LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 42

2018

Bate Stamp Numbers
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Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2018

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 42

2018

A. Title: Report – Final Explanation of Significant Differences, LHAAP-35A (58), Shops Area, Group 4, Record of Decision dated September 2010, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Department of the Army
Recipient: Environmental Protection Agency
Date: September 24, 2018
Bate Stamp: 00899856 – 00899886

B. Title: Report – Final Record of Decision, LHAAP-03, Former Waste Collection Pad, Building 722-P Paint Shop, Longhorn Army Ammunition Plant, Karnack, Texas, June 2018
Author(s): Department of the Army
Recipient: Environmental Protection Agency
Date: September 27, 2018
Bate Stamp: 00899887 – 00899936

C. Title: Report – Draft Quarterly Evaluation Report, 2nd Quarter (April–June) 2018, Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Bhate Environmental Associates, Inc.
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: October 8, 2018
Bate Stamp: 00899937 – 00901365

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

September 24, 2018

DAIM-ODB-LO

Mr. Rich Mayer
U.S. Environmental Protection Agency (USEPA)
Federal Facilities Section R6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: July 2018 Final, Explanation of Significant Differences,
LHAAP-35A(58), Shops Area, Group 4
Record of Decision dated September 2010
Longhorn Army Ammunition Plant, Karnack, Texas

Dear Mr. Mayer,

Please find attached two hard copies and one electronic copy (compact disk) of the LHAAP-35A(58) Final Explanation of Significant Differences for LHAAP-03 groundwater, signed by the Army and EPA, for your records.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin (letter)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)
A. Williams, USACE, Tulsa District, OK (1 CD)
N. Smith, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 hard copy and 1 CD for project files)
P. Srivastav, APTIM, Houston, TX

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

September 24, 2018

DAIM-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality (TCEQ)
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: July 2018 Final, Explanation of Significant Differences,
LHAAP-35A(58), Shops Area, Group 4
Record of Decision dated September 2010
Longhorn Army Ammunition Plant, Karnack, Texas

Dear Ms. Palmie,

Please find attached one hard copy and one electronic copy (compact disk) of the LHAAP-35A(58) Final Explanation of Significant Differences for LHAAP-03 groundwater, signed by the Army and EPA, for your records.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished (letter only):
R. Mayer, USEPA, Region 6, Dallas, TX
P. Bruckwicki, Caddo Lake NWR, TX
A. Williams, USACE, Tulsa District, OK
N. Smith, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO (for project files)
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Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Stephanie Bergeron Perdue, *Interim Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 2, 2018

Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
2530 Crystal Drive, Room 5000
Taylor Bldg./NC3
Arlington, Virginia 22202

Re: Explanation of Significant Differences Record of Decision for LHAAP-35A(58), Shops Area, Longhorn Army Ammunition Plant Federal Superfund Site TX6213820529 Karnack, Harrison County, Texas

Dear Mr. Lederle:

The Texas Commission on Environmental Quality (TCEQ) received the final Explanation of Significant Differences Record of Decision (ROD) for LHAAP-35A(58), Shops Area, Longhorn Army Ammunition Plant Federal Superfund Site in Karnack, Texas on July 25, 2018. The TCEQ has completed the review of the above referenced document and concurs that the described action is appropriate.

Sincerely,

Beth Seaton

Beth Seaton, Director
Remediation Division

BS/AP/cw

cc: Mr. Carl Edlund, P.E., Director, Superfund Division, U.S. Environmental Protection Agency, Region 6

FINAL
EXPLANATION OF SIGNIFICANT DIFFERENCES
LHAAP-35A(58), SHOPS AREA, GROUP 4
RECORD OF DECISION DATED SEPTEMBER 2010

FOR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corps of Engineers

Prepared By:

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205

2500 CityWest Blvd, Suite 1700
Houston, Texas 77042

July 2018

FINAL
EXPLANATION OF SIGNIFICANT DIFFERENCES
LHAAP-35A(58), SHOPS AREA, GROUP 4
RECORD OF DECISION DATED SEPTEMBER 2010

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corp of Engineers
Tulsa District

Prepared By:

Bhate Environment & Infrastructure
and
Aptim Federal Services, LLC

Contract No. W9128F-13-D-0012
Task Order No. W912BV17F0150

July 2018

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ACRONYMS AND ABBREVIATIONS

AECOM	AECOM Technical Services, Inc.
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
COC	contaminant of concern
DCA	dichloroethane
DCE	dichloroethene
DNAPL	dense non-aqueous phase liquid
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUC	land use control
MCL	maximum contaminant level
µg/L	micrograms per liter
MNA	monitored natural attenuation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
PCE	tetrachloroethene
RACR	Remedial Action Completion Report
RAO	remedial action objective
RAWP	Remedial Action Work Plan
RD	remedial design
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
Shaw	Shaw Environmental, Inc.
SVOC	semivolatile organic compound
TCA	trichloroethane
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
U.S. Army	U.S. Department of the Army
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

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1 INTRODUCTION AND STATEMENT OF PURPOSE

Site and Location: LHAAP-35A(58) is an industrial paved area consisting of 11 acres in the north-central section of LHAAP.

Lead Agency and Supporting Agency:
Lead Agency – U.S. Department of the Army (U.S. Army)
Lead Oversight Agency - U.S. Environmental Protection Agency Region 6 (USEPA)
Supporting Agency – Texas Commission on Environmental Quality (TCEQ)

This Explanation of Significant Differences (ESD) is in Compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §117 (c), 42 United States Code (U.S.C.) Section (§) 9617 (c) and National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 Code of Federal Regulations (C.F.R.) §300.435(c)(2)(i).

Date of Record of Decision Signature: September 2010, Administrative Record, Bate Stamp 00098704-00098797

Need for ESD: LHAAP-03 is a 50-foot by 50-foot tract of land located within the larger site, LHAAP-35A(58) (Figure 1-1). The September 2010 LHAAP-35A(58) Record of Decision (ROD) (Shaw, 2010) notes that LHAAP-03 falls within the LHAAP-35A(58) land use control boundary (LUC) and describes the LHAAP-03 well 03WW01 as impacted by the LHAAP-35A(58) volatile organic compound (VOC) plume but it does not specifically address the LHAAP-03 groundwater as part of the LHAAP-35A(58) remedy or LUC boundary. The ROD also does not identify arsenic as a potential contaminant of concern (PCOC) in groundwater for LHAAP-35A(58). However, a groundwater monitoring program for arsenic at LHAAP-03 and LUCs for LHAAP-03 were included in the LHAAP-35A (58) Remedial Action Completion Report (RACR) (AECOM, 2015), approved by USEPA and TCEQ in 2015. Thus, this ESD will formally include the groundwater at LHAAP-03 as indistinguishable from and included with the site wide groundwater plumes at LHAAP-35A(58) and the associated LUCs already in place at LHAAP-35A(58).

This ESD will become part of the Administrative Record file in accordance with NCP 40 C.F.R. §300.825(a)(2). The file will be located at the Marshall Public Library:

Marshall Public Library
300 South Alamo Blvd.
Marshall, Texas 75670

Phone: 903-935-4465

Hours:
Monday, Tuesday, and Thursday 9:30 am to 7:30 pm
Wednesday and Friday 9:30 am to 5:30 pm
Saturday 9:30 am to 3:30 pm

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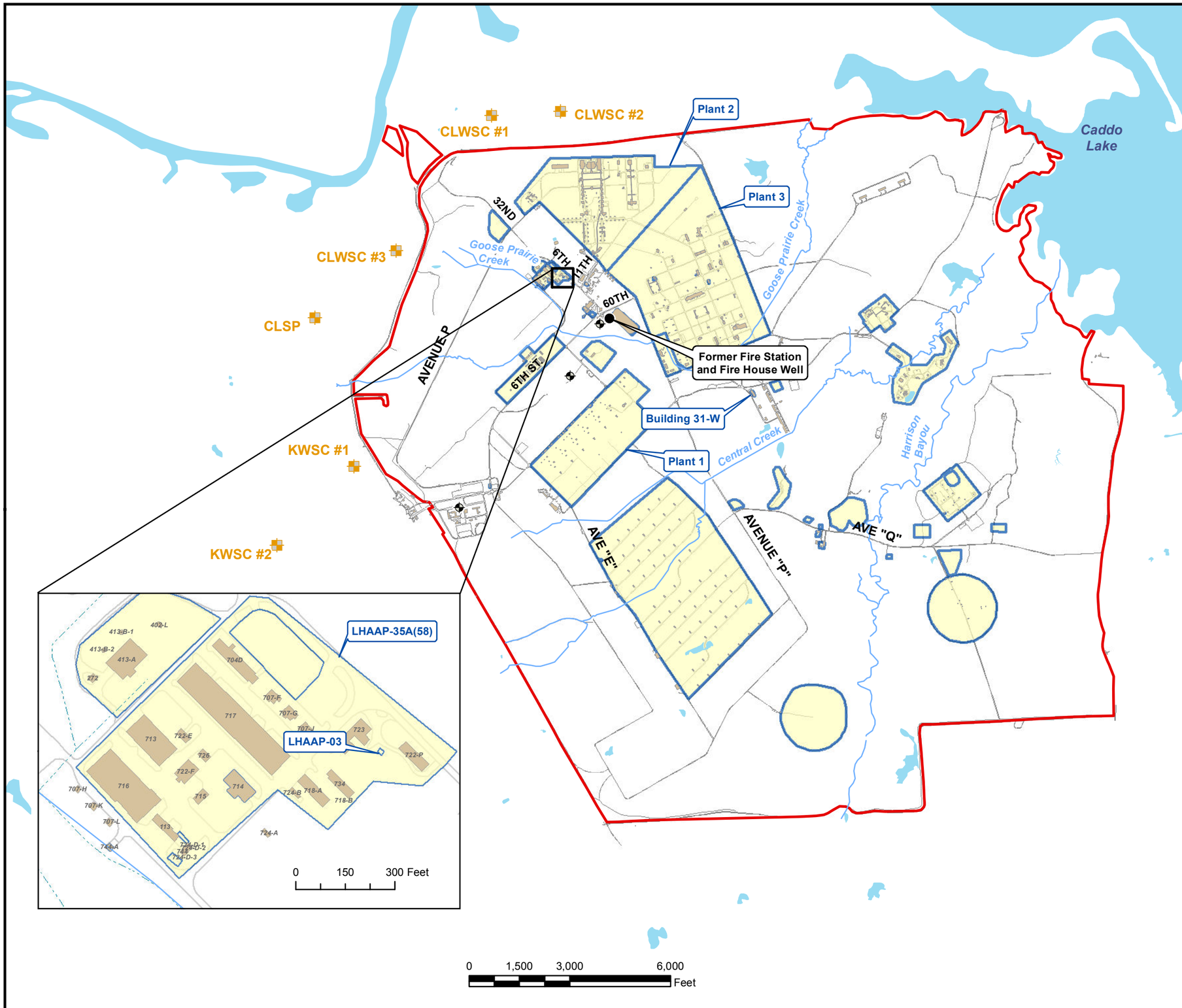

Legend

- Fire House Well
- Water Supply Well Locations
- Public Water Supply Well Locations
- Streams
- Roads
- Lake/Pond
- LHAAP-03 Site Boundary
- LHAAP Boundary

KWSC – Karnack Water Supply Corporation
CLWSC – Caddo Lake Water Supply Corporation
CLSP - Caddo Lake State Park

APTIM

Figure 1-1
LHAAP-03 Site Location Map

LHAAP-35A(58) ESD
Longhorn Army Ammunition Plant
Karnack, Texas

60256135

June 2018

\\usgrn1vfp001\data\group\L:\Group\IT_GIS\GIS Projects\Longhorn\MXDs\LHAAP-03\2013-May-16\Figure 2-2 LHAAP-03 Site Location Map_CH.mxd

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2 SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

2.1 SITE HISTORY AND CONTAMINATION

LHAAP-35A(58), also known as the Shops Area, is located in the north-central portion of LHAAP. LHAAP-35A(58) is an industrial area (former maintenance complex which included the Shops Area) that provided a wide range of support services including laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical shops. Located within the boundary of LHAAP-35A(58), LHAAP-03 is approximately 50 feet to the west of former Building 722-P. LHAAP-03 was a waste collection site (originally identified as a 16-foot by 15-foot area) outside of the paint shop at Building 722-P, which was at the Maintenance Shop Area. The waste collection site was active throughout LHAAP's mission and became inactive in 1996-1997, along with the entire installation.

Contaminants associated with LHAAP-35A(58) include volatile organic compounds (VOCs), primarily 1,1-dichloroethene, cis-1,2-dichloroethene, trichloroethene (TCE), and vinyl chloride (VC). All are detected within the uppermost water-bearing zone at the site. Potential site-related contaminants at LHAAP-03 were metals, VOCs, and semivolatile organic compounds (SVOCs). LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. A Federal Facility Agreement (FFA) became effective December 30, 1991, among the USEPA, the U.S. Army, and the State of Texas, represented by the TCEQ. LHAAP-35A(58) was not one of the originally listed NPL sites; however, it is being managed in the same manner because of the presence of contaminated groundwater under the site. The site has been added to the list of NPL sites at LHAAP with concurrence from the U.S. Army and USEPA Headquarters.

Following approval and signature of the ROD in September 2010 and the Remedial Design (RD) in September 2011, the Final Remedial Action Work Plan (RAWP) to implement the remedy proposed in the ROD was published in August 2013 (AECOM, 2013). Following implementation of the remedy in accordance with the RAWP, the RACR was published in May 2015 (AECOM, 2015) to document the implementation. The RAWP and RACR also established evaluation criteria for the remedy (**Section 2.3**) to determine if the performance objectives are met.

2.2 SELECTED REMEDY

The selected remedy, identified as Alternative 4 in Section 2.12 of the ROD, included in situ bioremediation followed by monitored natural attenuation (MNA) and LUC for the eastern plume and MNA and LUC for the western plume. The LHAAP-35A(58) eastern plume contains LHAAP-03. This alternative was selected because it was consistent with the intended future use of the site as a wildlife refuge. The alternative also satisfied the Remedial Action Objectives (RAOs) for the site through a groundwater LUC restriction, which would ensure protection of human health by preventing human exposure to contaminated groundwater, and MNA and in situ bioremediation, which would return the contaminated water to its potential beneficial use, wherever practicable, within a reasonable timeframe (40 C.F.R. 300.430(a)(1)(ii)(F)). The LUC to restrict groundwater use will remain in place until cleanup levels are met. Furthermore, long-term monitoring (LTM) will assure that human health and the environment are protected by verifying that

contaminated groundwater does not migrate into nearby surface water bodies at levels that exceed maximum contaminant levels (MCLs). This alternative offered a high degree of long-term effectiveness that can easily be implemented at a lower cost than other alternatives.

3 BASIS FOR THE DOCUMENT

The September 2010 ROD for LHAAP-35A(58) (Shaw, 2010) did not specifically include the groundwater under LHAAP-03, a small site that is entirely contained within the LHAAP-35A(58) eastern VOC plume and LUC boundaries. The only additional potential COC identified for LHAAP-03 groundwater is arsenic. The proposed management strategy is to address the groundwater underlying LHAAP-03 and associated LUCs as being indistinguishable from, and included with LHAAP-35A(58) groundwater remedies and LUCs.

Well 03WW01 (Figure 3-1) is identified in the ROD as an LHAAP-35A(58) VOC-impacted well, is located within the EISB target injection area for LHAAP-35A(58), and remains part of the LHAAP-35A(58) monitoring well network. Even though arsenic was not identified as a COC in the LHAAP-35A(58) ROD, in November 2008, arsenic was detected in the single LHAAP-03 well (03WW01) and five LHAAP-35A (58) wells at concentrations exceeding the 10 micrograms per liter (µg/L) MCL (AECOM, 2015). Arsenic groundwater monitoring plans are included in the LHAAP-35A(58) RAWP (AECOM, 2013) and RACR (AECOM, 2015) to provide additional evaluation of arsenic concentration trends after completion of the LHAAP-03 soil excavation for arsenic and lead, and the implementation of the EISB remedy at LHAAP-35A (58). Thus, the groundwater at LHAAP-03 cannot be isolated from the LHAAP-35A(58) groundwater and will be formally included with LHAAP-35A(58) via this ESD.

As described in the LHAAP-35A(58) RAWP, LUCs for the LHAAP-35A(58) groundwater include LHAAP-03 groundwater. Groundwater monitoring for LHAAP-35A(58) includes the well for LHAAP-03. The ROD states that LHAAP-03 is located inside the LHAAP-35A(58) LUC boundary. The land use notification required by the ROD and recorded in Harrison County, Texas states that LHAAP-03 is “contained within the LHAAP-35A(58) LUC boundary”. Therefore, the LHAAP-03 inclusion within the LHAAP-35A(58) LUC boundary implicitly applies the groundwater LUCs to LHAAP-03.

Although the ROD states that the LUCs will remain in place until the cleanup levels in groundwater are met, the land use notification and the RACR state the duration of the LUCs (restriction against the residential use of groundwater) is until the levels of the COCs in soil and groundwater allow UUUE. Therefore, the duration of the LUCs associated with LHAAP-35A(58) until UUUE is already a matter of record and implementation, and should be formalized via this ESD. This is consistent with CERCLA 121(c) and 40 C.F.R. 300.430(f)(4)(ii), both of which require a periodic review of the remedy to ensure protection of human health and the environment for as long as contamination remains on site and for as long as a remedy is required on site.

This ESD provides for arsenic to be sampled as a component of the groundwater monitoring program for LHAAP-35A(58) and evaluated to determine if arsenic is present due to a release or due to geochemical conditions.

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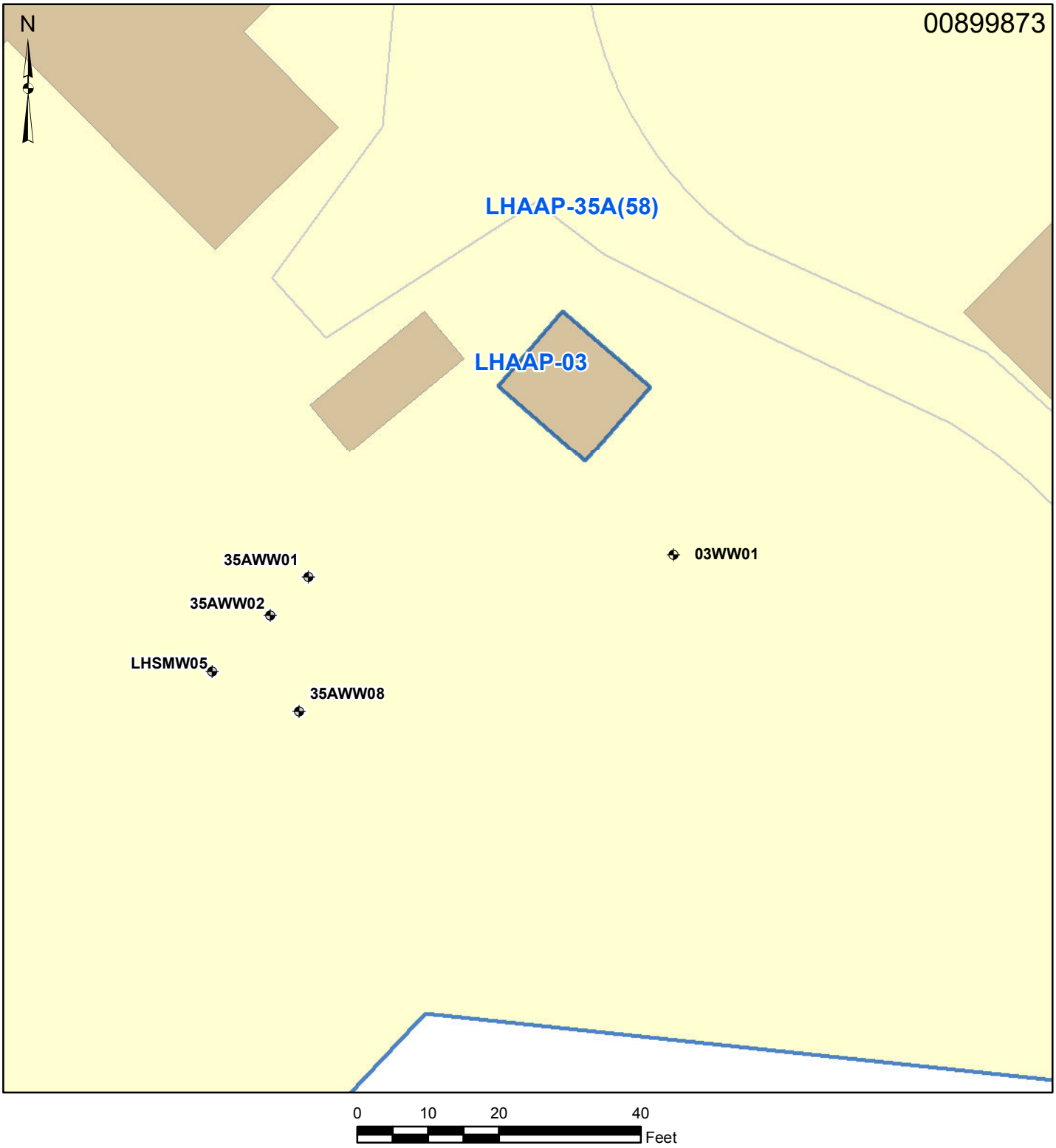

Legend

- Monitoring Well Location
- Roads
- Buildings
- Site

Source: Shaw, 2011, Draft Engineering Evaluation and Cost Analysis, LHAAP-03 (Former Waste Collection Pad Near Building 722-P, Paint Shop) Longhorn Army Ammunition Plant, Karnack, Texas

APTIM

Figure 3-1
LHAAP-03 Monitoring Well Locations

LHAAP-35A(58) ESD
Longhorn Army Ammunition Plant
Karnack, Texas

60256135

June
2018

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4 DESCRIPTION OF SIGNIFICANT DIFFERENCES

The significant differences in the remedy presented in the ROD and this ESD are summarized as follows:

- Formally document the monitoring and LUCs for LHAAP-03 groundwater are captured under LHAAP 35A(58)
- Incorporate groundwater monitoring for arsenic within the LHAAP-35A(58) monitoring program, as described in subsequent documents since the 2010 ROD
- Change the LUC duration to "until the levels of COCs in soil and groundwater allow unrestricted use and unlimited exposure".

These differences will not change the selected remedy for LHAAP-35A(58), the cost to implement the remedy, or the expected time to achieve the cleanup objectives.

ROD Section 1.4 Description of the Selected Remedy

> The final selected remedy for LHAAP-35A(58) protects human health and the environment by preventing human exposure to groundwater contaminated with chlorinated solvents…

Change to Remedy Presented in the ROD:

The changes to the remedy in the ROD consist of:

1. Formally documenting that monitoring and LUCs for LHAAP-03 groundwater are captured under LHAAP-35A(58)
2. Incorporating groundwater monitoring for arsenic within the LHAAP-35A(58) monitoring program, and;
3. Modification of the LUC duration to "until the levels of COCs in soil and groundwater allow unrestricted use and unlimited exposure"

ROD Section 2.5.5, Nature and Extent of Contamination:

> Based on the risk assessment and subsequent evaluations, it was determined that the COCs for the shallow groundwater at this site are tetrachloroethene (PCE), TCE, 1,1-dichloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE, VC, 1,1,2-trichloroethane (TCA), 1,1-dichloroethane (DCA), and chloroethene. The plume boundaries for PCE, TCE, and 1,1-DCE, as determined by their respective MCLs, are shown on **Figure 2-8**. The COCs are toxic and carcinogenic. No principal threat source material (such as dense non-aqueous phase liquid [DNAPL]) was identified or suspected to exist at LHAAP-35A(58).

Change to Nature and Extent of Contamination in the ROD:

The only change to nature and extent of contamination in the ROD is to incorporate arsenic for confirmation monitoring. Although not identified as a COC for LHAAP-35A(58), arsenic is found in groundwater and is monitored as described in the Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03 / LHAAP-35A(58) (AECOM, 2012) and the LHAAP-35A(58) RAWP (AECOM, 2013). In November 2008, arsenic was detected in the LHAAP-03 well (03WW01) and five LHAAP-35A(58) wells at concentrations exceeding the 10 µg/L MCL (AECOM, 2015). Arsenic was detected in

both eastern and western plume areas at LHAAP-35A(58). While this exceedance of arsenic is above the MCL, it is within the range of groundwater arsenic concentrations detected during background evaluations performed in 1995 and 2008, and may be attributable to reducing conditions in groundwater.

ROD Performance Objectives for the Groundwater Remedy, Section 2.12.2 Description of the Selected Remedy, Western Plume, paragraph 2:

> The MNA evaluation will be based on the USEPA lines of evidence (USEPA, 1999) and the anaerobic screening (USEPA, 1998) as follows:
>
> - MNA potential based on evaluating biodegradation screening scores using USEPA guidance
> - Plume stability (i.e., the plume concentrations are decreasing in the majority of performance wells, and the plume is not expanding in area as demonstrated with compliance wells)
> - MNA Process Evaluation demonstrated based on an attenuation rate calculated with empirical performance monitoring data and MNA Process Demonstration based on the presence of daughter products and bacterial culture counts

Change to Performance Objectives:

No change to the performance objectives in the ROD is proposed. Limited groundwater monitoring for arsenic will be conducted to evaluate whether detections in both eastern and western plume areas at LHAAP-35A(58) are within background concentrations or if detections may be attributable to reducing conditions in groundwater.

ROD Cost Estimate for the Selected Remedy, Section 2.12.3, paragraphs 1 and 2:

> Table 2-10 presents the present worth analysis of the cost for the selected remedy, Alternative 4. The information in this table is based on the best available information regarding the anticipated scope of the remedial alternative. The quantities used in the estimate are for estimating purposes only. Changes in the cost estimates are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a ROD amendment, while significant changes may be included in an ESD. Minor changes may be documented in a memorandum included in the Administrative Record. This is an order-of-magnitude engineering cost estimate that is expected to be within -30 to +50 percent of the actual project cost.
>
> The total project present worth cost of this alternative is approximately $785,000, using a discount rate of 2.8%. The capital cost is estimated at $191,000. The total O&M present value cost is estimated at approximately $594,000. The O&M cost includes evaluation of MNA, maintenance of LUC and LTM through year 30. The LTM would support the required CERCLA five-year reviews.

Change to Cost Estimate for the Selected Remedy:

There is no cost associated with formally documenting that monitoring and LUCs for LHAAP-03 groundwater is captured under LHAAP-35A(58). The cost associated with

incorporating groundwater monitoring for arsenic within the LHAAP-35A(58) monitoring program, as described in the LHAAP-35A(58) RAWP (AECOM, 2013) is considered to be insignificant with only twelve wells identified for arsenic sampling with the limited frequency of the first four quarters of MNA monitoring.

5 REGULATORY AGENCY COMMENTS

The lead oversight agency USEPA and support agency TCEQ have reviewed this ESD and support the changes to the selected remedy.

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6 STATUTORY DETERMINATIONS

The modification presented herein satisfies CERCLA §121, 42 U.S.C. §9621.

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7 PUBLIC PARTICIPATION

A notice summarizing the ESD shall be published in the Marshall News Messenger upon finalization of the ESD. This ESD and all supporting ESD documentation will be made a part of the Administrative Record file in accordance with the NCP at 40 C.F.R. §300.825(a)(2). The Administrative Record will be located at the repository identified in Section 1.0 of this document. All public participation requirements set out in the NCP at 40 C.F.R. §300.435(c)(2)(i) have been met.

The U.S. Army reviewed all written and oral comments submitted during the public comment period. There were no significant comments captured related to the groundwater remedy.

Authorizing Signature:

Date: 19 July 2018

Thomas E. Lederle
Chief BRAC Division ACSIM
U.S. Department of the Army

Authorizing Signature:
I have reviewed this document, and any comments I had have been addressed and/or incorporated:

Date: 9/5/18

Carl Edlund
Director
Superfund Division
U.S. Environmental Protection Agency, Region 6

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8 REFERENCES

AECOM Technical Services, Inc. (AECOM), 2012, *Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03/LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas*, November.

AECOM, 2013, *Final Remedial Action Work Plan, LHAAP-35A(58), Shops Area, Group 4, Longhorn Army Ammunition Plan, Karnack, Texas,* August.

AECOM, 2015, *Draft Final LHAAP-58 Remedial Action Completion Report, Longhorn Army Ammunition Plant, Karnack, Texas*, May.

Shaw Environmental, Inc. (Shaw), 2010, *Final Record of Decision LHAAP-35A(58), Shops Area, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas,* September.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

September 24, 2018

DAIM-ODB-LO

Mr. Rich Mayer
U.S. Environmental Protection Agency (USEPA)
Federal Facilities Section R6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final, Record of Decision (ROD),
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Longhorn Army Ammunition Plant, Karnack, Texas, June 2018

Dear Mr. Mayer,

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The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

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Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Stephanie Bergeron Perdue, *Interim Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 19, 2018

Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
2530 Crystal Drive, Room 5000
Taylor Bldg./NC3
Arlington, Virginia 22202

Re: Record of Decision for LHAAP-03, Former Waste Collection Pad, Building 722-P Paint Shop, Longhorn Army Ammunition Plant Federal Superfund Site TX6213820529 Karnack, Harrison County, Texas

Dear Mr. Lederle:

The Texas Commission on Environmental Quality (TCEQ) received the final Record of Decision (ROD) for LHAAP-03, Former Waste Collection Pad, Building 722-P Paint Shop, Longhorn Army Ammunition Plant Federal Superfund Site in Karnack, Texas on June 4, 2018. The TCEQ has completed the review of the above referenced document and concurs that the described action is appropriate.

Sincerely,

Stephanie Bergeron Perdue
Interim Executive Director

cc: Mr. Carl Edlund, P.E., Director, Superfund Division, U.S. Environmental Protection Agency, Region 6

FINAL
RECORD OF DECISION
LHAAP-03
FORMER WASTE COLLECTION PAD
BUILDING 722-P PAINT SHOP

FOR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corps of Engineers

Prepared By:

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205

2500 CityWest Blvd, Suite 1700
Houston, Texas 77042

June 2018

FINAL
RECORD OF DECISION

LHAAP-03
FORMER WASTE COLLECTION PAD
BUILDING 722-P PAINT SHOP

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corp of Engineers

Tulsa District

Prepared By:

Bhate Environment & Infrastructure
and
Aptim Federal Services, LLC

Contract No. W9128F-13-D-0012

Task Order No. W912BV17F0150

June 2018

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APPENDIX A: Public Notice

Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
ARAR	Applicable or Relevant and Appropriate Requirement
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
COC	contaminant of concern
CSM	Conceptual Site Model
ECP	Environmental Condition of Property
EE/CA	Engineering Evaluation/Cost Analysis
EPC	exposure point concentration
FFA	Federal Facility Agreement
HHRA	Human Health Risk Assessment
HI	hazard index
K_d	lead distribution coefficient
kg	kilograms
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MOA	Memorandum of Agreement
MSC	medium-specific concentration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	operation and maintenance
PW	present worth
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design

RFA	RCRA Facility Assessment
RG	remediation goal
RI/FFS	Remedial Investigation/Focused Feasibility Study
ROD	Record of Decision
RRS	risk reduction standard
SAM	Soil Attenuation Model
SVOC	semi-volatile organic compound
TAC	Texas Administrative Code
TNT	trinitrotoluene
TCEQ	Texas Commission on Environmental Quality
UCL	upper confidence limit
U.S.	United States
U.S. Army	U.S. Department of the Army
USAEHA	U.S. Army Environmental Hygiene Agency
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

1 THE DECLARATION

1.1 Site Name and Location

Longhorn Army Ammunition Plant (LHAAP) -03 (Former Waste Collection Pad, Building 722-P Paint Shop) LHAAP, Karnack, Texas

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), United States (U.S.) Environmental Protection Agency (USEPA) Identification Number: TX6213820529.

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) presents the selected remedy for LHAAP-03 (Former Waste Collection Pad near Building 722-P Paint Shop), located at LHAAP in Karnack, Texas. The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Code of Federal Regulations (CFR) Title 40 Section (§) 300.

The remedy selection is based on work completed and documented in the Administrative Record for the site, including:

- Baseline Human Health Risk and Screening Ecological Risk Assessment Report (Jacobs, 2003)
- Baseline Ecological Risk Assessment (BERA) Report (Shaw, 2007b)
- Site Investigation Report (Shaw, 2009)
- Remedial Investigation/Focused Feasibility Study (RI/FFS) Report (AECOM Technical Services, Inc. [AECOM], 2013a)
- Proposed Plan (AECOM, 2013b) for LHAAP-03

The U.S. Department of the Army (U.S. Army), the lead agency for LHAAP, has issued this document. The USEPA (Region 6) and the Texas Commission on Environmental Quality (TCEQ) are the regulatory agencies providing technical support, project review and comment, and oversight of the LHAAP cleanup program. Under 40 CFR § 300.430(f)(4)(iii), the U.S. Army, as the lead agency, and the USEPA, as the lead regulatory agency, have jointly selected the remedy. The TCEQ concurs with the selected remedy.

1.3 Assessment of the Site

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

1.4 Description of the Selected Remedy

This ROD presents the final remedy for soil at LHAAP-03. Groundwater for LHAAP-03 is addressed as part of the remedy for LHAAP-35A(58). The final remedy is identified in the Proposed Plan (AECOM, 2013b) that has been reviewed and approved by the regulatory agencies and placed in the Administrative Record file for LHAAP. The final remedy addresses arsenic- and lead-contaminated soil that, based upon testing and modeling, have the potential to result in local

groundwater arsenic and lead concentrations in excess of their respective maximum contaminant levels (MCLs). The soil cleanup levels selected are protective of the groundwater for arsenic and lead. Arsenic and lead concentrations exceeding the soil cleanup levels will be removed as part of the selected remedy and the remaining arsenic and lead concentrations in soil do not pose an unacceptable direct contact risk to humans or ecological receptors at this site. Surface water runoff to surface water streams is not shown as a pathway for the site on the Conceptual Site Model on **Figure 2-5**, and there is no indication of concentrations at the surface that present an unacceptable risk to human or ecological receptors that could create a risk via that pathway. To address ecological risk, LHAAP-03 was grouped with several other sites as part of the Industrial Sub-Area. The BERA (Shaw, 2007b) concluded that no unacceptable risk was present in the Industrial Sub-Area, and therefore no further action is needed at LHAAP-03 for the protection of ecological receptors.

The target soil remediation area for LHAAP-03 is contained entirely within the boundaries of a larger site, LHAAP-35A(58). Because LHAAP-03 is small and entirely contained within LHAAP-35A(58) and its land use control (LUC) boundary, the management strategy is to address the LHAAP-03 groundwater remedy and LUCs as being indistinguishable from and included with the LHAAP-35A(58) remedy via an Explanation of Significant Differences for the LHAAP-35A(58) ROD.

Similarly, LHAAP-03 lies wholly within the LUC boundary of LHAAP-35A(58) and all LUCs, as well as the non-residential land use notification, applicable to LHAAP-35A(58) will be applicable to LHAAP-03 in the same way and to the same extent (USACE, 2010 and 2018). Therefore, the remedy selected in this ROD does not include any specific provisions for LUCs.

CERCLA Five-Year Reviews specific to LHAAP-03 will be implemented following completion of the soil remedy to evaluate whether the remedy remains protective of human health and the environment. CERCLA Five-Year Reviews for LHAAP-03 will be addressed as part of the remedial action for LHAAP-35A(58). All monitoring and reporting requirements associated with CERCLA five year reviews, will be met under LHAAP-35A(58).

For these reasons, excavation and offsite disposal of soil exceeding the site-specific remediation goals (RGs) for arsenic and lead within the LHAAP-03 is the only remedy component selected by this ROD. Once the areas have been excavated, verification sampling will be performed to confirm that the contaminated soil exceeding the site-specific RGs has been removed. Following remedial action, contaminant of concern (COC) concentrations will be reduced to achieve chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs) (based on the commercial/industrial land use scenario). The selected remedy for LHAAP-03 protects groundwater by preventing migration of COCs into groundwater at concentrations that could possibly result in local exceedances of the MCLs for arsenic and lead.

The Remedial Design (RD) will include the specific remedy implementation details. Within 21 days of the issuance of the ROD, the U.S. Army will propose deadlines for completion of the RD/Remedial Action Work Plan (RAWP). The documents will be prepared and submitted to the USEPA and the TCEQ pursuant to the Federal Facility Agreement (FFA).

1.5 Statutory Determinations

The final selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial

action, and is cost-effective. This remedy utilizes permanent solutions technologies to the maximum extent practicable. The remedy does not satisfy the statutory preference for treatment as a principal element of the remedy since the estimated quantity of soil to be removed is too small and the chemical concentrations too low to be economically treated. Although the selected remedy does not employ treatment, the potential threat to underlying groundwater will be eliminated because the soil will be excavated and disposed off-site.

1.6 ROD Data Certification Checklist

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record for this site.

- Current and reasonably anticipated future land use assumptions and current and potential future land use as identified in the baseline risk assessment and ROD (**Section 2.6**).
- Potential land use that will be available at the site as a result of the selected remedy (**Section 2.12**).
- COCs and their concentrations (**Section 2.5**).
- Baseline risk represented by the COCs (**Section 2.7**).
- Cleanup level established for the COCs and the basis for the levels (**Section 2.8**).
- This ROD does not describe how source materials constituting principal threats will be addressed, since wastes identified at LHAAP-03 do not meet the definition of principal threat waste.
- Key factor(s) that led to selecting the remedy (**Section 2.10**).
- Estimated capital and total present worth (PW) costs, discount rate, and the number of years over which the remedy cost estimates are projected (**Section 2.12**).

1.7 Authorizing Signatures

As the lead agency, the U.S. Army issues this ROD for LHAAP-03 to document the final selected remedy. The undersigned is the appropriate approval authority for this decision.

Thomas E. Lederle
Chief BRAC Division, ACSIM
United States Army

31 MAY 2018
(Date)

The U.S. Environmental Protection Agency approves the final selected remedy as provided in the ROD for LHAAP-03.

Carl Edlund
Director
Superfund Division
U.S. Environmental Protection Agency, Region 6

August 10, 2018
(Date)

2 DECISION SUMMARY

2.1 Site Name, Location, and Description

LHAAP-03 (Former Waste Collection Pad, Building 722-P Paint Shop), LHAAP, Karnack, Texas

CERCLIS USEPA Identification Number: TX6213820529

Lead Agency: U.S. Army, Department of Defense

Lead Oversight Agency: USEPA Region 6

Support Agency: TCEQ

Source of Cleanup Money: U.S. Army, Department of Defense

Site Type: Industrial Facility

The former LHAAP is an inactive, government-owned, formerly contractor operated and maintained, Department of Defense facility located in central east Texas (see **Figure 2-1**) in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. The installation occupies approximately 1,400 of its former 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The facility can be accessed via State Highways 43 and 134.

LHAAP was placed on the Superfund National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination associated with the listing of LHAAP as a NPL site began in 1990. The U.S. Army, the USEPA, and the Texas Water Commission (now known as the TCEQ) entered into a CERCLA Section 120 FFA for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property. The majority of LHAAP has been transferred from the U.S. Army to the (U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge.

LHAAP-03 is located approximately 50 feet to the west of former Building 722-P (**Figure 2-2**). LHAAP-03 was a waste collection site (originally identified as a16-foot by 15-foot area) outside of the paint shop at Building 722-P, which was at the Maintenance Shop Area located within the boundary of LHAAP-35A(58). Building 722-P was used for paint spraying and polyurethane spray coating of various items. Heavy metal-based primers, other waste paint, waste solvents and contaminated rags were collected in a 55-gallon drum on a gravel pad in an open-sided shed. Full drums were transferred to Building 31-W for disposal offsite. Building 722-P has been demolished. Potential site-related chemicals at LHAAP-03 were metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) (Plexus, 2005).

Previous descriptions of the wastes collected at LHAAP-03 near the Paint Shop (Building 722-P) included inventories of the types and quantities of wastes generated, including waste paint thinner and other non-halogenated solvents (95 kilograms [kg] in 1985 and 200 kg in 1986), and urethanes (606 kg in 1985 and 400 kg in 1986) (U.S. Army Environmental Hygiene Agency [USAEHA], 1987). Approximately 130 gallons of waste paint thinner was generated circa 1990 (Day & Zimmerman, 1991).

2.2 Site History and Enforcement Activities

2.2.1 LHAAP History

LHAAP was established in December 1941 with the primary mission of manufacturing trinitrotoluene (TNT). Production of TNT began at Plant 1 in October 1942 and continued through World War II until August 1945, when the facility was placed on standby status until February 1952. LHAAP facility was reactivated with the opening of Plant 2, where pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40 millimeter ammunition, were produced until 1956.

In December 1954, a third facility, Plant 3, began production of solid-fuel rocket motors for tactical missiles. Rocket motor production at Plant 3 continued to be the primary operation at LHAAP until 1965 when Plant 2 was reactivated for the production of pyrotechnic and illuminating ammunition. In the years following the Vietnam Conflict, LHAAP continued to produce flares and other basic pyrotechnic or illuminating items for the U.S. Department of Defense inventory. From September 1988 to May 1991, LHAAP was also used for the static firing and elimination of Pershing I and II rocket motors in compliance with the Intermediate-Range Nuclear Force Treaty in effect between the U.S. and the former Union of Soviet Socialist Republics. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

2.2.2 LHAAP-03 History

2.2.2.1 Historical Site Activities

LHAAP-03 was a waste collection site outside of the former paint shop at Building 722-P. These waste collection activities are the potential sources of soil impact at LHAAP-03. LHAAP-03 was not listed on the NPL when LHAAP was initially added in 1990. However, due to releases of chemicals from operations at the facility, LHAAP-03 was added to the NPL by the FFA parties in 2011.

2.2.3 History of Investigative and CERCLA Enforcement Activities

As part of the Installation Restoration Program, the U.S. Army began an environmental investigation in 1976 at LHAAP followed by installation wide assessments/investigations that included a preliminary Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) completed in 1988 by the Texas Water Commission (Texas Water Commission, 1988). Waste at the various sites was characterized, but no samples were collected during the RFA. The RFA document can be found in Volume 2 of 2 in year 1988 of the Administrative Record. This RFA captured and referenced U.S. Army Environmental Hygiene Agency (USAEHA) information developed in 1987 as part of the RCRA permit application process, and as a continuation of the 1982 EPS contamination survey, where all solid waste management units at LHAAP were identified, described and evaluated (USAEHA, 1987). After the listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the TCEQ) entered into a CERCLA Section 120 FFA for remedial activities at LHAAP. The FFA became effective December 30, 1991.

LHAAP-03 was visually inspected as part of the RFA. The drum was found in good condition and no evidence of spillage or leakage was found during the visual inspection. The visual

inspection report further documented that because it is a well-managed unit, no further RFA action is recommended.

In addition to installation-wide investigations, several investigations were conducted specifically for LHAAP-03 to evaluate the nature and extent of soil and groundwater impacts at the site. These investigations have included multiple rounds of soil sampling and analyses, installation of a groundwater monitoring well, and groundwater sampling and analyses. The soil and groundwater investigation results were primarily summarized in the following reports issued for the Site:

- Final Site Investigation Report, LHAAP-03 (Waste Collection Pad Near Building 722-P, Paint Shop), Longhorn Army Ammunition Plant, Karnack, Texas (Shaw, 2009)
- Draft Engineering Evaluation and Cost Analysis, LHAAP-03 (Former Waste Collection Pad Near Building 722-P, Paint Shop), Longhorn Army Ammunition Plant, Karnack, Texas (Shaw, 2011)

The Draft Engineering Evaluation/Cost Analysis (EE/CA) Report summarized the human health and ecological risk assessments conducted for LHAAP-03. The Human Health Risk Assessment (HHRA) for LHAAP-03 was completed in 2003 (Jacobs, 2003) as part of the risk assessment for the larger site, LHAAP-35A(58), which encompasses LHAAP-03. The 2003 human health risk calculations were updated in the Draft EE/CA based on the investigation results at LHAAP-03. The ecological risk for LHAAP-03 was addressed as part of the installation-wide BERA completed in 2007 (Shaw, 2007b).

Following issuance of the Draft EE/CA Report, the U.S. Army in coordination with the TCEQ and the USEPA Region 6 determined to proceed with the cleanup at LHAAP-03 under the CERCLA remedial action authority (rather than removal action authority). Therefore, a RI/FFS Report was prepared in 2013 (AECOM, 2013a) to summarize the results of the previous environmental investigations, and to develop and evaluate remedial action alternatives to address potential risks to human health and the environment due to impacted soil at LHAAP-03.

Based on the detailed analysis of remedial alternatives documented in the RI/FFS report, a Proposed Plan was released for public comment that presented U.S. Army's preferred remedial alternative for impacted soil at LHAAP-03 (AECOM, 2013b). This preferred remedial alternative included excavation of arsenic- and lead-impacted soil, and disposal at an off-site disposal facility. This ROD is consistent with the Proposed Plan.

The VOC-impacted groundwater present at LHAAP-03 is unrelated to the activities performed at the site and is being addressed as part of the planned remedial action at LHAAP-35A(58). There is also a limited potential that arsenic in soil at LHAAP-03 is leading to its MCL exceedance in groundwater at the site. The remedial action selected in this ROD will eliminate any current and/or potential for future leaching of arsenic into underlying groundwater at unacceptable concentrations at LHAAP-03.

2.3 Community Participation

The U.S. Army, the USEPA, the TCEQ and the LHAAP Restoration Advisory Board (RAB) have provided public outreach to the surrounding community concerning LHAAP-03 and other environmental sites at LHAAP. The outreach program has included fact sheets, site visits, invitations to attend quarterly RAB meetings, and public meetings consistent with its public participation responsibilities under Sections 113(k)(2)(B), 117(a), and 121(f)(1)(G) of CERCLA.

The Proposed Plan (AECOM, 2013b) presenting the U.S. Army's preferred remedial action alternative for LHAAP-03 was made available to the public for review and comment on May 3, 2013. The notice of availability of the Proposed Plan and other related documents in the Administrative Record file was published in the *Marshall News Messenger* on May 12, 2013. The newspaper notice for the public meeting is provided in **Appendix A**. The public comment period for the Proposed Plan began on May 13, 2013, and ended June 12, 2013. A public meeting was held on May 30, 2013, in a formal format and with a court reporter. The transcript for the meeting is part of the Administrative Record. The significant comments (oral or written) are addressed in the Responsiveness Summary, which is included in this ROD as **Section 3.0**. The Administrative Record may be found locally at the information repository maintained at the following location:

Location:	Marshall Public Library 300 S. Alamo Marshall, Texas, 75670
Business Hours:	Monday – Thursday, 10:00 a.m. – 8:00 p.m. Friday – Saturday, 10:00 a.m. – 5:00 p.m.

2.4 Scope and Role of Response Action

This ROD selects the final remedy for arsenic and lead soil contamination at the LHAAP-03 site, which based upon testing and modeling, have the potential to result in local groundwater arsenic and lead concentrations in excess of their respective MCLs. Arsenic and lead in soil do not pose an unacceptable direct contact risk to humans (under an industrial scenario) or to ecological receptors. The role of the selected remedy is to prevent current and/or potential future migration of soil COCs arsenic and lead into groundwater. The selected remedial action includes soil excavation and off-site disposal to remove COC concentrations in soil to meet the RGs.

The target remediation area for LHAAP-03 lies entirely within the boundaries of a much larger site, LHAAP-35A(58).

The groundwater beneath LHAAP-03 is currently being addressed as part of the selected remedy for LHAAP-35A(58). Therefore, no separate remedial action for groundwater is required to address risks to human health and the environment.

2.5 Site Characteristics

This section of the ROD presents a brief yet comprehensive overview of LHAAP-03 site. The following elements of the Conceptual Site Model (CSM) are summarized in the subsections below: site physical characteristics, nature and extent of contamination, contaminant fate and transport, potential sources of contamination, potential release mechanisms, and potential exposure pathways. Detailed information about each element of the CSM can be found in the RI/FFS (AECOM, 2013a).

2.5.1 Physical Characteristics

2.5.1.1 Surface Water Hydrology

There are no surface water bodies present within LHAAP-03. Land at LHAAP-03 is relatively flat but water from heavy rains would eventually drain to the southern branch of Goose Prairie

Creek, approximately 800 feet to the southwest (see **Figure 2-2**). Goose Prairie Creek flows into Caddo Lake, although Goose Prairie Creek along with most surface water bodies at LHAAP have been impacted by drought conditions and are currently dry. Caddo Lake is a part of Big Cypress Bayou and is considered a wetland of international significance.

2.5.1.2 Geology and Hydrogeology

The subsurface geology at LHAAP consists primarily of a thin veneer of Quaternary alluvium overlying Tertiary age formations of the Wilcox and Midway Groups. The Wilcox Group underlies most of the LHAAP installation (Jacobs, 2002). The thickness of the Wilcox Group varies from 350 feet in the northwest corner of the installation to 130 feet along the eastern side near Caddo Lake. This formation consists of interbedded fine-to medium-grained sand, silt, and clay. The shallow soils at LHAAP-03 include interbedded layers of silty clays and sands (Shaw, 2007a).

2.5.2 Nature and Extent of Contamination

Groundwater generally occurs under semi-confined conditions at LHAAP. Perched and localized confining conditions frequently occur within the Wilcox Group deposits due to a high clay content and highly variable stratigraphy. The depth to groundwater across the LHAAP facility varies with typical depths being 12 to 16 feet below ground surface (bgs) in the shallow zone. Groundwater has been encountered at depths deeper than 16 feet bgs at certain locations within the LHAAP facility and groundwater levels have been impacted by on-going drought conditions. Depth to groundwater at monitoring well 03WW01 at LHAAP-03 was measured three times, in 2008 and 2011, with a depth to water of approximately 25 feet each time**.**

Groundwater contamination under LHAAP-03 is being addressed as part of the remedy for LHAAP-35A(58). A summary of the nature and extent of soil contamination at LHAAP-03 from the RI/FFS Report (AECOM, 2013a) is presented below.

Soil samples were collected from seventeen locations at LHAAP-03 soil operable unit at depths ranging from surface (0 to 0.5 feet bgs) to 15 feet bgs (**Figure 2-3**). The collected samples were analyzed for metals, VOCs, and SVOCs. The analytical results were compared to TCEQ risk reduction standard (RRS) 2 and RRS3 medium-specific concentrations (MSCs) (Title 30 Texas Administrative Code [TAC] Chapter 335) corresponding to commercial/ industrial land-use. The RRS2 and RRS3 MSCs are risk-based values developed to protect human health and groundwater resources, and are protective at a target risk level of 1×10^{-6} for carcinogens and a target hazard quotient of 1 for non-carcinogens.

No VOCs were detected at concentrations exceeding their respective RRS2 MSCs in any sample analyzed, and VOCs are of no further concern at LHAAP-03. Fifteen SVOCs had high sample detection limit concentrations identified for diluted samples and were not detected in any of the undiluted samples. Results of reanalysis of samples without dilution indicated that SVOCs were not detected in the soil at location 03SB01-1 (Shaw, 2009 and 2011).

Antimony, arsenic, barium, cadmium, chromium, copper, lead, and mercury were detected in one or more samples from borings 03SB01 through 03SB15, and 03SB17 at concentrations exceeding their respective RRS2 MSCs. These data indicated that there is a potential for the metals-contaminated soil to contaminate the groundwater (Shaw, 2009). Since LHAAP is under RRS3, to develop potential cleanup levels for the COCs in soil, RRS3 MSCs were developed using the soil

attenuation model, according to the TCEQ Risk Reduction Rules (30 TAC §335 and updates), included in the RI/FFS Appendix B (AECOM, 2013a). The RRS3 MSCs were developed for the following metals that exceeded their respective RRS2 MSCs: antimony, arsenic, barium, cadmium, chromium, copper, lead, and mercury.

The calculated 95 percent upper confidence limits (UCLs) of the mean concentrations in soil for antimony, arsenic, barium, cadmium, chromium, copper, lead, and mercury were compared to their respective calculated RRS3 MSCs. This comparison indicated that 95 percent UCLs for arsenic and lead exceeded their respective applicable RRS3 industrial soil MSCs and are the only COCs in soil. The maximum detected concentrations of arsenic and lead in soil were 32.7 and 6,760 milligrams per kilogram (mg/kg), respectively. The individual sample locations with lead and arsenic concentrations exceeding their respective RRS3 MSC values are shown on **Figure 2-4**.

LHAAP-03 groundwater is indistinguishable from LHAAP-35A (58) groundwater. The LHAAP-35A (58) groundwater levels are below the bottom of the ditch, and therefore, groundwater to surface water is not an identified pathway.

2.5.3 Contaminant Fate and Transport

Metals (arsenic and lead) exceeding their respective applicable RRS3 industrial soil MSCs were reported in a highly localized area (less than 50 feet by 50 feet) near the central portion of the site (see **Figure 2-4**). Within this localized area, metal concentration results from samples collected from boring 03SB04 and 03SB05, and 03SB07 and 03SB08 indicate that the distribution of elevated metal concentrations is heterogeneous.

LHAAP-03 is a localized area within a larger site, LHAAP-35A(58). The nearest surface water stream is approximately 800 feet from LHAAP-03. The runoff contribution from LHAAP-03 to nearby surface water bodies is expected to be negligible because of the small area of the site and unpaved areas surrounding the site. Overland flow does not currently appear to be contributing to a migration of contaminants, as the ditch surface water did not contain any VOCs, SVOCs, explosives, pesticides, or polychlorinated biphenyls. Surface water samples collected from the surface water ditch adjacent to LHAAP-03 as a part of the 2002 remedial investigation for LHAAP-35A(58) did not detect arsenic (Jacobs, 2002). Likewise, the sediment data do not show detections of VOCs, SVOCs, explosives, or pesticides. Some metals were detected in the surface water and sediment at low concentrations that naturally occur (USACE, 2010).

Leaching of metals in soil may occur into underlying shallow groundwater. The exceedance of arsenic in groundwater above its MCL is believed to be due to low dissolved oxygen in groundwater. Although it has not yet been determined if site chemicals are related to the arsenic groundwater exceedances, the remedial action selected in this ROD will eliminate any current leaching and/or the potential for future leaching of arsenic as well as lead into underlying groundwater.

2.5.4 Potential Exposure Pathways

The CSM and potential exposure pathways for LHAAP-03 based on the HHRA (Jacobs 2002), are shown on **Figure 2-5**. A hypothetical future maintenance worker was selected as the potential receptor in the risk assessment and the following exposure pathways were evaluated: incidental ingestion of soil, dermal contact with soil, and inhalation of vapors and particulates that have been released from soil.

2.6 Current and Potential Future Land and Resource Uses

2.6.1 Current and Future Land Uses

The reasonably anticipated future use of LHAAP-03 is as part of a national wildlife refuge. This anticipated future use is based on a Memorandum of Agreement (MOA) (U.S. Army, 2004) between the USFWS and the U.S. Army. That MOA documents the transfer process of the LHAAP acreage to USFWS to become the Caddo Lake National Wildlife Refuge and will be used to facilitate a future transfer of LHAAP-03. Presently the Caddo Lake National Wildlife Refuge occupies approximately 7,000 acres of the 8,416-acre former installation. In accordance with the National Wildlife Refuge System Administration Act of 1966 and its amendments (16 U. S. Code 668dd), the land will remain as a national wildlife refuge unless there is a change brought about by an act of Congress, or the land is part of an exchange authorized by the Secretary of the Interior. Neither of these events terminating LHAAP-03's use as a wildlife refuge are reasonably foreseeable.

2.6.2 Current and Future Surface Water Uses

There is no surface water body present within LHAAP-03. Land at LHAAP-03 is relatively flat; water from heavy rains would eventually drain to the southern branch of Goose Prairie Creek, approximately 800 feet to the southwest. Goose Prairie Creek flows into Caddo Lake, a large recreational lake covering 51 square miles with a mean depth of 6 feet. The watershed of the lake encompasses approximately 2,700 square miles. Caddo Lake is used extensively for fishing and boating and provides drinking water supply to multiple cities/towns. The anticipated future uses of surface water are the same as the current uses.

2.6.3 Current and Future Groundwater Uses

Groundwater in the drinking water aquifer (250-430 feet bgs) under and near LHAAP is currently used as a drinking water source. The shallow, intermediate and deep zones are encountered at 10 to 25 feet bgs, 60 to 71 feet bgs, and 126 to 140 bgs, respectively. The shallow zone containing contaminated groundwater and the aquifer utilized for drinking water are considered distinct from each other with no connectivity. The drinking water aquifer should not be confused with LHAAP "deep zone" groundwater, which extends only to a depth of approximately 151 feet bgs. TCEQ identifies six active public water supply wells completed in the drinking water aquifer (**Figure 2-2**). All these public water supply wells are located greater than one mile from the LHAAP-03 site. Karnack Water Supply Corporation operates two source wells servicing the town of Karnack. These wells were completed in 1905 to depths of 287 and 285 feet bgs and are located hydraulically upgradient approximately one-quarter mile northwest and one-half mile southwest of the town center, respectively. Caddo Lake Water Supply Corporation operates three source wells located north and northwest of LHAAP that have been in use since 1905. These wells are hydraulically upgradient of LHAAP (Jacobs, 2002) with completion depths of 244, 185 and 310 feet below ground surface. Caddo Lake State Park operates one source well located approximately 1.6 miles northwest upgradient of LHAAP. This well was installed in 1905 with a total depth of 292 feet. Due to the large distance between these wells and LHAAP, water removal from these wells is not expected to affect groundwater flow at the site. In addition, there are several livestock and domestic wells located in the vicinity of LHAAP with depths averaging approximately 250 feet bgs.

Three water supply wells are located within the boundary of LHAAP itself (**Figure 2-2**). One well is located at the Fire Station with a total depth of 128 feet and a screened interval from 58 to 128 feet bgs; the second well is located upgradient/cross-gradient of LHAAP-03 approximately 0.35 miles southwest of the Fire Station. The third well is located north of the USFWS administration building for Caddo Lake National Wildlife Refuge, near the main entrance to LHAAP. None of these three wells are currently used for drinking water at LHAAP, although they may supply water for non-potable uses.

2.7 Summary of Site Risks

This section summarizes the results of the Baseline Human Health and Screening Ecological Risk Assessments (Jacobs, 2003) and the BERA conducted for LHAAP-03 (Shaw, 2007b).

2.7.1 Summary of Human Health Risk Assessment

A HHRA for LHAAP-03 was completed in 2003 (Jacobs, 2003) as part of the risk assessment for the larger Site, LHAAP-35A(58), which encompasses LHAAP-03. The 2003 HHRA was based on the data collected from investigations prior to 2001. Therefore, as part of preparation of the Draft EE/CA (Shaw, 2011), results from additional investigations conducted at LHAAP-03 subsequent to the 2003 HHRA were evaluated and risk calculations were updated. This included comparison of maximum detected concentrations in LHAAP-03 soil samples to the exposure point concentrations (EPCs) estimated during the 2003 HHRA. The original and revised cancer risk and non-cancer hazard index (HI) values for soil are summarized in **Table 2-1**.

The cancer risk values were compared to the USEPA target risk range of 1×10^{-4} to 1×10^{-6}, and the non-cancer hazards were compared to the target HI of 1. For the hypothetical future maintenance worker exposure to soil, the estimated HI is 0.47, which is below the benchmark of 1. The calculated carcinogenic risk is 2.1×10^{-5}, which is within the acceptable range (1×10^{-6} to 1×10^{-4}). While the EPCs for lead and arsenic did not exceed the industrial screening values for lead and arsenic, individual concentrations were present that exceeded direct contact based screening values and the SAM results (AECOM, 2013a) indicated that contaminants may leach to groundwater at concentrations exceeding the applicable standards.

2.7.2 Summary of Ecological Risk Assessment

The ecological risk for LHAAP-03 was addressed in the installation-wide BERA completed in 2007 (Shaw, 2007b). The BERA concluded that no unacceptable risk was present in the Industrial Sub-Area, where LHAAP-03 is located. Therefore, no further action is needed at LHAAP-03 for the protection of ecological receptors.

Data gap sampling is currently being conducted for explosives, and the results of this sampling will be incorporated into an addendum to the BERA. However, based on the historical use of the Maintenance Shop Area (the larger area within which LHAAP-03 is located), no change to the BERA conclusions are anticipated.

2.7.3 Basis for Action

Although the risks to human health due to soil contamination are within the acceptable industrial screening criteria range at LHAAP-03, remedial action is selected for soil to address the possibility of impacts to groundwater quality due to the presence of lead and arsenic in soil (see **Section 2.6.3**

for details). Based on the comparison of metal concentrations in soil with site-specific RRS3 MSC soil concentrations developed to protect groundwater resources from leaching of chemicals from soil and corresponding to a hypothetical use of groundwater under commercial/industrial land use scenario, the current concentrations of arsenic and lead in soil at LHAAP-03 are considered to have the potential to degrade groundwater quality in the local vicinity. Therefore, remedial action is selected at LHAAP-03 to address soil exhibiting concentrations of arsenic and lead above the RRS3 MCSs developed for the site.

2.8 Remedial Action Objectives

The Remedial Action Objective (RAO) for LHAAP-03, which addresses soil contamination and takes into account the future uses of LHAAP land and groundwater, is:

- Protect human health and the environment by preventing lead and arsenic contaminated soils from potentially leaching into the underlying groundwater.

NCP (40 CFR § 300.430 [e][2][i]) states that the RAOs must specify COCs and RGs. The COCs and RGs for soil at LHAAP-03 are presented in **Table 2-2**. The RGs for COCs have been set at concentrations equal to largest of calculated RRS3 industrial soil MSC based on the site-specific soil standard for groundwater protection, and background soil concentration. The details on the calculations for RRS3 industrial soil MSCs are presented in the RI/FFS (AECOM, 2013a).

2.9 Description of Alternatives

The following remedial alternatives were developed in the RI/FFS to address COCs in soil at LHAAP-03:

- Alternative 1: No Action
- Alternative 2: Excavation and Off-Site Disposal

Each of these alternatives is described in the following sections.

2.9.1 Alternative 1- No Action

As required by the NCP, the No Action alternative provides a comparative baseline against which the action alternatives can be evaluated. Under this alternative, soil would be left “as is,” without implementing any containment, removal, treatment, or other mitigating actions. No other actions would be implemented to reduce existing or potential future exposure to human receptors.

There are no costs associated with the No Action alternative.

Estimated Total Direct Capital Cost: $0

Estimated Total Operation and Maintenance (O&M) Cost: $0

Cost Estimate Duration: NA

Estimated Total PW Cost: $0

2.9.2 Alternative 2 – Excavation and Off-Site Disposal

This Alternative is the preferred alternative and involves the Excavation and Off-Site disposal of contaminated soil from LHAAP-03. The conceptual limits of soil excavation at LHAAP-03 are shown on **Figure 2-6**. It is estimated that 50 to 100 bank cubic yards, of impacted soil will be

removed from LHAAP-03. The excavation extents shown on **Figure 2-6** may be revised as part of the pre-excavation sampling conducted prior to the start of excavation and confirmation sampling following soil removal. Confirmation samples collected following excavation will be analyzed for COCs (arsenic and lead) to evaluate if the RAOs/RGs (**Section 2.8**) have been attained. Once confirmation sampling results indicate that RAOs/RGs have been attained, the excavation areas will be backfilled with clean soil and reseeded.

All components of this action will use standard construction and operating procedures and routine sampling and analysis procedures. Details concerning operating procedures will be provided in a future design/work plan.

Implementation of this action may result in short-term impacts, such as minor fugitive dust emissions, storm-water runoff and precipitation/ infiltration in the excavation areas. These potential problems will be eliminated using appropriate engineering controls, such as water spraying, installing erosion and sediment control best management practices, and phased excavation areas or temporary sheeting.

A summary of cost estimate for Alternative 2 is provided below.

Estimated Total Direct Capital Cost: $87,878

Estimated Total O&M Cost:$0

Cost Estimate Duration: 1 year

Estimated Total PW Cost: $87,878

2.9.3 Expected Outcomes of Each Alternative

Alternative 1 would allow the site to remain a potential hazard to human receptors; and to the environment (i.e., groundwater), because no remedial activities would be conducted.

Alternative 2 provides removal of the contaminated soil to meet COC RGs protective of the groundwater underlying the site. Alternative 2 will protect human health by removing soil containing arsenic and lead at concentrations greater than the groundwater protection standards; at which point, LHAAP-03 will be available for its intended future use as a wildlife refuge.

2.10 Summary of Comparative Analysis of Alternatives

Nine criteria identified in the NCP §300.430(e)(9)(iii) are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. **Table 2-3** summarizes the comparative analysis of the alternatives.

2.10.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how potential threat to groundwater quality due to leaching of COCs is eliminated through impacted soil removal.

The cancer and non-cancer risks due to soil contamination at LHAAP-03 are within the acceptable range for the potential human receptor/exposure pathways associated with the planned land use

(**Section 2.7.1**). In addition, the BERA concluded that no unacceptable risk to potential ecological receptors was present in the Industrial Sub-Area, where LHAAP-03 is located (**Section 2.7.2**). However, elevated metal concentrations in soil indicate the potential for contamination of groundwater in the future due to leaching from soil. Therefore, a remedy addressing the metal contamination in soil was selected to prevent potential impacts to the local groundwater resource.

The Excavation and Off-Site Disposal alternative is the most protective of groundwater. It involves the removal of impacted soil at LHAAP-03, and therefore is the only alternative that includes active cleanup of the site. This alternative meets the RAOs and is effective in preventing impacts to groundwater because contamination above the remedial goals is removed from the site. The No Action alternative involves no actions to prevent impacts to groundwater resources.

2.10.2 Compliance with ARARs

Section 121(d) of CERCLA and 40 CFR §300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations, which are collectively referred to as "ARARs" unless such ARARs are waived under CERCLA Section 121(d)(4). The ARARs that pertain to the selected remedy in this ROD are discussed in **Section 2.13.2**.

The No Action alternative does not meet the chemical-specific ARARs because soil contaminant levels that exceed groundwater protection criteria remain in the soil. Since no removal activities would be conducted under this alternative, location-specific and action-specific ARARs do not apply.

The Excavation and Off-Site Disposal alternative complies with ARARs. This alternative would meet the chemical-specific ARARs for soil (based on the commercial/industrial land use scenario) as well as comply with all location- and action-specific ARARs.

2.10.3 Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up levels have been met. This criterion includes the consideration of residual risk that will remain onsite following remediation and the adequacy and reliability of controls.

Over the long-term, the Excavation and Off-Site Disposal alternative would provide long-term effectiveness and permanence by eliminating the potential for migration of arsenic and lead from soil into groundwater at concentrations that may exceed their MCLs. The No Action alternative is not effective in the long term.

2.10.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

The No Action alternative does not provide reduction of toxicity, mobility, or volume of the contaminants. The Excavation and Off-Site Disposal alternative provides reduction of mobility because COCs-impacted soil is removed from the site and placed in a permitted disposal facility. Toxicity and volume are not reduced by the Excavation and Off-Site Disposal alternative as the form and quantity of the contaminated soil is not altered.

2.10.5 Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and the environment during construction and operation of the remedy until RGs are achieved.

Short-term effectiveness is not applicable to the No Action alternative. For the Excavation and Off-Site Disposal alternative, the use of proper dust suppressant measures would control windblown emissions of dust. Measures to protect the environment such as stormwater best management practices will be implemented, as required, as part of the Excavation and Off-Site Disposal alternative. Potential short-term risks to site workers due to soil excavation and onsite handling would be minimized through implementation of proper health and safety procedures.

The length of time required to complete the remedial alternatives are as follows: Alternative 1 is a No Action alternative, therefore, no time is required. The Excavation and Off-Site Disposal alternative, Alternative 2, has an estimated implementation duration of nine months.

2.10.6 Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

There are no technical or administrative feasibility concerns, or availability of services and materials concerns associated with the No Action alternative because there are no remedial actions performed.

There are no technical or administrative feasibility concerns, or availability of services and materials concerns associated with implementation of the Excavation and Off-Site Disposal alternative. Excavation and off-site disposal can be implemented using easily-procured equipment and services, and require only basic construction expertise.

2.10.7 Cost

Cost estimates are used in the CERCLA process to eliminate those remedial alternatives that are significantly more expensive than competing alternatives without offering commensurate increases in performance or overall protection of human health or the environment. The cost estimates developed are preliminary estimates with an intended accuracy range of –30 to +50 percent. Final costs will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final scope, final schedule, final engineering design, and other variables.

The cost estimates include capital costs (including fixed-price remedial construction) and long term O&M costs (post-remediation). PW costs were developed for each alternative assuming a discount rate of 2 percent.

The No Action alternative, which has no associated cost, is the least expensive alternative. The estimated net PW of Alternative 2 is $87,878 for a construction period of nine months to one year. These costs include capital cost for remedy implementation including Excavation and Off-Site disposal of soil.

2.10.8 State/Support Agency Acceptance

The USEPA and the TCEQ have reviewed the Proposed Plan, which presented Alternative 2 as the preferred alternative. Comments received from the USEPA and the TCEQ during the Proposed Plan development have been incorporated. TCEQ concurs with the selected remedial action. The lead oversight agency, USEPA, along with the lead agency, U.S. Army, have selected the remedy documented in this ROD.

2.10.9 Community Acceptance

Community acceptance is an important consideration in the final evaluation of the selected remedy. Public comments were received during the 30-day public comment period and during the May 30, 2013, public meeting. The written comments received and their responses are presented in the Responsiveness Summary (**Section 3.0**).

2.11 Principal Threat Waste

Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should the exposure occur (USEPA, 1991). Soil at LHAAP-03 does not meet the definition of the principal threat waste because 1) the contaminants are not highly mobile and 2) under current and projected future non-residential use conditions, there is no unacceptable risk to human or ecological receptors from contact or ingestion of the soil. Therefore, this ROD does not describe how source materials constituting principal threats will be addressed.

2.12 The Selected Remedy

2.12.1 Summary of Rationale for the Selected Remedy

The U.S. Army has selected Alternative 2, Excavation and Off-Site Disposal as the final remedial action for contaminated soil at LHAAP-03 based on the results of the previous investigations (AECOM, 2013a), the administrative record for LHAAP-03, a comparative analysis of remedial alternatives (**Section 2.10**), and an evaluation of comments submitted by interested parties during the public comment period (**Section 3.0**).

As summarized in **Section 2.10**, based on the currently-available information, the U.S. Army believes that the selected alternative meets the threshold NCP evaluation criteria (Overall Protection of Human Health and the Environment, and Compliance with ARARs) and provides the best balance of tradeoffs among the other alternatives with respect to the balancing (Long-Term Effectiveness and Permanence; Reduction in Toxicity, Mobility, or Volume Through Treatment; Short-Term Effectiveness; Implementability; and Cost), and modifying (State/Support Agency Acceptance and Community Acceptance) criteria.

The selected alternative will (1) be protective of human health and the environment; (2) comply with ARARs; (3) is cost-effective; and (4) utilizes permanent solutions.

2.12.2 Description of the Selected Remedy

The description of the selected remedy, Alternative 2, outlined in **Section 2.9**, is expanded in this section. The remedy may undergo modifications as a result of the RD and construction processes. Modifications of the remedy described in the ROD will be documented using a technical

memorandum in the Administrative Record, an Explanation of Significant Differences, or a ROD amendment. The selected remedy is excavation and off-site disposal of soil at the LHAAP-03 soil operable unit. The selected remedy for LHAAP-03 is described in the following paragraphs.

Soil with concentrations of arsenic and lead exceeding the RGs presented in **Table 2-2** will be excavated and disposed of at an off-site disposal facility. The conceptual limits of soil excavation are shown on **Figure 2-6**. The proposed excavation depth within Area A is approximately two feet bgs; while the proposed excavation depth within Areas B and C is approximately seven feet bgs. The estimated volume of soil proposed to be removed from LHAAP-03 is 50 to 100 bank cubic yards.

The excavation extent shown on **Figure 2-6** will be refined as part of pre-excavation sampling conducted prior to the start of excavation. The pre-excavation sampling will include collection of soil samples and analyses for the arsenic and lead. The analytical results will be used to refine the initial excavation limits. The pre-excavation sampling results will also be used to plan confirmation sampling following excavation and to characterize the soil for disposal purposes.

Due to the limited excavation extent and depth, excavation will be performed using small capacity conventional equipment that is anticipated to include a small bulldozer and/or end loader to remove soil in the shallow excavation area and a rubber-tired or small tracked hydraulic excavator. Other equipment may include a water truck for dust suppression, end loader for moving and loading soil, dump trucks for transporting disposed soil and/or backfill soil delivery, roll-on/roll-off containers and trucks for transporting disposed soil.

Depending upon pre-excavation characterization, soil volumes, and logistics, the excavated soil may be directly loaded into roll off boxes or dump trucks, or stockpiled on-site prior to hauling off-site.

Because it is anticipated that the excavation will destroy monitoring well 03WW01, monitoring well 03WW01 will be abandoned in accordance with TAC, Title 16, §76.104. The portion of riser pipe and removable casing will be removed during excavation and disposed with the excavated soil. The proposed new monitoring well 35AWW23 will be used as replacement for 03WW01 for the groundwater remedy for LHAAP-35A(58).

Once the areas have been excavated to the planned depths, verification soil sampling will be performed to collect data to evaluate if RAOs/RGs have been attained. If the results of confirmation sampling indicate that the RAOs/RGs have not been attained, additional excavation may be conducted followed by an additional round of confirmation sampling.

Waste characterization for excavated soil and decontamination water (if any) will be conducted in accordance with the requirements of the disposal facility. Waste characterization may include collection of soil and/or water samples, and analyses for the chemicals expected to be present at the site based on the historical operations. The results of the waste characterization will be used to select appropriate disposal facility for excavated soil and decontamination water. The disposal facility will meet the requirements of CERCLA Offsite Rule (40 CFR § 300.440).

After it has been demonstrated that the RGs for arsenic and lead have been attained, the excavated areas will be backfilled with fill material and compacted. The backfilled areas will be seeded.

2.12.3 Cost Estimate for the Selected Remedy

Table 2-4 presents the cost estimate summary for the selected remedy. The information in the table is based on the best available information regarding the anticipated scope of the remedial alternative. The quantities used in the estimate are for estimating purposes only. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This is an order-of-magnitude engineering cost estimate that is expected to be within -30 to +50 percent of the actual project cost.

The PW cost of the selected remedy is approximately $87,878. This cost includes capital cost for remedy implementation for the cost items listed in **Table 2-4**.

2.12.4 Expected Outcomes of Selected Remedy

The selected remedy includes removal of contaminated soil exceeding the RGs for COCs and disposal at an off-site facility. The RGs (**Table 2-2**) are developed to protect groundwater resource from potential leaching of COCs from soil. No unacceptable risks to human health or the environment were determined to be associated with LHAAP-03 soil based on the HHRA (for the proposed land use) or BERA. LHAAP-03 will be available for its intended future use as a wildlife refuge.

2.13 Statutory Determinations

Under CERCLA §121 and the NCP, the U.S. Army must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element. The following sections discuss how the selected remedy meets the statutory requirements

2.13.1 Protection of Human Health and the Environment

The BERA results indicate that no further action is needed at LHAAP-03 for the protection of ecological receptors (see **Section 2.7.2** for details). The cancer and non-cancer risks due to soil contamination at LHAAP -03 are within the acceptable range for the potential human receptor/ exposure pathways associated with the planned land use.

The selected remedy is protective of groundwater and will remove the soil exceeding the RGs for the COCs, arsenic and lead (**Table 2-2**). The RGs are developed to protect groundwater resource from potential leaching of COCs from soil and correspond to potential use of groundwater under commercial/industrial uses (USACE, 2010). Because both arsenic and lead have federal MCLs, the site specific soil RGs are the same for residential and commercial/industrial land uses.

There are no short-term threats associated with the selected remedy that cannot be readily controlled. In addition, no adverse cross-media impacts are expected from the remedy.

2.13.2 Compliance with ARARs

Section 121(d) of the CERCLA of 1980 (42 U.S.C. § 9621[d]), as amended, states that remedial actions on CERCLA sites must attain (or the ROD must justify the waiver of) any Federal or more

stringent State environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate. The selected remedial action will comply with all identified ARARs.

CERCLA Section 121(e)(1), 42 U.S.C. § 9621(e)(1), states that "No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on-site, where such remedial action is selected and carried out in compliance with this section." Any action that takes place off-site would have to comply with substantive and procedural requirements of all applicable Federal, State, and local regulations. The chemical-, location-, and action-specific ARARs for the selected remedy are discussed in the following sections.

2.13.2.1 Chemical-Specific ARARs

Chemical-specific ARARs are health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. **Table 2-5** presents the State chemical-specific ARARs. No Federal chemical-specific ARARs were identified for the selected remedy.

The RGs for soil at LHAAP-03 comply with substantive provisions of the TCEQ Risk Reduction Rules at 30 TAC 335.563 (i)(2)(A) and (j)(1).

2.13.2.2 Location-Specific ARARs

There are no potential location-specific ARARs associated with this site.

2.13.2.3 Action-Specific ARARs

Action-specific ARARs are technology- or activity-based requirements or limitations for remedial activities. These requirements are triggered by the particular remedial activities conducted at the site. Remedial activities associated with the selected remedy include activities that have the potential to generate air contaminants, particulate matter, and hazardous waste. **Table 2-6** discusses action-specific ARARs.

The selected remedy has potential action-specific ARARs related to the following activities:

- **General Site Preparation, Excavation, Grading, and Backfilling Activities** – Fugitive dust may be generated during the land-disturbing, earth-moving, and grading operations. Therefore, the requirements at Title 30 TAC (30 TAC 111.111(a)(8)(A) for controlling visible emissions are applicable to the remedial action. All excavation is expected to be performed above groundwater table, therefore, no groundwater treatment is expected. In the event of rainfall, if significant quantities of water accumulate in the impacted areas (exceeding RGs), the water will be collected, managed and stored in accordance with the requirements presented below.
- **Waste Generation, Management, and Storage –** The excavated soil and other wastes (such as decontamination water) will be generated during the remedial action. The determination of whether wastes generated during remedial action are hazardous will be made in accordance with the requirements of 40 CFR 262.11, 264.13(a)(1) and (2); and 30 TAC 335.62, 335.503(a)(4), 335.504, 335.509, and 335.511. Excavated waste classified as RCRA hazardous waste will be accumulated in accordance with 40 CFR 264.34(a) and

(c)(1) (for accumulation in containers) and/or 40 C.F.R. § 264.554(d)(1)(i-ii) and (d)(2), (e), (f), (h), (i), (j), and (k) (for accumulation in staging piles). The container storage will be in compliance with 40 CFR 264.171-173; and 30 TAC 335.69(e) and 335.152(a)(7). At closure, storage containers will be decontaminated in accordance with 40 CFR 264.178 and 30 TAC 335.152(a)(7). Since any characteristic hazardous waste will be stored in either containers or staging piles in compliance with the identified ARARs, the land disposal restrictions would not be triggered.

2.13.3 Cost-Effectiveness

Alternative 2, the selected remedy for LHAAP-03 has been determined to provide overall effectiveness proportional to its costs; it is therefore considered cost-effective. The estimated net PW cost for this remedial action is approximately $87,878. Technologies included in this remedy are readily implementable and have been widely used and demonstrated to be effective.

2.13.4 Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

The U.S. Army has determined that the selected final remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the site. The selected remedy provides the best balance of tradeoffs with respect to the balancing NCP criteria. The selected remedy is effective in the long-term since it will include removal and off-site disposal of soil that may pose a threat to groundwater quality. Although, no treatment is proposed for excavated soil due to limited volume, the removal of soil will reduce the potential for mobilization of metals on-site due to leaching from soil. The selected remedy is readily implementable and is cost-effective.

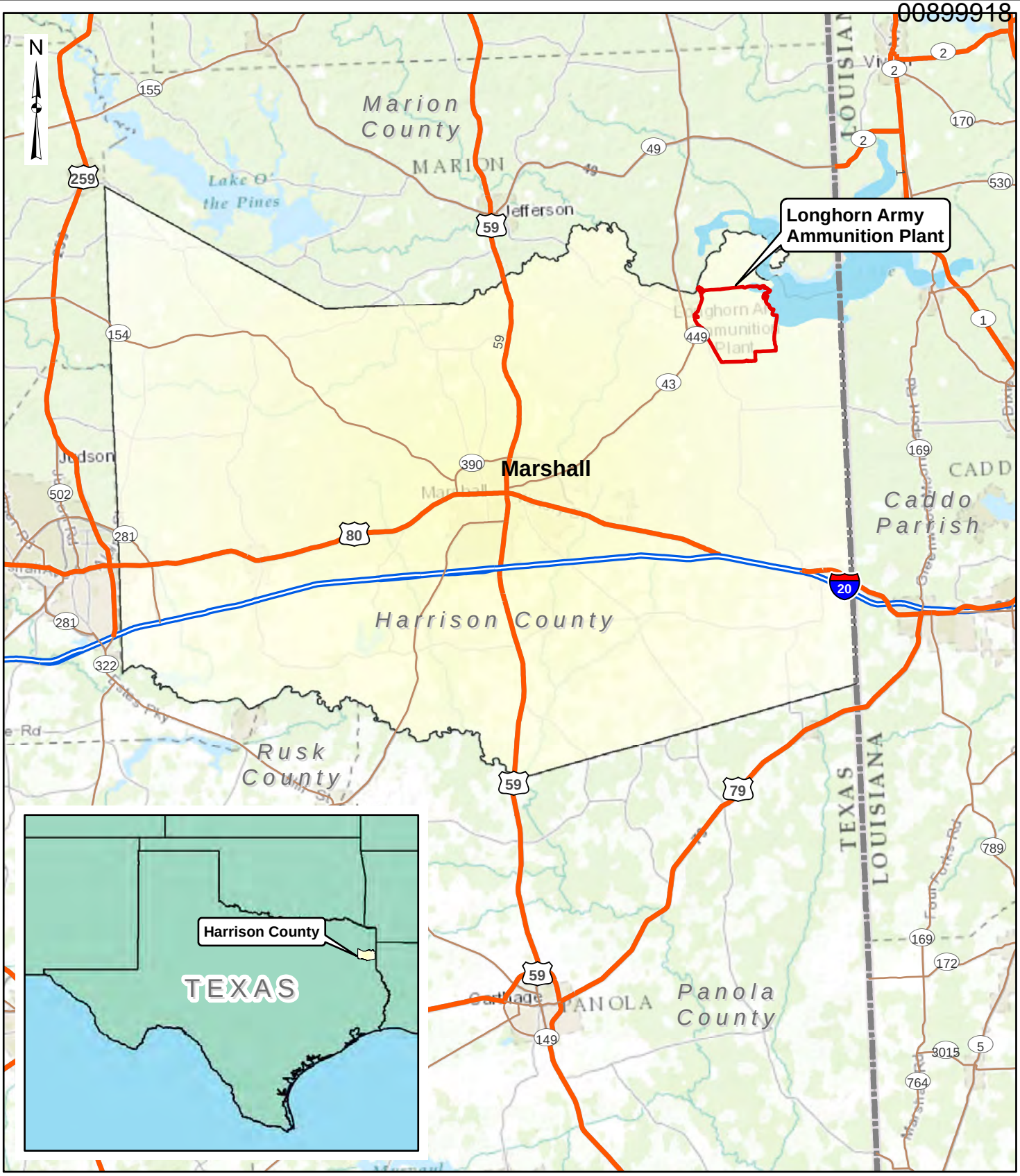
2.13.5 Preference for Treatment as a Principal Element

The CERCLA Section 121(b) identifies a statutory preference for alternatives that utilize treatment to reduce the toxicity, mobility, or volume of contamination. Although the selected remedy does not treat the contaminated soil to remove the COCs in LHAAP-03 soil, the contaminated soil will be removed from the site and transported to an appropriate off-site disposal facility. Excavation and removal of the contaminated soil from LHAAP-03 will reduce the volume of contaminants at the site.

During the development of alternatives in the Feasibility Study Addendum, treatment technologies were considered for soil at LHAAP-03 but were not retained for remedial alternative development due to the small volume and low chemical concentrations of the soil rendering these technologies ineffective either technically or based on cost-effectiveness.

2.14 Significant Changes from the Proposed Plan

The Proposed Plan public comment period for LHAAP-04 was from May 13, through June 12, 2013. The Proposed Plan identified Alternative 2 as the Preferred Alternative for soil remediation. The U.S. Army reviewed all written comments during the public comment period and verbal comments during the May 30, 2013 public meeting. After careful consideration of the comments, it was determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary or appropriate.



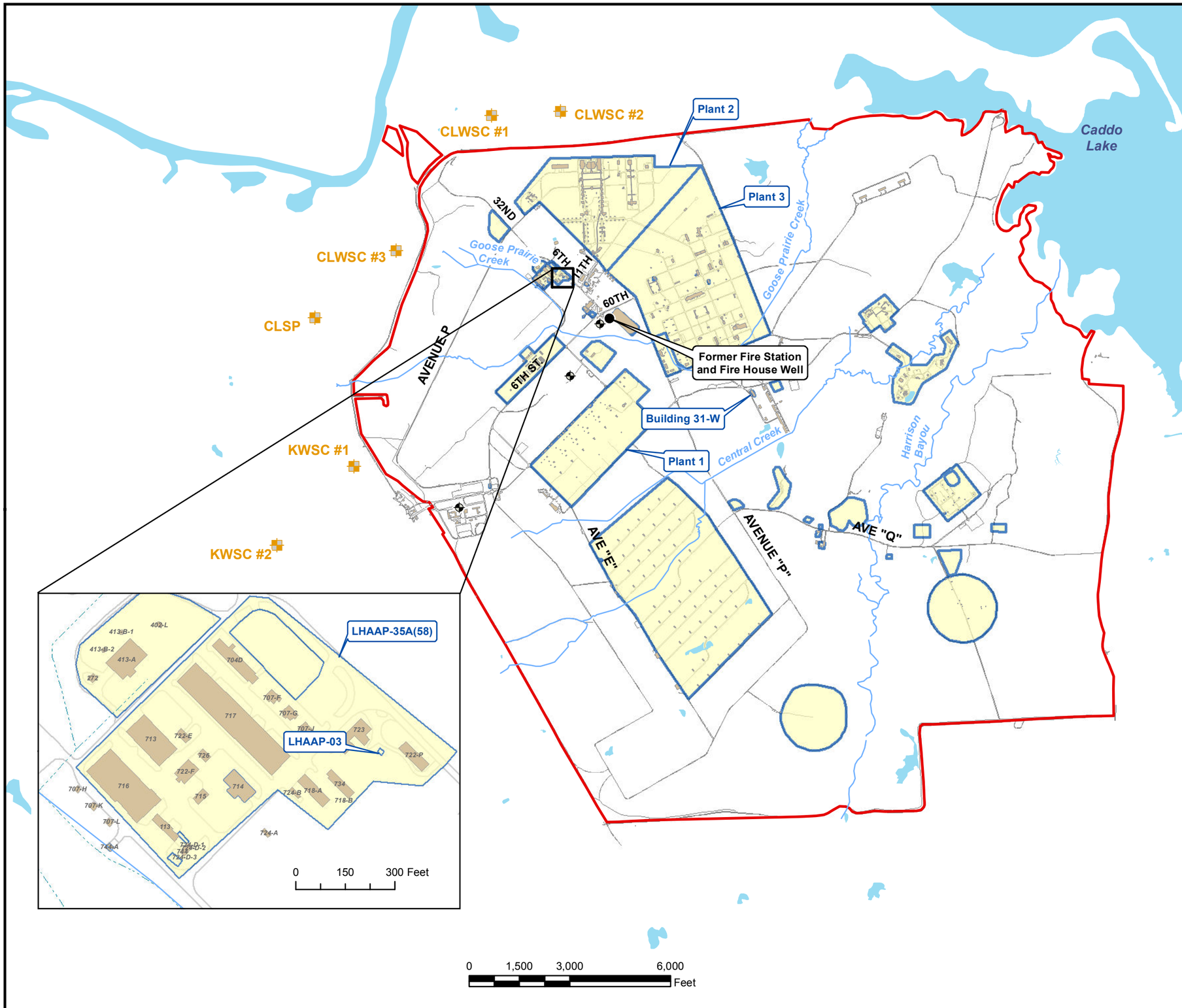
LHAAP -- Longhorn Army Ammunition Plant

APTIM

Figure 2-1
LHAAP Location Map
LHAAP-03
Record of Decision
Longhorn Army Ammunition Plant
Karnack, Texas

60256135

December 2017



Legend

- Fire House Well
- Water Supply Well Locations
- Public Water Supply Well Locations
- Streams
- Roads
- Lake/Pond
- LHAAP-03 Site Boundary
- LHAAP Boundary

KWSC – Karnack Water Supply Corporation
CLWSC – Caddo Lake Water Supply Corporation
CLSP - Caddo Lake State Park

APTIM

Figure 2-2
Site Location Map
LHAAP-03
Record of Decision
Longhorn Army Ammunition Plant
Karnack, Texas

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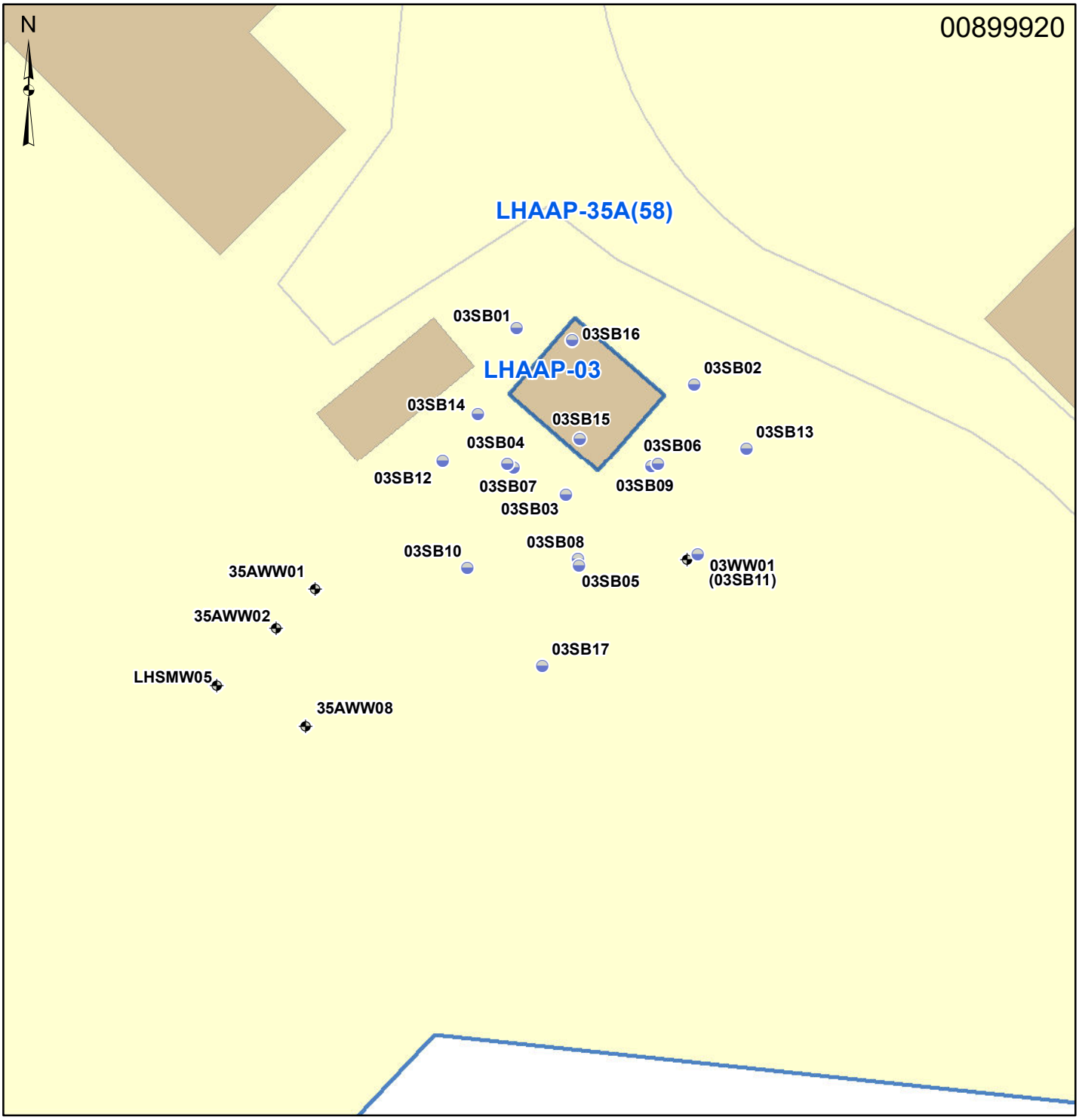
December 2017

\\usgrn1vfp001\data\group\L:\Group\IT_GIS\GIS Projects\Longhorn\MXDs\LHAAP-03\2013-May-16\Figure 2-2 LHAAP-03 Site Location Map_CH.mxd



0 10 20 40 Feet

Legend

- Monitoring Well Location
- Soil Boring Location
- Roads
- Buildings
- Site

Source: Shaw, 2011, Draft Engineering Evaluation and Cost Analysis, LHAAP-03 (Former Waste Collection Pad Near Building 722-P, Paint Shop) Longhorn Army Ammunition Plant, Karnack, Texas

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Figure 2-3
Soil Boring and Monitoring Well Locations
LHAAP-03
Record of Decision
Longhorn Army Ammunition Plant
Karnack, Texas

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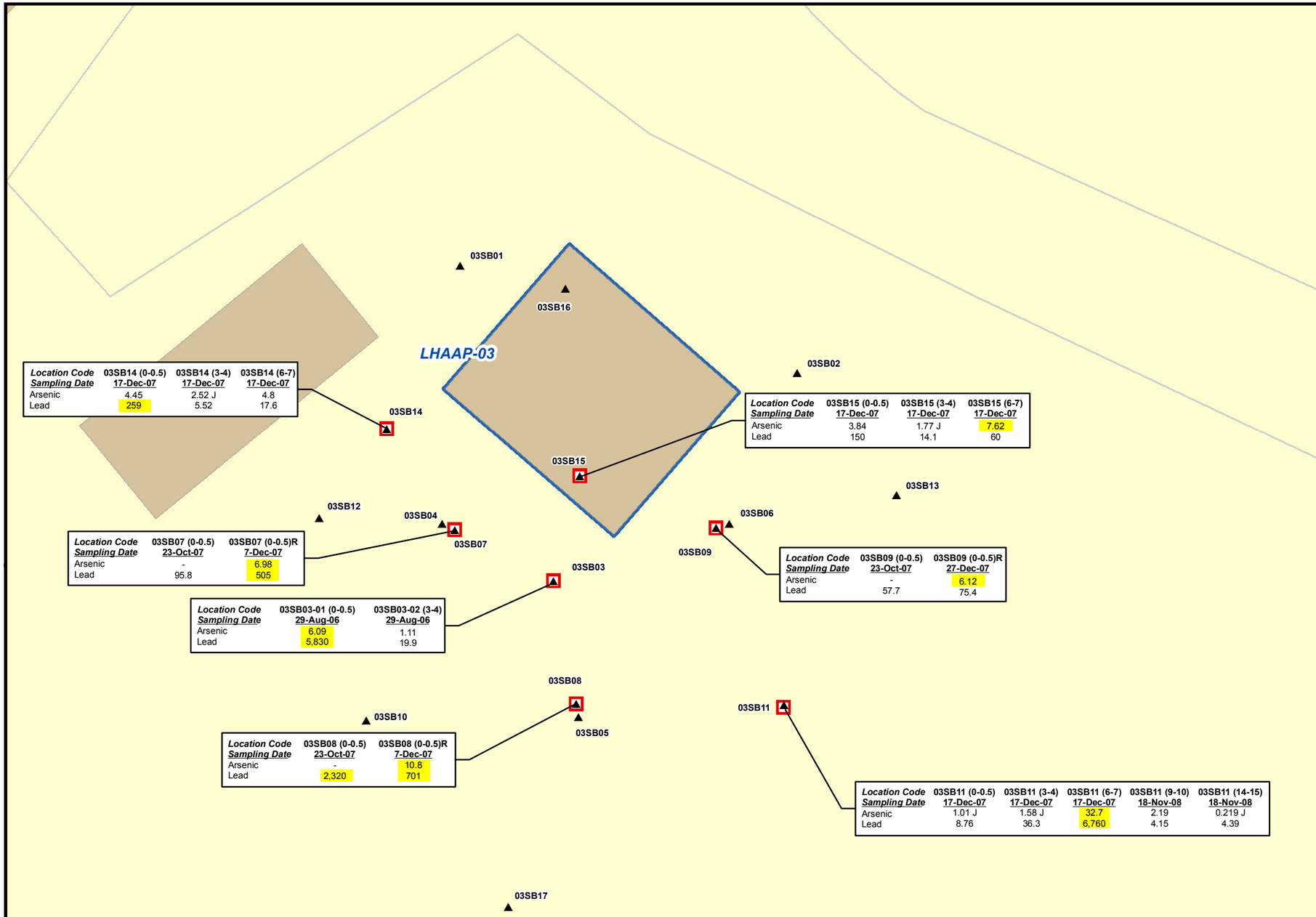
December
2017



Location Code	03SB14 (0-0.5)	03SB14 (3-4)	03SB14 (6-7)
Sampling Date	17-Dec-07	17-Dec-07	17-Dec-07
Arsenic	4.45	2.52 J	4.8
Lead	259	5.52	17.6

Location Code	03SB15 (0-0.5)	03SB15 (3-4)	03SB15 (6-7)
Sampling Date	17-Dec-07	17-Dec-07	17-Dec-07
Arsenic	3.84	1.77 J	7.62
Lead	150	14.1	60

Location Code	03SB07 (0-0.5)	03SB07 (0-0.5)R
Sampling Date	23-Oct-07	7-Dec-07
Arsenic	-	6.98
Lead	95.8	505

Location Code	03SB09 (0-0.5)	03SB09 (0-0.5)R
Sampling Date	23-Oct-07	27-Dec-07
Arsenic	-	6.12
Lead	57.7	75.4

Location Code	03SB03-01 (0-0.5)	03SB03-02 (3-4)
Sampling Date	29-Aug-06	29-Aug-06
Arsenic	6.09	1.11
Lead	5,830	19.9

Location Code	03SB08 (0-0.5)	03SB08 (0-0.5)R
Sampling Date	23-Oct-07	7-Dec-07
Arsenic	-	10.8
Lead	2,320	701

Location Code	03SB11 (0-0.5)	03SB11 (3-4)	03SB11 (6-7)	03SB11 (9-10)	03SB11 (14-15)
Sampling Date	17-Dec-07	17-Dec-07	17-Dec-07	18-Nov-08	18-Nov-08
Arsenic	1.01 J	1.58 J	32.7	2.19	0.219 J
Lead	8.76	36.3	6,760	4.15	4.39

N

Legend

- Soil Boring
- Locations with Concentrations Exceeding Applicable RRS3 MSCs (see Note 1).
- Roads
- Former Building Location
- Site

Notes:
1. RRS3 MSCs for arsenic and lead are 5.9 milligrams per kilogram mg/kg) and 180 mg/kg, respectively.
2. All concentrations listed are in milligram per kilogram (mg/kg)
3. J - Estimated Concentration.
4. Yellow shaded results exceed screening values.
5. RRS3 - Risk Reduction Standard 3
6. MSCs - Medium Specific Concentrations

Source:
Shaw, 2011, Draft Engineering Evaluation and Cost Analysis, LHAAP-03 (Former Waste Collection Pad Near Building 722-P, Paint Shop) Longhorn Army Ammunition Plant, Karnack, Texas.

0 4 8 16 Feet

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Figure 2-4
Concentrations Exceeding Applicable RRS3 MSCs
LHAAP-03
Record of Decision
Longhorn Army Ammunition Plant
Karnack, Texas

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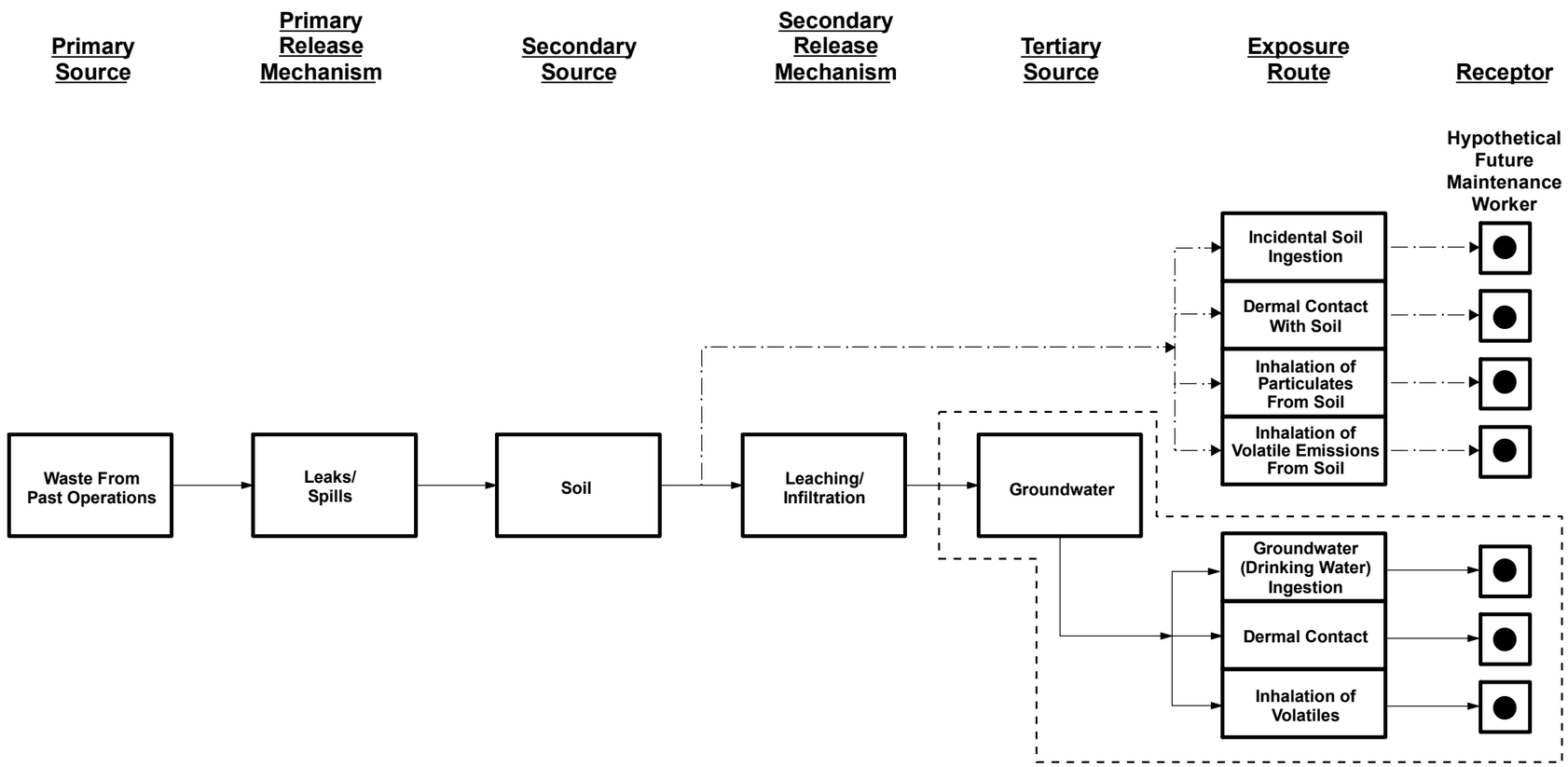
December 2017



Legend

● Scenario Evaluated in the Baseline Human Health Risk Assessment

Groundwater pathways were evaluated for a larger site LHAAP-35A(58) withiin which LHAAP-03 is located. Evaluation and remediation of groundwater at LHAAP-03 will be conducted as part of remedial action at LHAAP-35A(58). No separate remedial action for groundwater is planned for LHAAP-03.

Potential exposure pathway evaluated in the baseline human health risk assessment. No unacceptable risk was identified and no remediation will be conducted to address these exposure pathways.

Source:
Jacobs, 2003. Final Baseline Human Health and Screening Ecological Risk Assessment for the Grooup 4 Sites. (Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67, Goose Prairie Creek, Saunders Branch, Central Creek and Caddo Lake). Longhorn Army Ammunition Plant, Karnack, Texas, June.

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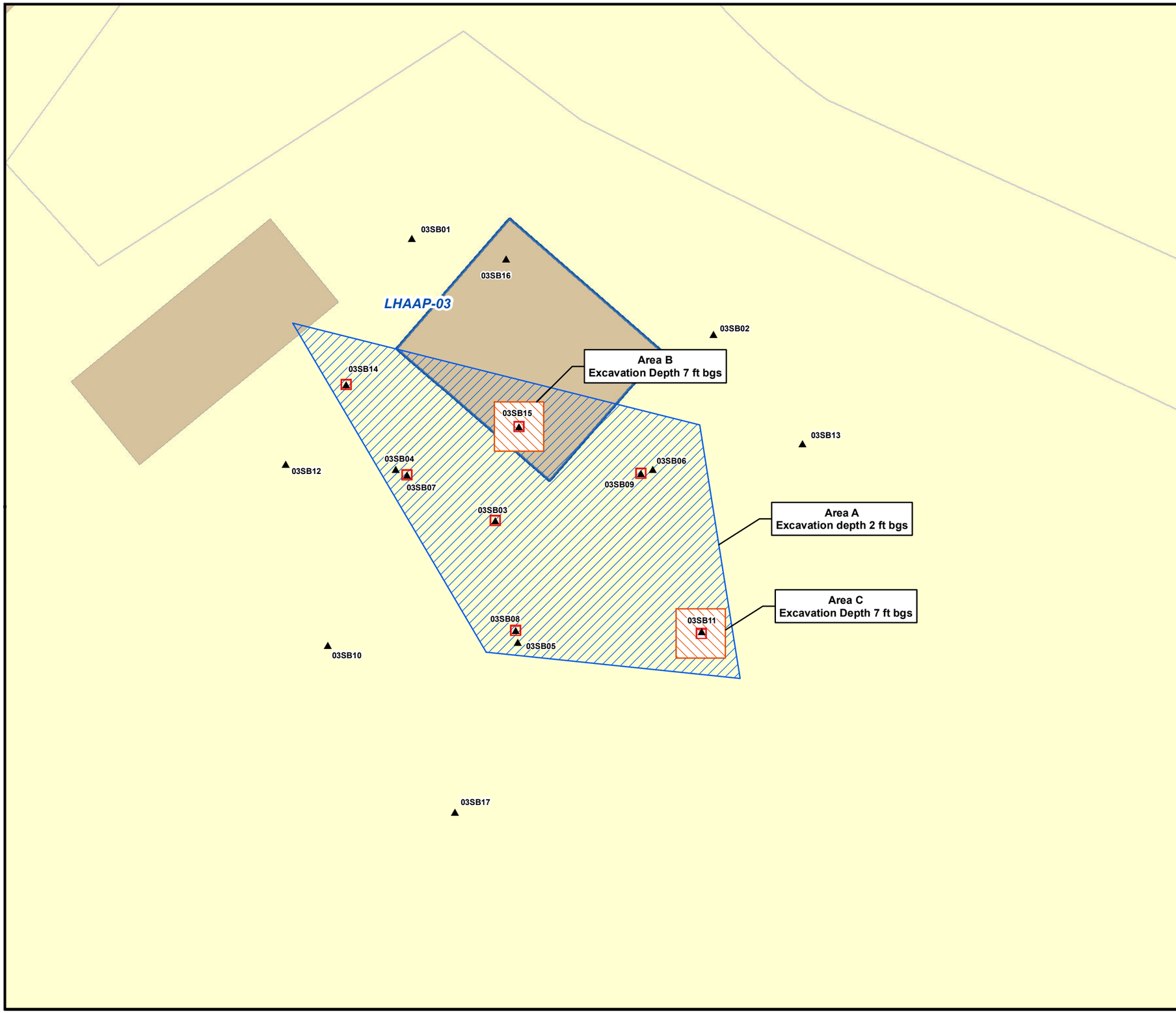
Figure 2-5
Conceptual Site Model
LHAAP-03
Record of Decision
Longhorn Army Ammunition Plant
Karnack, Texas

60256135

December 2017



Legend

- Soil Boring
- Locations with Concentrations Exceeding Applicable RRS3 MSCs
- Target Remediation Area B and Area C (See Note 1)
- Target Remediation Area A (See Note 1)
- Roads
- Former Building Location
- Site

Notes:
1. The excavation extents will be revised as part of remedial action implementation (See section 2-12 of the ROD for details).

ft bgs - feet below ground surface

Source:
Shaw, 2011, Draft Engineering Evaluation and Cost Analysis, LHAAP-03 (Former Waste Collection Pad Near Building 722-P, Paint Shop) Longhorn Army Ammunition Plant, Karnack, Texas.

0 4 8 16 Feet

APTIM

Figure 2-6
Conceptual Target Remediation Area
LHAAP-03
Record of Decision
Longhorn Army Ammunition Plant
Karnack, Texas

60256135

December 2017

Table 2-1: Summary of Risk Estimates

Chemical	HI	EPC (mg/kg)	New Max	Location	Note	HI
Aluminum	0.015	9230	12500	03SB01	LARGER	0.020
Antimony	0.030	8.5	8.55	03SB03	LARGER	0.030
Cadmium	0.023	18.5	1.44	03SB09	< EPC	0.023
Mercury	0.270	43.7	0.483	03SB03	< EPC	0.270
Silver	0.057	109	2.19	03SB03	< EPC	0.057
Vanadium	0.025	51.2	39.1	03SB09	< EPC	0.025
bis(2-Ethylhexyl)phthalate	0.043	200	all ND		< EPC	0.043
BHHRA Total HI	0.47				New Total HI	0.47
					% change	1.20%

Chemical	ELCR	EPC (mg/kg)	New Max	Location	Note	New ELCR
2,3,7,8-TCDD	1.80E-06	2.53E-05	none		< EPC	1.80E-06
Cadmium	1.80E-09	18.5	1.44	03SB09	< EPC	1.80E-09
Benzo(a)anthracene	7.90E-07	1.6	all ND		< EPC	7.90E-07
Benzo(a)pyrene	9.90E-06	2	all ND		< EPC	9.90E-06
Benzo(b)fluoranthene	1.50E-06	3.1	all ND		< EPC	1.50E-06
bis(2-Ethylhexyl)phthalate	4.30E-06	200	all ND		< EPC	4.30E-06
Dibenz(a,h)anthracene	1.50E-06	0.3	all ND		< EPC	1.50E-06
Indeno(1,2,3-cd)pyrene	1.00E-06	2.1	all ND		< EPC	1.00E-06
BHHRA Total ELCR	2.10E-05				New Total HI	2.10E-05
					No change	

Notes:
ELCR from Table C-53 of the BHHRA, Jacobs, 2003.
EPC from Table 3-40 of the BHHRA, Jacobs, 2003.
HI from Table C-50 of the BHHRA, Jacobs, 2003.
New Max is the maximum concentration found at LHAAP-03 soil from 0-2 feet bgs, Final Site Investigation Report, Shaw, 2009.
bgs below ground surface
BHHRA Baseline Human Health Risk Assessment
ELCR excess lifetime cancer risk
EPC exposure point concentration
HI hazard index
Max maximum
mg/kg milligrams per kilogram
ND non-detect
TCDD tetrachlorodibenzodioxin
Source: Shaw, 2012, *Comments on Draft Engineering Evaluation and Cost Analysis LHAAP-03 (published December 2011), Former Waste Collection Pad Near Building 722-P, Paint Shop, Longhorn Army Ammunition Plant, Karnack, Texas.*

Table 2-2: COCs and RGs

COC	RGs for Soil [a] (mg/kg)
Arsenic	*5.9*
Lead	180

Notes:
[a] RG/ Applicable RRS3 Industrial Soil MSC equals largest of calculated RRS3 MSC and background values. *Italicized* text indicates value equals background.
COC contaminant of concern
RG remediation goal
RRS risk reduction standard
mg/kg milligrams per kilogram
MSC medium-specific concentration

Table 2-3: Summary of Individual and Comparative Analysis of Alternatives

Criterion	Alternative 1 – No Action	Alternative 2: Excavation and Off-Site Disposal (Industrial Reuse)
Overall Protection of Human-Health and the Environment	Not Satisfied	Satisfied
	No reduction in risk to human-health and the environment.	Provides protection to human-health and the environment by removing the COC-impacted soil from the site exceeding the RGs for industrial reuse scenario.
Compliance with ARARs	Not Applicable	Satisfied
	Since no-action entails no remedial action, ARARs would not be triggered.	Complies with all the identified ARARs.
Long-Term Effectiveness	Not Applicable	Good
	Threshold criteria are not met.	Significantly reduces risk at the site and is considered permanent solution since impacted soil is removed from the site.
Reduction in Toxicity, Mobility, and Volume through Treatment	Not Applicable	Fair
	Threshold criteria are not met.	This alternative provides reduction of mobility because metals-contaminated soil is removed from the site and placed in a permitted disposal facility. Toxicity and volume are not reduced as the form and quantity of the contaminated soil is not altered.
Short-Term Effectiveness	Not Applicable	Fair
	No short-term effectiveness associated with this alternative since no remedial actions are performed.	This alternative involves relatively minor quantities of soil to be removed; there would be minimal risk to the community, workers, and the environment during the removal action. The time required to perform the alternative is approximately nine months. Soil excavation, backfilling and field activities performed as part of Alternative 2 would present short-term risks/hazards to site workers. However, adherence to standard health and safety procedures would minimize exposure of the workers.
Implementability	Not Applicable	Fair
	No implementability issues associated with this alternative since no actions are performed.	The removal and disposal of COC-impacted soil for Alternative 2 is easily implementable.
Cost ($)*	Not Applicable	Fair
	No cost	$87,878[a]
Regulatory Acceptance	The State of Texas and the USEPA cannot accept this alternative	The State of Texas and the USEPA support the selected alternative.

Criterion	Alternative 1 – No Action	Alternative 2: Excavation and Off-Site Disposal (Industrial Reuse)
Community Acceptance	The Proposed Plan for LHAAP-03 was issued to the public and discussed at a public meeting (see Section 2.3 for details). The responsiveness summary portion of this ROD addresses the public's comments and concerns about the selected remedy.	The Proposed Plan for LHAAP-03 was issued to the public and discussed at a public meeting (see Section 2.3 for details). The responsiveness summary portion of this ROD addresses the public's comments and concerns about the selected remedy.

Notes:
[a] PW assuming total duration of 30 years and a discount rate of 2 percent.
Alternative that costs the least was rated as good.
ARAR Applicable or Relevant and Appropriate Requirement
COC contaminant of concern
IR Installation Restoration
RAOs Remedial Action Objectives
RG remediation goal
ROD Record of Decision

Table 2-4: Cost Estimate for the Selected Remedy

Cost Item	Cost
Remedial Design/Remedial Action Work Plan	$18,055
Pre-Excavation Sampling	$8,778
Excavation and Off-Site Disposal	$28,535
Confirmation and Waste Characterization Sampling	$2,543
Construction Completion Report	$15,022
Total Direct Cost	**$72,932**
Contingency (10% of construction cost)	$3,985
Project Management (10% of construction cost)	$4,384
Construction Management (10% of construction cost)	$6,576
Total Present Value	**$87,878**

Table 2-5: Chemical-Specific ARARs

Citation	Prerequisite	Requirement	ARAR Determination [a]	Comments
Surface/Subsurface Soils				
TCEQ Texas Risk Reduction Rules 30 TAC 335.563 (i)(2)(A) and (j)(1)	Closure or remediation of industrial solid waste or municipal hazardous waste per the requirements of 30 TAC 335.8	For closure in accordance with RRS3, cleanup goals for soil shall not exceed values which will allow the air, surface water, and groundwater cleanup levels specified in subsections (f) - (h) of Section 335.563, respectively, to be maintained over time taking into account the effects of engineering controls.	Applicable	The cleanup goals for soil at LHAAP-03 are presented in Section 2.8 and are applicable RRS3 industrial soil MSCs based on groundwater protection. The details on the calculations for RRS3 industrial soil MSCs are presented in the RI/FFS Report (AECOM, 2013).

Notes:
[a] Only substantive requirements of specific citations are considered ARARs.
ARAR Applicable or Relevant and Appropriate Requirement
CFR Code of Federal Regulation
LHAAP Longhorn Army Ammunition Plant
MSC medium-specific concentration
RCRA Resource Conservation and Recovery Act
RI/FFS Remedial Investigation/Focused Feasibility Study
RRS risk reduction standard
TAC Texas Administrative Code
TCEQ Texas Commission on Environmental Quality
TCLP toxicity characteristic leaching procedure

Table 2-6: Action-Specific ARARs

Citation	Prerequisite	Requirement	ARAR Determination	Comments
General Site Preparation, Excavation, Grading, and Backfilling Activities				
Opacity Standard 30 TAC 111.111(a)(8)(A)	Fugitive emissions from land-disturbing activities (e.g., excavation, construction)	Visible emissions shall not be permitted to exceed opacity of 30% for any six minute period from any source.	Applicable	Fugitive dust emissions of particulate matter are expected from the excavation, grading, and earth-moving activities. Measures such as applying water to minimize fugitive dust emissions would be required.
Waste Generation, Management, and Storage				
Characterization of Solid Waste 40 CFR 262.11 30 TAC 335.62 30 TAC 335.504 30 TAC 335.503(a)(4)	Generation of solid waste, as defined in 30 TAC 335.1	A person who generates a solid waste must determine if that waste is hazardous. After making the hazardous waste determination as required, if the waste is determined to be nonhazardous, the generator shall then classify the waste as Class 1, Class 2, or Class 3 (as defined in Section 335.505 through Section 335.507) using one or more of the methods listed in Section 335.503(a)(4) and Section 335.508.	Applicable	Applicable for any operation where waste is generated. The determination of whether the wastes generated during the implementation of the selected remedy including excavated metal-impacted soil are hazardous, Class 1, Class 2, or Class 3 will be made at the time the wastes are generated.
Characterization of Hazardous Waste 40 CFR 264.13(a)(1) and (2) 30 TAC 335.509 30 TAC 335.511	Generation of a RCRA hazardous waste for treatment, storage, or disposal	Must obtain a detailed chemical and physical analysis of a representative sample of the waste(s) that at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with 40 CFR 264 and 268.	Applicable	Applicable when analyzing waste generated during the impacted soil excavation activities.
Requirements for Temporary Storage of Hazardous Waste in Accumulation Areas 40 CFR 262.34(a) and (c)(1) 30 TAC 335.69(a) and (d)	On-site accumulation RCRA hazardous waste	A generator may accumulate hazardous waste at the facility provided that • Waste is placed in containers that comply with 40 CFR 264.171 to 264.173 (Subpart I); and • Container is marked with the words "hazardous waste"; or • Container may be marked with other words that identify the contents.	Applicable	Applicable for any operation where hazardous waste is generated and transported. The determination of whether wastes generated during response action activities, such as metal-impacted soil excavation are hazardous will be made at the time the wastes are generated.
Requirements for the Use and Management of Containers 40 CFR 264.171–264.173 30 TAC 335.69(e) 30 TAC 335.152(a)(7)	Storage of RCRA hazardous waste not meeting small-quantity generator criteria before treatment, disposal, or storage elsewhere, in a container	Containers of RCRA hazardous waste must be: • maintained in good condition, • compatible with hazardous waste to be stored, and • closed during storage except to add or remove waste.	Applicable	Substantive requirements are applicable for accumulation of waste for less than 90 days if the waste is RCRA hazardous waste and is stored on-site in containers.
Staging Piles 40 CFR § 264.554(d)(1)(i–ii) and (d)(2), (e), (f), (h), (i), (j), and (k) 30 TAC 335.152(a)(14)	Hazardous remediation waste temporarily stored in piles.	Allows generators to accumulate solid remediation waste in a USEPA-designated pile for storage only, up to 2 years, during remedial operations without triggering LDRs	Applicable	Substantive requirements are applicable for storage of excavated soil. The staging pile will be designed to prevent or minimize the releases of COCs into the environment, and minimize or adequately control cross-media transfer of pollutants.
Closure				
Requirements for Closure of a RCRA Container Storage Area 40 CFR 264.178 30 TAC 335.152(a)(7)	Closure of a RCRA-permitted container storage area	At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers and liners.	Applicable	Substantive requirements are applicable if RCRA hazardous wastes are generated and stored in containers.

Notes:
[a] Only substantive requirements of specific citations are considered ARARs.

ARAR Applicable or Relevant and Appropriate Requirement
CFR Code of Federal Regulations
COC contaminant of concern
RCRA Resource Conservation and Recovery Act
TAC Texas Administrative Code
LDR land disposal restrictions
USEPA U.S. Environmental Protection Agency

3 RESPONSIVENESS SUMMARY

The Responsiveness Summary serves three purposes. First, it provides the U.S. Army, the USEPA, and the TCEQ with information about community concerns with the Preferred Alternative at LHAAP-03 as presented in the Proposed Plan. Second, it shows how the public's comments were considered in the decision-making process for selection of the remedy. Third, it provides a formal mechanism for the U.S. Army to respond to public comments.

The U.S. Army, the USEPA, and the TCEQ provide information regarding LHAAP-03 through public meetings, the Administrative Record for the facility, and announcements published in the *Marshall News Messenger* newspaper. **Section 2.3** discusses community participation on LHAAP-03, including the dates for the public comment period, the date, location, and time of the public meetings, and the location of the Administrative Record. The following documents related to community involvement were added to the Administrative Record:

- Transcript of the public meeting held on May 30, 2013
- Presentation slides from the May 30, 2013 public meeting
- Written questions and comments from the public during the public comment period, and the U.S. Army response to those comments

3.1 Stakeholder Issues and Lead Agency Responses

This section responds to significant issues raised by stakeholders including the public and community groups that were received in written or verbal form.

Lead Cleanup Level

Comment: Mr. George Rice submitted a comment on behalf of the Caddo Lake Institute related to the proposed soil lead cleanup level at LHAAP-03. During the public meeting held on May 30, 2013, RAB member Ms. Judy VanDeventer specifically asked "What will be the Army's response to Mr. George Rice's comment," which is summarized below.

The Army determined the cleanup level for lead of 180 milligrams per kilogram (mg/kg) using Soil Attenuation Model (SAM). The commenter stated that the input values used in the SAM were in general, appropriate; however the lead distribution coefficient (K_d) value used in the SAM was too large. The K_d value used by the Army (1,830 mg/kg) corresponds to clayey soils and was taken from a table published by TCEQ (30 TAC §350.73[f][1][A]). The commenter stated that this K_d value is not representative of all soils at LHAAP-03 and if the TCEQ published value of K_d for loamy soils (597 mg/kg) is used in the SAM, the calculated lead cleanup level is 58 mg/kg. Thus, the Army should remove all soils that contain a lead concentration greater than 58 mg/kg. In addition to the soil it plans to excavate, the Army should also excavate soil in the vicinity of boring SB04 to a depth of at least four feet.

Response: The K_d value is used in the SAM to calculate the concentration of lead in soil leachate in the *impacted soil zone*. Therefore, the value of K_d used in the SAM needs to be representative of the impacted soil zone only. Based on the investigations conducted to date, the potentially impacted soil zone (on the basis of comparison with RRS2 and RRS3 MSCs) at LHAAP-03 extends from surface to approximately seven feet bgs depending on the location at the site (see Table 4-1 and Figure 4-1 of the RI/FFS [AECOM 2013a]). A review of the field logs for borings

at or in the immediate vicinity of LHAAP-03 (03WW01, 03SB01, 03SB02, 03SB03, 35AWW01/ 35AWW08/ LHSMW05) included in the site reports indicate that clays constitute the majority of the impacted soil zone (up to approximately 10 feet bgs) (Shaw, 2009; and AECOM, 2013a). Therefore, the use of K_d value representative of clayey soils (1,830 mg/kg) in the SAM model to calculate the soil cleanup goal for lead is reasonable.

Extent of Contaminated Soil

Comment: Mr. George Rice submitted a comment on behalf of the Caddo Lake Institute related to the extent of contaminated soil at LHAAP-03. During the public meeting held on May 30, 2013, RAB member Ms. Judy VanDeventer specifically asked "What will be the Army's response to Mr. George Rice's comment," which is summarized below.

The comment stated that there are no soil borings to the northwest or southeast of the zone known to contain contaminated soils. Therefore, the full extent of contamination is unknown. The Army should advance and sample at least two more soil borings; one to northwest, and one to the southeast of the contaminated zone.

Response: The Army is planning to collect additional soil samples at LHAAP-03 to refine the extent of contamination and therefore concurs with the recommendation. As stated in the RI/FFS (AECOM 2013a) and the Proposed Plan (AECOM 2013b), soil sampling will be conducted prior to the start of excavation to further define the current boundaries of the excavation area. Once the excavation is complete, confirmation samples will be collected confirming full extent of contamination was defined and removed. A detailed sampling plan for pre-excavation sampling will be presented in the Remedial Design/ Remedial Action Work Plan that will be made part of the Administrative Record for the site and will be available for public review.

Groundwater Cleanup

Comment: Mr. George Rice on behalf of the Caddo Lake Institute commented that the Army's plan to deal with groundwater contamination as part of the remedial action for LHAAP-35(58) is reasonable.

Response: The Army acknowledges the concurrence of Caddo Lake Institute with respect to this issue.

Concurrence with George Rice Submitted Comments

Comment: Mr. Bob Cargill (May 29, 2013 email) and Mr. Paul Fortune (June 6, 2013 email) submitted the same comment concurring with George Rice's comments addressed above and requesting Army follow Mr. Rice's recommendations.

Response: See responses above.

3.2 Technical and Legal Issues

This section is used to expand on technical and legal issues. However, there are no issues of that nature beyond the technical issues already discussed in **Section 3.1**.

4 REFERENCES

AECOM Technical Services, Inc. (AECOM), 2012. *Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03/LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas,* November.

AECOM, 2013a. *Final Remedial Investigation – Focused Feasibility Study, Longhorn Army Ammunition Plant*, March.

AECOM, 2013b. *Final Proposed Plan, Longhorn Army Ammunition Plan*, May.

Day & Zimmerman, 1991. *Final Report, Hazardous Waste Minimization Plan, Longhorn AAP, Phase III Report*, June.

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APPENDIX A: Public Notice

PUBLIC NOTICE

The United States Army invites public comment on the Proposed Plan for environmental site

LHAAP-03 (FORMER PAINT SHOP WASTE COLLECTION PAD)

Longhorn Army Ammunition Plant, Texas

The U.S. Army is the lead agency for environmental response actions at the former Longhorn Army Ammunition Plant (LHAAP). In partnership with the Texas Commission on Environmental Quality and the U.S. Environmental Protection Agency Region 6, the U.S. Army has developed a Proposed Plan for site LHAAP-03. Although the Proposed Plan identifies the preferred remedy for the site, the U.S. Army welcomes the public's review and comments. **The public comment period begins May 13, 2013 and ends June 12, 2013. On Tuesday, May 30, 2013, from 6:00 to 8:00 p.m., the U.S. Army is inviting all interested parties to attend an open house forum to review the Proposed Plan and ask questions. The open house forum will be held at the Karnack Community Center, Highway 134 and Spur 449, Karnack, Texas.** Copies of the Proposed Plan and supporting documentation are available for public review at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670. A summary of LHAAP-03, including a short discussion of the planned Remedial Action, is provided below.

The Former Paint Shop Waste Collection Pad was used as a paint waste collection site, and is approximately 50 feet to the west of former Building 722-P paint shop. Building 722-P was used for paint spray and polyurethane spray coating of materials. The soil contaminant(s) of concern (COCs) are lead and arsenic. LHAAP-03 lies within the boundary of a larger environmental site, LHAAP-35A(58), and LHAAP-03 groundwater is being addressed by activities completed for LHAAP-35A(58). The Preferred Alternative to address contaminated soil at LHAAP-03 is excavation and off-site disposal. This will result in the removal of an estimated 50-150 cubic yards of soil with disposal off-site in a permitted landfill.

For further information or to submit comments contact:

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US Army Corps of Engineers ®
Tulsa District

DRAFT
QUARTERLY EVALUATION REPORT
2ND QUARTER (APRIL - JUNE) 2018
GROUNDWATER TREATMENT PLANT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OCTOBER 2018

Prepared For:

U.S. Army Corps of Engineers
Tulsa District

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Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
AMCV	Air Monitoring Comparison Value
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
CD	Compact disc
COC	Chemical of concern
COD	Chemical oxygen demand
DCE	Dichloroethene
ESD	Explanation of Significant Difference
ESL	Effects Screening Level
FBR	Fluidized bed reactor
ft	Feet or foot
GAC	Granular activated carbon
gpd	Gallons per day
gph	Gallons per hour
gpm	Gallons per minute
GWTP	Groundwater Treatment Plant
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCl	Hydrochloric acid
HDPE	High density polyethylene
ICT	Interception-collection trench
IRA	Interim Remedial Action
J	Estimated concentration
lbs/hr	Pounds per hour
LHAAP	Longhorn Army Ammunition Plant
MCL	Maximum Contaminant Level
µg/L	Micrograms per liter
$Mg(OH)_2$	Magnesium hydroxide
MSC	Medium Specific Concentration
mV	Millivolts

NA	Not applicable
NaOH	Sodium hydroxide
No.	Number
ORP	Oxidation-reduction potential
PCL	Protective Concentration Level
PID	Photoionization detector
ppmv	Parts per million by volume
psi	Pounds per square inch
ROD	Record of Decision
TAC	Texas Administrative Code
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
tpy	Tons per year
UEP	Unlined Evaporation Pond
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

The operation of the Groundwater Treatment Plant (GWTP) is part of the Interim Remedial Action (IRA) at Burning Ground Number (No.) 3, also referred to as Longhorn Army Ammunition Plant (LHAAP)-18/24. A historical pilot test for nearby landfill LHAAP-16 resulted in the installation of eight extraction wells which also contribute groundwater to the GWTP. Groundwater extraction, treatment, and monitoring activities consist of:

- Continuous extraction of groundwater from multiple interception-collection trenches (ICTs) and extraction wells at both LHAAP-18/24 and LHAAP-16;
- Treatment of extracted groundwater for heavy metals, chlorinated compounds, and perchlorate using precipitation, air stripping, and biological methods, respectively;
- Evaluation of the hydraulic effectiveness of the extraction system by groundwater monitoring;
- Monitoring of treated groundwater to ensure compliance with the discharge limits; and
- Discharge of treated water to Harrison Bayou, or to a holding pond (INF Pond), or release of treated water as irrigation water on LHAAP-18/24.

The location of the extraction wells and ICTs are shown on **Figure A-1** in **Appendix A**. The process flow diagram of the GWTP is shown on **Figure A-2** in **Appendix A**.

Figure ES-1 depicts the monthly total volume of groundwater that was extracted from the ICTs and extraction wells at LHAAP-18/24 and LHAAP-16 between September 2012 and June 2018.

The GWTP was not operational during June, July, and August 2012. This was related to meltdown of the scrubber system, associated with the catalytic oxidizer, due to system overheating. Overheating occurred when the blower became inoperable after the bearing on the scrubber blower unit was shattered and damaged the blower. This occurred around 1:00 PM on May 21, 2012.

After developing an interim air monitoring plan and obtaining concurrence from the Texas Commission on Environmental Quality (TCEQ) and the United States Environmental Protection Agency (USEPA) to operate the GWTP without use of air abatement equipment, a pilot run of the GWTP was conducted on September 6, 2012. In that first pilot run, 85,170 gallons of water that had been stored in the influent equalization tank (TK-140) were treated. The treated water was re-circulated through the fluidized bed reactor (FBR) to revive the FBR after 3 months of dormancy. Treated groundwater and air samples were collected and analyzed respectively for perchlorate, metals, and Volatile Organic Compounds (VOCs); and VOCs only. On September 19, 2012, a second pilot run was performed at the GWTP and 107,264 gallons of water were treated. Based on the successful re-start of the GWTP, continuous groundwater extraction began again on September 24, 2012. While groundwater extraction occurs on a continuous basis, operation

of the GWTP occurs intermittently due to the low volume of water available for treatment with respect to the design capacity of the GWTP. During the 3rd quarter of 2012, groundwater extraction occurred only from LHAAP-18/24. Groundwater extraction from LHAAP-16 was not performed due to equipment failure. However, extraction from LHAAP-16 began in October 2012 and the extraction volumes increased steadily throughout the 4th quarter of 2012, as pumping equipment was gradually repaired/replaced. The GWTP operated under normal conditions until September 2015.

On September 14, 2015, at 11:15 AM, the blower on the air stripper (BL-340) malfunctioned during routine operation. The wiring on the blower was repaired and the blower operated for less than 2 hours on September 17, 2015, when the blower malfunctioned again. It was determined that the blower needed to be replaced, and groundwater extraction and operation of the GWTP ceased beginning September 18, 2015, as the influent equalization tank (TK-140) became full. Beginning on October 2, 2015, it was determined that the GWTP could operate without the blower at a reduced extraction rate. The operation of the GWTP allowed extraction of groundwater from ICTs 12E, 13A, 13B, and 13C (13C was changed to ICT 13E on October 12, 2015), which were considered critical ICTs to prevent migration of contaminants to Harrison Bayou. Groundwater extraction was switched frequently between ICTs 12E, 13A, 13B, and 13E to ICTs 14B, 14C, and 14D beginning on December 14, 2015.

On December 12, 2016, flange bolts at TK-380 failed and allowed hydrochloric acid (HCl) to drain into the sump. The containment area was washed down and the sump contents were transferred into the equalization tank (TK-140). Because of the acid release, extraction of groundwater from the ICTs was halted, and the GWTP was put into recycle mode (effluent sent back as influent) until the acid was neutralized and perchlorate, metals, and VOCs were below discharge criteria on March 17, 2017.

On August 12, 2017, severe storms caused a power outage at LHAAP-18/24. When electrical service was restored, the main transformer failed due to a manufacturing defect. A portable emergency generator was brought on-site on August 21, 2017, to allow the FBR to operate in full recycle mode. After a replacement transformer was installed on September 12, 2017, extraction began from ICT-13B, 13C, 13D, 13E, 13F, 7, and EW01 and the FBR was put into normal operation. Beginning on September 21, 2017, groundwater was extracted from all of the ICTs.

As shown on **Figure ES-1**, the total extracted groundwater volume from LHAAP-18/24 during the 2nd quarter of 2018 was within normal range. The extracted groundwater volume was measured on a monthly basis as the sum of the ICTs flow meter totalizers' differences between the beginning and end of each month. Extraction volumes were somewhat depressed compared to the 2nd quarter volume documented in the prior 5 years. The quantities in LHAAP-18/24 ranged between 503,807 gallons in June 2018 and 837,078 gallons in April 2018. The decreased volume extracted in May and June 2018 was due primarily to reduced precipitation. Maintenance issues with the FBR and ion exchange vessels further complicated and reduced discharge volumes in June 2018 when Harrison Bayou flow ceased and discharge to the INF Pond was required.

Treated effluent was only discharged after laboratory results confirmed that the perchlorate levels were acceptable, which resulted in delays in the treated batches being discharged.

Extraction from LHAAP-16 decreased from April to June 2018. In April 2018, 71,921 gallons were extracted from LHAAP-16. However, due to maintenance issues and repairs associated with the pump at LHAAP-16, the extracted amount reduced significantly the following months with May 2018 having 25,901 gallons extracted and June 2018 having 10,325 gallons extracted. The total extracted from LHAAP-16 from April through June 2018 was 108,147 gallons. Approximately 1,981,535 gallons of groundwater were extracted from LHAAP-18/24 and LHAAP 16 during the 2nd quarter of 2018 compared to approximately 1,713,492 gallons extracted during the 4th quarter of 2017. No treated water was returned to ICTs 6 and 9 during the 2nd quarter of 2018 because this practice was discontinued after system restart in September 2012.

The average discharged flowrate from the GWTP was calculated as approximately 12 gallons per minute (gpm) during the 2nd quarter of 2018. Approximately 1,227,926 gallons of groundwater was discharged from the GWTP to the Harrison Bayou. No treated groundwater was discharged from the INF Pond to the Harrison Bayou (see **Figure ES-2** below).

Grab perchlorate samples from the GWTP influent were collected on April 11, May 24, and June 6, 2018, and the following concentrations were reported: 6,400 micrograms per liter (µg/L), 12,000 µg/L, and 21,000 µg/L, respectively. A quarterly influent sample was collected and analyzed for perchlorate on June 20, 2018, and had a detection of 9,400 µg/L. Considering all four perchlorate results, the average perchlorate concentration in the GWTP influent during the quarter was 12,200 µg/L. No perchlorate concentrations in any effluent (TK-650) samples discharged to the Harrison Bayou exceeded daily maximum effluent limits of 589 µg/L, respectively, during the quarter. Groundwater was treated by both the FBR and the ion exchange vessels prior to discharge to the INF Pond to ensure that perchlorate would be 17 µg L, which was verified by rush analysis by the laboratory prior to discharging. Prior to this sample being collected, a drum of hydrated granular activated carbon (GAC) was added to the FBR which increased the oxidation-reduction potential (ORP) slightly.

As shown in **Table ES-1**, 1,227,926 gallons of treated groundwater was discharged directly to the Harrison Bayou, with a majority of that occurring in April and May. No treated groundwater was discharged to the Harrison Bayou after June 15, 2018, due to low or little flow in the Harrison Bayou. In June 2018 (June 18, June 22, June 25 and June 26), a total of 135,779 gallons was discharged to the INF Pond. No water was discharged from the INF Pond to the Harrison Bayou in the 2nd quarter of 2018.

The groundwater volume extracted for treatment at the GWTP ranged from a low of approximately 514,132 gallons in June 2018 to a high of approximately 908,999 gallons in April 2018. The total water extracted for treatment by the GWTP in the 2nd quarter of 2018 was approximately 1,981,535 gallons. The 3 month average was approximately 660,511 gallons per month. The water quantities treated each month since June 2012 are shown on **Figure ES-2**. The

total volume of water extracted from LHAAP-18/24 and LHAAP-16 in the 2nd quarter 2018 (1,981,535 gallons) is higher than the volume of water discharged to the Harrison Bayou and the INF Pond combined (1,363,705 gallons). The reason for the difference is the change in volume stored in the GWTP at the end of June 2018 (156,783 gallons), the amount of water lost with the removed metals precipitation sludge, and the amount of evaporative water lost in the air stripper (which is included in the volume processed, but not in the volume discharged).

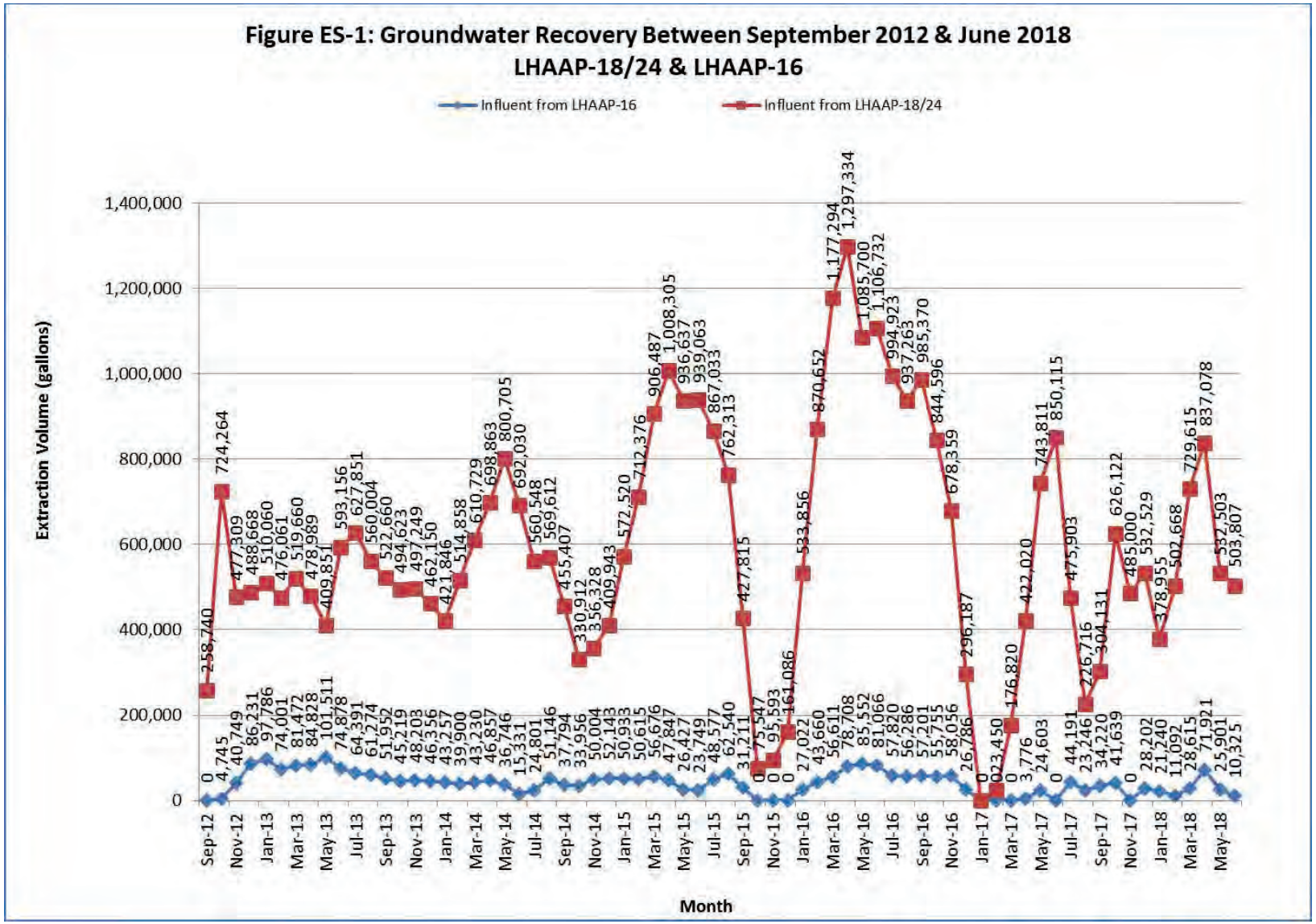
Figure ES-1: Groundwater Recovery Between September 2012 & June 2018
LHAAP-18/24 & LHAAP-16
Influent from LHAAP-16
Influent from LHAAP-18/24
Extraction Volume (gallons)
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Month
Sep-12
Nov-12
Jan-13
Mar-13
May-13
Jul-13
Sep-13
Nov-13
Jan-14
Mar-14
May-14
Jul-14
Sep-14
Nov-14
Jan-15
Mar-15
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
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Jan-18
Mar-18
May-18

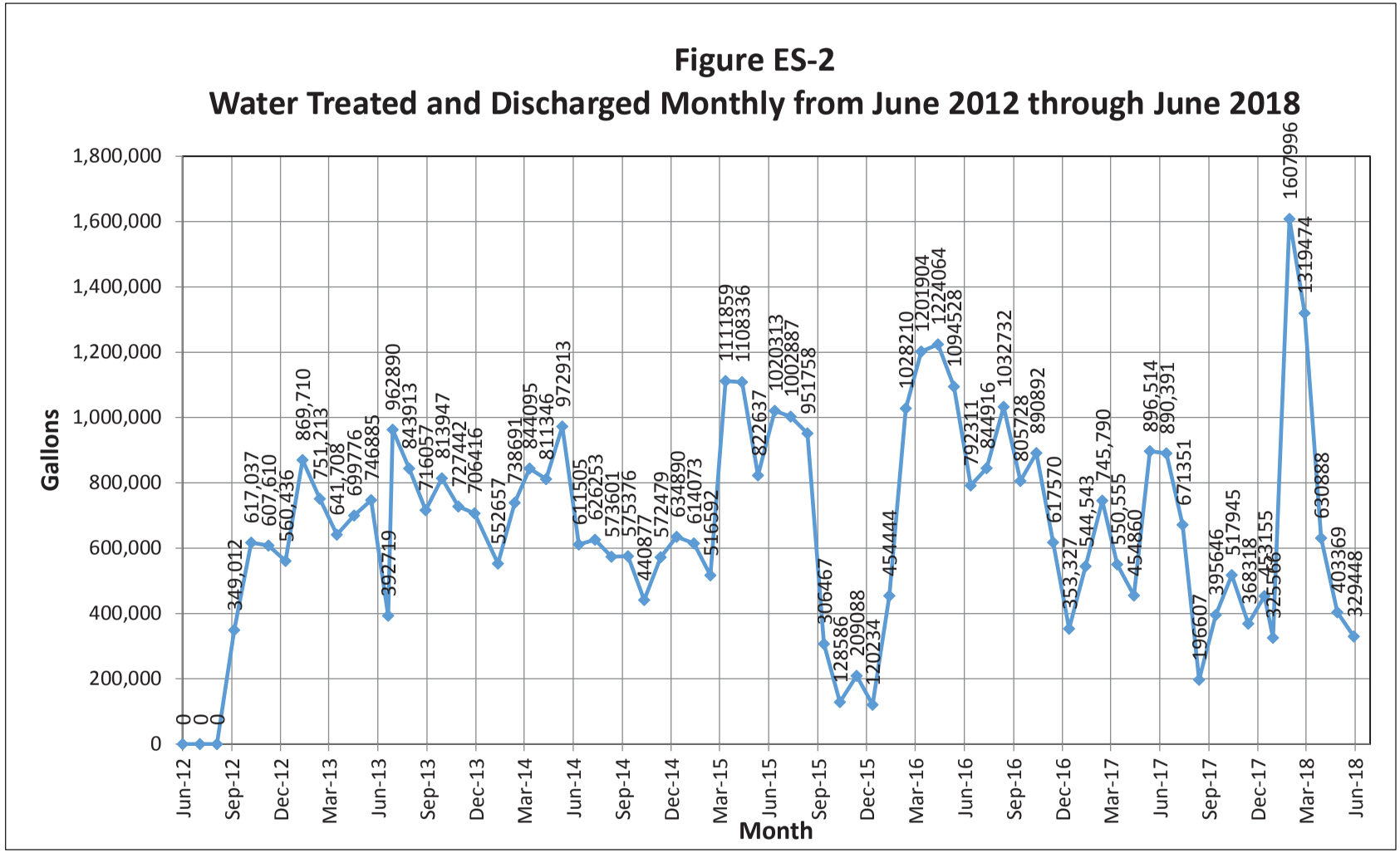
Figure ES-2
Water Treated and Discharged Monthly from June 2012 through June 2018
Gallons
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Month
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
0
0
0
349,012
617,037
607,610
560,436
869,710
751,213
641,708
699,776
746885
392719
962890
843913
716057
813947
727442
706416
552657
738691
844095
811346
972913
611505
626253
573601
575376
440877
572479
634890
614073
516592
1111859
1108336
822637
1020313
1002887
951758
306467
128586
209088
120234
454444
1028210
1201904
1224064
1094528
792311
844916
1032732
805728
890892
617570
353,327
544,543
745,790
550,555
454860
896,514
890,391
671351
196607
395646
517945
368318
453155
325568
1607996
1319474
630888
403369
329448

Table ES-1. Discharge Information to Harrison Bayou During 2nd Quarter 2018

Date	Harrison Bayou Flow (gpm)	Maximum Rate Allowed (gpm)	Released Flow Rate From GWTP To Harrison Bayou (gpm)	Volume Released to Harrison Bayou from GWTP (Gallons)	Volume Released to INF Pond from GWTP (Gallons)	Combined Total Flow Rate Released To Harrison Bayou (gpm)	Combined Total Volume Released from GWTP (Gallons)
04/01/2018	FLOOD STAGE	MAXIMUM	15.4	22,115	0.0	15.4	22,115
04/02/2018	32,171	10,763	11.4	16,438	0.0	11.4	16,438
04/03/2018	21,127	7,068	16.1	23,232	0.0	16.1	23,232
04/04/2018	22,693	7,592	5.9	8,520	0.0	5.9	8,520
04/05/2018	13,254	4,434	16.1	23,255	0.0	16.1	23,255
04/06/2018	6,580	2,201	14.9	21,388	0.0	14.9	21,388
04/07/2018	FLOOD STAGE	MAXIMUM	15.6	22,472	0.0	15.6	22,472
04/08/2018	FLOOD STAGE	MAXIMUM	4.7	6,813	0.0	4.7	6,813
04/09/2018	17,987	6,018	18.8	27,072	0.0	18.8	27,072
04/10/2018	13,865	4,639	1.2	1,770	0.0	1.2	1,770
04/11/2018	6,594	2,206	17.2	24,795	0.0	17.2	24,795
04/12/2018	5,627	1,882	15.3	22,030	0.0	15.3	22,030
04/13/2018	4,783	1,600	16.0	22,970	0.0	16.0	22,970
04/14/2018	4,548	1,521	11.6	16,680	0.0	11.6	16,680
04/15/2018	6,260	2,094	16.5	23,743	0.0	16.5	23,743
04/16/2018	3,925	1,313	25.4	36,542	0.0	25.4	36,542
04/17/2018	2,912	974	16.9	24,295	0.0	16.9	24,295
04/18/2018	2,411	806	14.9	21,510	0.0	14.9	21,510
04/19/2018	2,116	708	13.9	20,006	0.0	13.9	20,006
04/20/2018	1,417	474	12.7	18,283	0.0	12.7	18,283
04/21/2018	1,306	437	14.8	21,351	0.0	14.8	21,351
04/22/2018	FlOOD STAGE	MAXIMUM	16.4	23,615	0.0	16.4	23,615

Date	Harrison Bayou Flow (gpm)	Maximum Rate Allowed (gpm)	Released Flow Rate From GWTP To Harrison Bayou (gpm)	Volume Released to Harrison Bayou from GWTP (Gallons)	Volume Released to INF Pond from GWTP (Gallons)	Combined Total Flow Rate Released To Harrison Bayou (gpm)	Combined Total Volume Released from GWTP (Gallons)
04/23/2018	FlOOD STAGE	MAXIMUM	19.1	27,445	0.0	19.1	27,445
04/24/2018	FlOOD STAGE	MAXIMUM	15.1	21,760	0.0	15.1	21,760
04/25/2018	24,588	8,226	15.3	22,006	0.0	15.3	22,006
04/26/2018	16,474	5,512	13.8	19,884	0.0	13.8	19,884
04/27/2018	10,368	3,469	13.6	19,655	0.0	13.6	19,655
04/28/2018	5,316	1,778	15.5	22,391	0.0	15.5	22,391
04/29/2018	3,443	1,152	15.7	22,679	0.0	15.7	22,679
04/30/2018	2,824	944	18.2	26,173	0.0	18.2	26,173
05/01/2018	2,282	885	9.0	12,958	0.0	9.0	12,958
05/02/2018	1,815	704	8.5	12,217	0.0	8.5	12,217
05/03/2018	1,499	581	9.5	13,747	0.0	9.5	13,747
05/04/2018	1,255	486	7.4	10,632	0.0	7.4	10,632
05/05/2018	1,518	589	2.3	3,332	0.0	2.3	3,332
05/06/2018	1,925	747	10.2	14,728	0.0	10.2	14,728
05/07/2018	1,582	613	16.2	23,299	0.0	16.2	23,299
05/08/2018	1,359	527	6.6	9,501	0.0	6.6	9,501
05/09/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/10/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/11/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/12/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/13/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/14/2018	583	226	5.5	7,971	0.0	5.5	7,971
05/15/2018	532	206	17.9	25,718	0.0	17.9	25,718
05/16/2018	382	148	17.0	24,539	0.0	17.0	24,539
05/17/2018	338	131	9.3	13,461	0.0	9.3	13,461

Date	Harrison Bayou Flow (gpm)	Maximum Rate Allowed (gpm)	Released Flow Rate From GWTP To Harrison Bayou (gpm)	Volume Released to Harrison Bayou from GWTP (Gallons)	Volume Released to INF Pond from GWTP (Gallons)	Combined Total Flow Rate Released To Harrison Bayou (gpm)	Combined Total Volume Released from GWTP (Gallons)
05/18/2018	334	129	7.7	11,111	0.0	7.7	11,111
05/19/2018	351	136	9.3	13,324	0.0	9.3	13,324
05/20/2018	328	127	9.2	13,301	0.0	9.2	13,301
05/21/2018	289	112	14.2	20,498	0.0	14.2	20,498
05/22/2018	244	94	9.9	14,220	0.0	9.9	14,220
05/23/2018	205	79	15.1	21,692	0.0	15.1	21,692
05/24/2018	185	71	15.4	22,105	0.0	15.4	22,105
05/25/2018	199	77	12.6	18,201	0.0	12.6	18,201
05/26/2018	185	71	10.8	15,599	0.0	10.8	15,599
05/27/2018	168	65	11.1	15,953	0.0	11.1	15,953
05/28/2018	236	91	11.7	16,888	0.0	11.7	16,888
05/29/2018	256	99	13.7	19,785	0.0	13.7	19,785
05/30/2018	232	90	9.8	14,129	0.0	9.8	14,129
05/31/2018	274	106	10.0	14,460	0.0	10.0	14,460
06/01/2018	233	90	7.8	11,288	0.0	7.8	11,288
06/02/2018	168	65	9.5	13,735	0.0	9.5	13,735
06/03/2018	109	42	9.7	14,019	0.0	9.7	14,019
06/04/2018	73	28	12.5	18,062	0.0	12.5	18,062
06/05/2018	491	143	1.8	2,654	0.0	1.8	2,654
06/06/2018	1,408	411	10.0	14,466	0.0	10.0	14,466
06/07/2018	1,457	425	9.9	14,292	0.0	9.9	14,292
06/08/2018	560	163	7.8	11,299	0.0	7.8	11,299
06/09/2018	230	67	8.7	12,589	0.0	8.7	12,589
06/10/2018	202	59	8.9	12,754	0.0	8.9	12,754
06/11/2018	170	49	11.8	17,062	0.0	11.8	17,062

Date	Harrison Bayou Flow (gpm)	Maximum Rate Allowed (gpm)	Released Flow Rate From GWTP To Harrison Bayou (gpm)	Volume Released to Harrison Bayou from GWTP (Gallons)	Volume Released to INF Pond from GWTP (Gallons)	Combined Total Flow Rate Released To Harrison Bayou (gpm)	Combined Total Volume Released from GWTP (Gallons)
06/12/2018	122	35	9.1	13,168	0.0	9.1	13,168
06/13/2018	193	56	8.6	12,424	0.0	8.6	12,424
06/14/2018	130	38	9.2	13,231	0.0	9.2	13,231
06/15/2018	63	18	8.8	12,626	0.0	8.8	12,626
06/16/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/17/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/18/2018	No Release	NA	0.0	0.0	42,103	0.0	42,103
06/19/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/20/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/21/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/22/2018	No Release	NA	0.0	0.0	3,092	0.0	3,092
06/23/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/24/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/25/2018	No Release	NA	0.0	0.0	65,571	0.0	65,571
06/26/2018	No Release	NA	0.0	0.0	25,013	0.0	25,013
06/27/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/28/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/29/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/30/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0

Notes:
NA – Not Applicable
FLOOD STAGE - does not have a value and is based upon the bayou flowing outside of the banks.
MAXIMUM - Flow rate of 120 gpm based upon the discharge pump. However, typically flow is limited by the discharge from the FBR at 30 gpm.

1 EVALUATION OF GROUNDWATER TREATMENT PLANT

The Groundwater Treatment Plant (GWTP) was constructed as part of the Interim Remedial Action (IRA) at Burning Ground Number (No.) 3, also referred to as Longhorn Army Ammunition Plant (LHAAP)-18/24, to treat groundwater extracted from interception-collection trenches (ICTs) and extraction wells. **Figure A-1** located in **Appendix A** presents the layout of the ICTs and extraction wells at LHAAP-18/24. The groundwater contamination at LHAAP-18/24 likely resulted from infiltration from an Unlined Evaporation Pond (UEP) that was used to store manufacturing wastewater, and from burning trenches and other industrial processes used to flash pyrotechnic, propellant, and explosive waste streams. The groundwater at LHAAP-18/24 is contaminated mainly with chlorinated ethenes and perchlorate, with lesser concentrations of 1,4-dioxane.

The GWTP also receives flow from eight extraction wells installed at LHAAP-16 as part of a historical treatability study. The extraction wells were installed in 1996 and 1997. The wells are located between the landfill at LHAAP-16 and Harrison Bayou. The groundwater at LHAAP-16 is also contaminated mainly with chlorinated ethenes and perchlorate.

1.1 Treatment Configuration

The process flow diagram for the GWTP is presented in **Appendix A, Figure A-2**. The GWTP was not operational between May 24, 2012, and September 6, 2012, due to malfunction of the scrubber unit associated with the catalytic oxidizer. Since September 6, 2012, the GWTP has operated without air abatement equipment. Although major repairs were conducted on the GWTP (e.g., replacement of level alarms, repair of the hydrochloric acid [HCl] tank, replacement of TK-650, replacement of malfunctioning valves and flow meters, replacement of metering pumps, repair or replacement of various system pumps, rust removal and repainting of various tanks, and replacement and repair of various extraction pumps, motors, and level switches), the GWTP treatment configuration has remained unchanged.

Malfunction of the blower on the air stripper (BL-340) on September 14, 2015, and on September 17, 2015, disrupted continuous extraction and routine operations of the GWTP, which lasted through January 7, 2016. Prior to this occurrence, the GWTP performed as designed and the GWTP was operated on an as needed basis (i.e., semi-continuous operational basis). During the 4th quarter of 2015, groundwater was extracted from a limited number of ICTs (ICTs 12E, 13A, 13B, 13C, and/or 13E, or ICTs 14B, 14C, and 14D). Operation of the GWTP occurred on a batch basis through the fluidized bed reactor (FBR). After replacement of the blower, attempts were made to restore continuous operations to the FBR but remained predominantly on a batch basis throughout January 2016.

In December 2016, a HCl spill caused plant operations to shut down until the issue could be properly addressed. The FBR performance was challenged by the increased chlorides in the

neutralized wastewater, but performance gradually returned to normal in the 1st quarter of 2017. Groundwater extraction was gradually increased to full rates during the 2nd quarter of 2017.

On August 12, 2017, severe storms caused a power outage at LHAAP-18/24. When electrical service was restored, the main transformer failed due to a manufacturing defect. A portable emergency generator was brought on-site on August 21, 2017, to allow the FBR to operate in full recycle mode. After a replacement transformer was installed on September 12, 2017, extraction began from ICT-13B, 13C, 13D, 13E, 13F, 7, and EW01 and the FBR was put into normal operation. Beginning on September 21, 2017, groundwater was extracted from all of the ICTs.

Flow rates for the treatment processes for metals and Volatile Organic Compounds (VOCs) ranged between 170 and 210 gallons per minute (gpm) with an average of approximately 185 gpm for the operating hours (i.e., this flow rate does not represent continuous flows). The GWTP operated for 107 hours during the quarter. The treatment configuration of the plant at these rates (with minor variations) is as follows:

GWTP Metals Precipitation Operating Parameters

Pretreatment Settings	Tank 200-A $Mg(OH)_2$ Mixing	Tank 200-B NaOH Mixing	Tank 200-C Polymer Mixing	Tank 300 feed line to Air Stripper
pH Adjustment	9.0	10.5	NA	5.0 to meet ≤ 8.0 release from stripper
Feed Pump Settings	Speed 100% Stroke 100% 10 gph $Mg(OH)_2$	Speed 100% Stroke 100% 9.0 gph NaOH	Speed 90% Stroke 100% 40 gph water	Speed 80% Stroke 80% 10 gph HCl
Notes: gph - gallons per hour, NaOH - sodium hydroxide, $Mg(OH)_2$ - magnesium hydroxide, NA - not applicable				

GWTP Air Compressors Operating Parameters

Air Compressors	K-700A	K-700B	K-701
Air Pressure Settings	88 psi	88 psi	105 psi
Note: psi - pounds per square inch			

GWTP Stripper Operating Parameters

Stripper Tower	
pH Setting	7.4
Inlet Pressure Gauge	Not operational
Stripper Pressure Gauge	Not operational
Air Flow Rate	Not operational

GWTP Fluidized Bed Reactor Operating Parameters

Fluidized Bed Reactor	
Carbon Bed Height	12 feet & 8 to 11 inches
Recycle Flow Rate	200 gpm
pH	7.1 to 7.4
Recycle oxidation-reduction potential (ORP)	<-430 mV
Note: mV - millivolts	

The operating parameters for the GWTP FBR are presented in **Table 1**. While the FBR was typically operating within the above parameters, perchlorate is not being fully degraded. Additional carbon was added to the FBR throughout the 2nd quarter, which improved perchlorate treatment. However, replacement of laterals and the nozzles within the FBR is planned to further improve the reactor's performance.

1.2 Work Performed at the GWTP

Work performed at the GWTP during the 2nd quarter of 2018 is described in the following subsections.

1.2.1 Major Maintenance

The major maintenance items that were completed at the GWTP during this quarterly reporting period are:

- On April 10, 2018, Fastrack Construction was on site to start repair on phone lines
- On April 12, 2018, BLOC Design was on site to install a new chassis in Panel # 2 in Burning Grounds
- BLOC Design was on site from May 8 through May 16, 2018, to install the new Programmable Logic Controller system
- BLOC Design was on site on June 14, 2018, to repair wiring on ICT 11

1.2.2 Routine Maintenance

The following routine maintenance items were completed at the GWTP during this quarterly reporting period:

- Perform housekeeping in GWTP office, Army trailer, GWTP Shop, and around the GWTP including the containment area
- Added approximately 350 pounds of GAC to the FBR
- Back flushed the ion exchange vessels

- Cleared logs and debris from Harrison Bayou that were jammed against the walk across bridge
- Mow grass around GWTP and Army trailer
- Made adjustments to impeller on P-320 and installed new Woods 8J coupling
- Replaced leaking flange on TK-380 (HCl storage tank)
- Rebuilt Grundfos pumps for reuse in ICT wells
- Bush-hogged and weed-eated around the discharge valve at Harrison Bayou
- Installed new 3-inch trash pump at sump

1.2.2.1 Safety

The GWTP Operators, Mr. Scott Beesinger and Mr. Kennie Moore, received confined space entry training as well as the 8-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher course.

1.2.2.2 Lubrication

No lubrication maintenance was conducted during the reporting period.

1.2.2.3 Air Compressors

- On April 24, 2018, Ingersoll – Rand was on site to reprogram the controller on one of the new air compressors
- Ingersoll-Rand was on site on June 14, 2018, to repair the air compressors

1.2.2.4 Belt Press and Waste Disposal

No belt press or waste disposal was conducted during the reporting period.

1.2.2.5 Sand Filter

No maintenance or repairs were conducted on the sand filter during the reporting period.

1.2.2.6 Well Field at LHAAP-18/24

- Collected monthly flowmeter readings and water level measurements
- Cleaned and adjusted level probes in ICT 14C
- Installed new breaker in electric panel for ICT 11
- Used chainsaw and tractor to remove fallen tree from access road to well 18CPTMW16
- Bush-hogged around some of the monitoring wells

- Completed semi-annual sampling of monitoring wells
- Completed annual sampling of ICT wells
- Cleaned and adjusted level probes in ICTs EW01& 12C
- Replaced level probes in ICT 14E
- Replaced pump in ICTs 12B and 14C

1.2.2.7 Miscellaneous Activities

- On June 17, 2018, power was lost and the system called out. Air compressors were restarted and the FBR was restarted.

1.2.3 Routine Maintenance at LHAAP-16

- Checked site daily
- Collected monthly water levels
- Cleared new well locations at Site 16 using bulldozer
- Removed fallen dead tree from across wells 16WW29 & 16WW30
- Bush-hogged Landfill 16

1.2.4 Routine Maintenance (Potable Water Wells)

- Flushed potable water lines
- Added chlorine tablets to potable water well # 1

1.3 Filter Cake Operations and Management

No filter cake operations took place during this reporting period.

1.4 Fluidized Bed Reactor Operations

During the 2nd quarter of 2018, evaluation of the FBR continued. Hydrated granular activated carbon (GAC) was added slowly during May and June 2018. While increasing the GAC reduced the perchlorate in the effluent following the FBR, perchlorate was still detected. Ideally, the FBR should treat perchlorate down to non-detect or near the non-detect value. Based upon conversations with the current GWTP operator as well as Envirogen, the FBR was last shut-down for complete maintenance in 2010. Therefore, maintenance was determined to be necessary to achieve complete degradation of the perchlorate. This maintenance is schedule for the 3rd quarter of 2018.

Due to the incomplete degradation of the perchlorate by the FBR, the ion exchange vessels were brought online when treated effluent was to be discharged to the INF pond. During the quarter,

the ORP ranged between -435 and -543 mV, and the pH ranged between 7.0 and 7.5 standard units. The ORP was generally lower in the 2nd quarter than in the 1st quarter 2018 which was likely due to the increase in ambient temperature and GAC. The average perchlorate concentration in the GWTP influent (based upon monthly influent samples collected in April, May and June 2018 and the quarterly influent sample collected in June 2018) during the 2nd quarter of 2018 was 12,200 micrograms per liter (µg/L).

Table 1. Enhanced Fluidized Bed Reactor Operating Parameters – 2nd Quarter 2018

Date	pH (7.1 - 7.4)	ORP (<-430 mV)	Temperature Degrees Fahrenheit
4/01/2018	7.2	-523	71
4/02/2018	7.3	-521	71
4/03/2018	7.3	-536	72
4/04/2018	7.3	-435	70
4/05/2018	7.3	-522	66
4/06/2018	7.3	-529	66
4/07/2018	7.3	-523	66
4/08/2018	7.2	-491	62
4/09/2018	7.2	-520	65
4/10/2018	7.3	-521	65
4/11/2018	7.3	-532	66
4/12/2018	7.2	-526	66
4/13/2018	7.2	-535	68
4/14/2018	7.2	-519	68
4/15/2018	7.2	-530	66
4/16/2018	7.2	-538	65
4/17/2018	7.2	-537	67
4/18/2018	7.2	-538	68
4/19/2018	7.2	-537	68
4/20/2018	7.3	-533	66
4/21/2018	7.3	-535	66
4/22/2018	7.2	-531	65
4/23/2018	7.2	-535	67
4/24/2018	7.2	-532	67
4/25/2018	7.2	-526	68
4/26/2018	7.3	-521	67
4/27/2018	7.3	-523	67
4/28/2018	7.2	-519	67
4/29/2018	7.2	-520	68
4/30/2018	7.3	-521	71
5/01/2018	7.3	-522	73
5/02/2018	7.2	-523	73

Date	pH (7.1 - 7.4)	ORP (<-430 mV)	Temperature Degrees Fahrenheit
5/03/2018	7.2	-522	75
5/04/2018	7.2	-520	74
5/05/2018	7.1	-491	73
5/06/2018	7.1	-504	71
5/07/2018	7.2	-513	77
5/08/2018	7.2	-520	78
5/09/2018	FBR shutdown	FBR shutdown	FBR shutdown
5/10/2018	FBR shutdown	FBR shutdown	FBR shutdown
5/11/2018	7.4	-537	78
5/12/2018	Recycle	Recycle	Recycle
5/13/2018	Recycle	Recycle	Recycle
5/14/2018	7.3	-532	82
5/15/2018	7.3	-534	82
5/16/2018	7.3	-455	82
5/17/2018	7.3	-508	80
5/18/2018	7.3	-517	79
5/19/2018	7.2	-522	81
5/20/2018	7.4	-529	83
5/21/2018	7.3	-486	80
5/22/2018	7.2	-497	79
5/23/2018	7.2	-500	80
5/24/2018	7.2	-502	79
5/25/2018	7.1	-501	78
5/26/2018	7.1	-495	79
5/27/2018	7.1	-501	81
5/28/2018	7.1	-505	82
5/29/2018	7.1	-498	82
5/30/2018	7.0	-500	83
5/31/2018	7.0	-500	84
6/01/2018	7.1	-501	83
6/02/2018	7.3	-500	84
6/03/2018	7.3	-513	86
6/04/2018	7.2	-509	84
6/05/2018	7.5	-536	81
6/06/2018	7.5	-534	83
6/07/2018	7.5	-539	84
6/08/2018	7.5	-543	83
6/09/2018	7.4	-526	84
6/10/2018	7.2	-519	85

Date	pH (7.1 - 7.4)	ORP (<-430 mV)	Temperature Degrees Fahrenheit
6/11/2018	7.2	-486	84
6/12/2018	7.1	-506	84
6/13/2018	7.3	-511	85
6/14/2018	7.1	-510	86
6/15/2018	7.3	-520	87
6/16/2018	Weekend	Weekend	Weekend
6/17/2018	Weekend	Weekend	Weekend
6/18/2018	7.3	-519	84
6/19/2018	7.2	-524	84
6/20/2018	7.4	-529	83
6/21/2018	7.2	-525	85
6/22/2018	7.3	-532	85
6/23/2018	Weekend	Weekend	Weekend
6/24/2018	Weekend	Weekend	Weekend
6/25/2018	7.4	-537	88
6/26/2018	7.5	-500	85
6/27/2018	7.4	-519	85
6/28/2018	7.4	-526	87
6/29/2018	7.5	-541	88
6/30/2018	Weekend	Weekend	Weekend

1.5 Process Chemical Usage at GWTP

Approximate chemical consumption and the quantities delivered during the 2nd quarter of 2018 are shown in **Table 2**.

Table 2. Process Chemicals Delivered and Used

Chemical	Usage 2nd Quarter 2018	Quantity Delivered 2nd Quarter 2018
Hydrochloric acid	500 gallons	0
Sodium hydroxide (35%)	775 gallons	0
Acetic acid (50%)	9 drums = 495 gallons	20 drums (1,100 gallons)
Phosphoric acid (75%)	44.1 liters	0
Magnesium hydroxide	205 gallons	0
Urea	324.8 pounds	500 pounds
Polymer (magnafloc 110-L)	9.3 liters	0

2 EVALUATION OF LHAAP-18/24 ICT EFFECTIVENESS

The ICT system at Burning Ground No. 3 is composed of 14 sections ranging in length from 100 feet (ft) to 1,300 ft. A total of approximately 5,000 linear ft of trench was installed within and around three sides of Burning Ground No. 3. The trench sections extend approximately 22 ft to 45 ft below ground surface (bgs). Most, but not all of the trenches are as deep as the confining clay layer of the shallow groundwater zone. High density polyethylene (HDPE) liners were installed in ICTs 12 and 13, located on the western and northern boundaries of LHAAP-18/24, respectively. The locations of the liners are shown on **Figure A-1** in **Appendix A**. **Table A-1** in **Appendix A** presents the depths of the ICTs.

2.1 Groundwater Elevation

Water levels from 95 monitoring wells and 11 piezometers (piezometer 12 was damaged and plugged and abandoned in May 2013) are measured monthly to generate potentiometric surface maps that assist in monitoring the effectiveness of the groundwater extraction system on plume containment. The groundwater contours are generated using the water levels from the shallow zone and Wilcox Formation wells. The water level data are presented in **Table 3**. No reinjection of treated groundwater or reapplication to LHAAP-18/24 grounds via the existing irrigation system occurred during the 2nd quarter of 2018. Potentiometric surface maps are presented in **Appendix B** and groundwater elevations from the 2nd quarter of 2018 are discussed in Section 2.2. Groundwater monitoring completed at LHAAP-18/24 in the 2nd quarter of 2018 is discussed in Section 2.4.

2.2 Performance of Plume Capture

The intent of the ICTs is to control groundwater gradients, prevent off-site migration of contaminated groundwater, extract the most highly contaminated groundwater, and reduce the mass of contaminants in groundwater. Liners were installed in the ICTs on the northern (ICT 13) and western (ICT 12) site boundaries to limit migration of contaminated water from the site towards Harrison Bayou. At the same time, the liners reduce or prevent removal of contaminated groundwater that is outside the containment zone, between the site and Harrison Bayou. The ICTs are installed within the shallow subsurface at the site and capture primarily shallow groundwater (e.g., < 40 ft bgs).

In 2007 and 2008, in consultation with the Texas Commission on Environmental Quality (TCEQ) and the United States Environmental Protection Agency (USEPA), the Army ceased operations of ICTs 1, 3, 5, 10, and 12A for groundwater extraction (note that extraction from ICT 12A was resumed after pump replacement in December 2012). Two other ICTs (ICT 6 and ICT 9) were changed from extraction ICTs to re-injection ICTs. Groundwater extraction from well EW-1 located in the northeast central portion of the site began in October 2008 and well 18WW17 located to the northeast of the ICT containment area began in January 2008. **Table B-1** in **Appendix B** presents a summary of extraction equipment replacement since 2011, as dictated by

poor extraction performance (malfunctioning pumps, poor pump positioning with respect to groundwater, non-operational level probes, scale build up, etc.). Further discussion of extraction performance of various ICTs and extraction wells is presented in Section 2.3.

Potentiometric surface maps of the shallow zone groundwater in the vicinity of LHAAP-18/24, based on groundwater elevations measured on April 25, May 31, and June 26, 2018, are shown on **Figures B-1, B-2, and B-3 in Appendix B**, respectively.

The potentiometric surface maps of the shallow zone were contoured using the Kriging geostatistical interpolation method included in the Golden Software Surfer® data analysis software. The HDPE liners in the ICTs, where present, were interpreted as groundwater flow barriers. The potentiometric surface maps for April and May 2018 reflect high groundwater elevations at 123 and AWD2, inside the ICT containment area.

The elevated potentiometric surface contours within the ICTs compared to the lower potentiometric surface contours on the outside of the ICTs is likely due to a no flow boundary condition caused by the ICT liners and groundwater extraction along the ICTs. From the groundwater highs at monitoring wells 123 and AWD-2, groundwater flows radially towards the surrounding ICTs. East of the groundwater mound and in the northeastern third of the site, groundwater flow is primarily towards ICT 14 along the northeast site boundary.

Groundwater extraction rates from the ICTs were 837,078 gallons in April 2018; 532,503 gallons in May 2018; and 503,807 gallons in June 2018. Rainfall amounts recorded at the GWTP were 5.13 inches in April 2018, 0.58 inches in May 2018, and 3.01 inches in June 2018. This amount of rainfall resulted in over 65,230 gallons of additional water treated and discharged but not metered with the influent totals.

During the reporting period, approximately 1.227-million gallons of treated groundwater was discharged to Harrison Bayou from the GWTP. Discharge was only to the Harrison Bayou in April and May 2018 and half of the month of June 2018. No treated groundwater from the GWTP was returned to LHAAP-18/24 via the sprinkler system. A total of 135,779 gallons was released to the INF Pond from the GWTP starting on June 18, 2018. **Table 4** presents the daily discharge rates and volume for the 2nd quarter 2018. Overall groundwater levels decreased throughout the 2nd quarter of 2018.

Groundwater levels in Wilcox Formation wells (generally > 40 to 50 ft bgs) were measured during the 2nd quarter of 2018 groundwater gauging events. Wilcox Formation wells correspond generally to those wells previously identified as “Intermediate” and “Deep” wells. “Intermediate” wells are designated as Upper Wilcox Formation wells and “Deep” wells are designated as Lower Wilcox Formation wells. Generally, groundwater in the Upper and Lower Wilcox Formation wells are in hydraulic communication and so can be treated as a single hydrogeologic unit. Therefore, the groundwater elevations in Upper Wilcox wells were used to construct the potentiometric surface maps for the Wilcox Formation. **Figures B-4, B-5, and B-6** in **Appendix B** show the locations of the Wilcox Formation monitoring wells and the

potentiometric surface of the Wilcox Formation, based on static water levels measured during the April, May, and June 2018 gauging events, respectively. Groundwater in the Wilcox Formation generally flows in a northerly direction, towards Caddo Lake and there is a downward vertical gradient between the overlying shallow zone and the Wilcox Formation. However, a groundwater high in the Wilcox Formation occurs in the area of MW-14.

2.3 Quantity of Water Extracted from LHAAP-18/24

The average daily extraction rates from the ICTs were 27,903 gallons per day (gpd) in April 2018, approximately 17,178 gpd in May 2018, and approximately 16,794 gpd in June 2018. The increase in average daily extraction rates observed in April is due to maintenance repairs on the pumps and discharge lines in addition to high levels of precipitation. The extraction rates decreased in May and June 2018 due primarily to a reduction in rainfall. However some of the reduced extraction rates were related to decrease in extraction in pumps requiring additional maintenance.

The volume of groundwater removed from LHAAP-18/24 during the 2nd Quarter 2018 measured approximately 1,873,388 gallons, based on total flow measured from the extraction wells and ICT wells, and as presented on **Figure 2-1**. LHAAP-16 contributed 108,147 gallons to the GWTP. Together, approximately 1,981,535 gallons was extracted from both LHAAP-16 and LHAAP-18/24. **Figure 2-1** shows the historical trends of extracted volumes by quarter.

In contrast to the approximate total extracted volume based on total flow measured at the GWTP, the total estimated volume discharged to the INF pond and/or Harrison Bayou following treatment by the GWTP was 630,888 gallons in April 2018; 403,369 in May 2018; and 329,448 gallons in June 2018 for a total of 1,363,705 gallons discharged in the 2nd quarter of 2018. However, this volume does not account for water present in the decant tank at the end of June 2018 or the influent that was not treated after the GWTP last ran on June 26, 2018. The difference between the influent and effluent volumes is approximately 45%. However, considering the over 250,00 gallons of water within the treatment plant as of June 29, 2018, this percent difference is closer to 22% variation, which is contributable to variations in the influent flow meter recordings. The sum of the individual well volumes is significantly higher than the FIT-140 meter reading and slightly higher than the FIT-172 meter reading for TK-630. New gauges were installed in May 2018 as part of a programmable logic controller update to the GWTP to improve the information collected from the GWTP.

As indicated by **Table 5**, 21 of 27 ICTs and wells produced water during the 2nd quarter of 2018. However, ICTs 11, 12B, 13C, and 14D produced water during only a portion of the quarter.

2.4 Groundwater Monitoring at LHAAP-18/24

The following 77 monitoring wells were sampled in June 2018; 102, 109, 120, 123, 126, 129, 130, 17WW08, 18CPTMW01DW, 18CPTMW01SW, 18CPTMW03SW, 18CPTMW04, 18CPTMW04SW, 18CPTMW06, 18CPTMW07, 18CPTMW08DW, 18CPTMW08SW, 18CPTMW10DW,

18CPTMW10SW, 18CPTMW12SW, 18CPTMW12DW, 18CPTMW14, 18CPTMW15, 18CPTMW16, 18CPTMW18, 18CPTMW19, 18CPTMW19SW, 18CPTMW22DW, 18CPTMW22SW, 18CPTMW22R, 18CPTMW23, 18CPTMW23SW, 18CPTMW24, 18CPTMW26SW, 18WW02, 18WW03, 18WW06, 18WW08, 18WW09, 18WW14, 18WW17, 18WW18, 18WW19, 18WW20, 18WW22, 18WW24, 18WW25, AWD-1, AWD-3, AWD-4, C-01, C-02, C-03, C-04, C-06, C-08, C-09, MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-12, MW-13, MW-14, MW-16, MW-17, MW-18, MW-19, MW-20, MW-21, MW-22, and MW-23. In addition, 17 ICTs were also sampled. Monitoring wells 18WW16 and 125 were dry and unable to be sampled.

The analytical results are presented in **Table 6**. Laboratory data packages are provided within **Appendix C**. Parameters exceeding their respective Maximum Contaminant Levels (MCL), Medium Specific Concentration (MSC), or Protective Concentration Levels (PCLs) are arsenic; barium; beryllium; cadmium; chromium; manganese; nickel; perchlorate; 1,4-dioxane; 1,1-dichloroethene; 1,2-dichloroethane; carbon tetrachloride; 1,1,2-trichloroethane; methylene chloride; benzene; cis-1,2-dichloroethene; tetrachloroethene; trichloroethene (TCE); and vinyl chloride.

Groundwater chemicals of concern (COC) maps depicting the results of the June 2018 groundwater sampling event for perchlorate, TCE, and methylene chloride are presented as **Figures D-1 through D-6** in **Appendix D**.

The highest perchlorate concentrations in the shallow zone are observed in 18WW17, MW-3, MW-5, MW-7, MW-21, MW-23, and 120, with concentrations in these wells ranging between 16,000 µg/L in MW-3 and 97,000 µg/L in 18WW17 (**Figure D-1**). Perchlorate in groundwater has migrated off-site in all directions. The perchlorate concentration in 18CPTMW23 was reported at 5,700 µg/L compare to 140 µg/L in December 2017, 3,220 µg/L in June 2017, 91.3 µg/L in December 2016, and 2,310 µg/L in June 2016. This well has a history of order of magnitude fluctuations in perchlorate concentrations. For example, a two orders of magnitude increase was observed between December 2014 and June 2015, a four orders of magnitude decrease was observed between June 2014 and December 2014, a four orders of magnitude increase was observed between December 2013 and June 2014, and a fourfold decrease was observed between May 2013 and December 2013. These changes in concentration are likely influenced by groundwater level fluctuations, rain amounts, and performance of the ICTs.

Perchlorate in the Wilcox Formation was detected in monitoring well 18CPTMW08SW at a concentration of 61,000 µg/L (**Figure D-2**), which is nearly double the concentration reported in December 2017 (31,000 µg/L) and in June 2017 (32,900 µg/L). Perchlorate concentration decreases rapidly away from this well. Another area where perchlorate in the Wilcox Formation was identified at an elevated concentration is in MW-14, with a reported concentration of 94,000 µg/L compared to 150,000 µg/L in December 2017 and 137,000 µg/L in June 2017. 18CPTMW22SW also contained an elevated concentration of perchlorate with 4,800 µg/L, which is less than the detection of 6,900 µg/L in December 2017 and 10,400 µg/L in June 2017.

TCE concentrations in the shallow zone remained consistent with the concentrations reported in

December 2017 with the highest TCE concentration in June 2018 occurring in well 120 at a concentration of 17,000 µg/L that decreased from a concentration of 27,000 µg/L in December 2017 (**Figure D-3**). This decrease of TCE in well 120 is similar to that observed previously where a 9,400 µg/L decrease in TCE was observed from 24,400 µg/L in December 2016 to 15,000 µg/L in June 2017. This is likely due to fluctuations in groundwater elevations and rainfall amounts. Other TCE detections in June 2018 were generally similar in magnitude as detected in December 2017.

TCE in the Wilcox Formation is generally present at low concentrations (**Figure D-4**). The highest concentration of 7,300 µg/L was observed in MW-14. This concentration decreased from a concentration of 13,000 µg/L in December 2017. A concentration of 81 µg/L was reported in 18CPTMW01SW in June 2018, which is similar to the concentration measured in December 2017 (90 µg/L). No detections of TCE were observed in monitoring wells 18CPTMW19SW, 18CPTMW22DW, 18CPTMW23SW, or 18CPTMW26SW.

The concentrations of methylene chloride in the shallow zone remain centered on MW-2 with a concentration of 240,000 µg/L which is higher than the concentration of 140,000 µg/L detected in December 2017 but lower than the detection of 604,000 µg/L measured in June 2017. The extent of methylene chloride in the shallow formation is depicted on **Figure D-5**. Methylene chloride in the Wilcox Formation is present at a concentration of 840 µg/L identified in 18CPTMW01SW, which is lower than the concentration reported in December 2017 of 1,500 µg/L. This fluctuation is similar to that observed in June 2017 which had a detection of 913 µg/L and a detection of 1,590 µg/L in December 2016. Methylene chloride in MW-14 was not detected (< 10 µg/L) in June 2018 compared to a detection of 12 µg/L in December 2017. The extent of methylene chloride in the Wilcox Formation is depicted on **Figure D-6**.

Time-series graphs for the shallow zone and Wilcox Formation wells are presented in **Appendix E**. Graphs for shallow zone wells C-08, MW-02, MW-07, MW-08, MW-16, MW-17, MW-20, MW-21, MW-22, MW-23, 18WW08, 109, 120, 126, and AWD-3 are included. Graphs for Wilcox wells C-03 and MW-14 are also included. The following observations were made, based on the June 2018 groundwater monitoring results:

- MW-02 is located inside the containment in the shallow zone. The concentration of methylene chloride increased sharply from June 2016 and December 2016; however, a sharp decrease was observed during the same time period in 2017. Methylene chloride concentrations decreased from 604,000 µg/L in June 2017 to 140,000 µg/L in December 2017. However, methylene chloride increased to 240,000 µg/L in June 2018. Similarly, the concentration of TCE decreased significantly from 15,300 µg/L in June 2017 to 2,600 µg/L in December 2017 but then increased in June 2018 to 5,000 µg/L. The concentration of perchlorate also significantly decreased from 4,830 µg/L in June 2017 to 160 µg/L in December 2017 and then to 1.3 J µg/L in June 2018. Perchlorate has been detected at similar low levels in December 2015 (0.847 µg/L).

- Perchlorate concentrations in MW-21 increased slightly from previous results in June 2016, June 2017, and December 2017 but is below the detections in 2013-2015. TCE decreased from December 2017 to June 2018 from 8,500 µg/L to 4,800 µg/L.
- Concentrations of TCE in MW-22 inside the containment in the shallow zone remained approximately 50-percent lower than the June 2016 through December 2017 results with a detection of 260 µg/L. Methylene chloride remained below the detection limits. Perchlorate continued to remain a detected value much lower than in previous years with a detection of 66 µg/L compared to greater than 200 µg/L in prior sampling events at MW-22.
- Perchlorate detected in groundwater at MW-23 increased to 91,000 µg/L which indicates an overall increasing trend in perchlorate. TCE decreased to 1,500 µg/L which is consistent with previous detections in June 2016 and June 2017.
- Perchlorate and TCE concentrations in monitoring well 120 decreased from December 2017 but remained within historical levels and are comparable to the detections of these same analytes during the June 2016 sampling event.
- Methylene chloride and perchlorate remained below the detection limits in samples from C-08, to the northeast of the containment area. TCE decreased to below detection limits in June 2018 from a detection of 0.7 µg/L in December 2017.
- The other northeastern well, 109 continues to have perchlorate at levels significantly below that detected in December 2015. Perchlorate was detected at 4,300 µg/L which is less than 19,000 µg/L detected in December 2017, but greater than the detection of 265 µg/L in June 2017. TCE detected in monitoring well 109 decreased from the detection in June 2017 and December 2017 to similar levels detected in June 2016.
- Wells to the southwest of the containment area include MW-07, MW-08, and MW-17. MW-07 has a decreasing trend for TCE and a stable trend for perchlorate that fluctuates from December and June since December 2015. MW-08 has a decreasing trend for TCE and a stable trend for perchlorate with levels remaining less than 9,000 µg/L since June 2016. The perchlorate concentration in MW-17 has remained below the detection limit since June 2016.
- The concentration of TCE in MW-16 in June 2018 (520 µg/L) was similar to the June 2017 detection (695 µg/L) but was higher than the TCE detected in December 2017 (300 µg/L). This variability in TCE detection from December to June has been observed since 2014. Methylene chloride and perchlorate remained below the detection limit.
- Perchlorate was detected at 250 µg/L in AWD-3 in June 2018 which is consistent with historical levels and significantly less than the December 2017 detection of 8,800 J (estimated concentration) µg/L. TCE also decreased in June 2018 to a similar detection as in June 2017 with a detection of 100 µg/L.
- Perchlorate was detected in 18WW08 at 130 µg/L which is consistent with historical detections and is significantly lower than the December 2016 detection of 2,390 µg/L

and December 2017 detection of 2,400 µg/L. TCE and methylene chloride were not detected in June 2018.

- C-03 is a Wilcox Formation well located northeast of the containment area, which has remained non-detect for TCE and methylene chloride since December 2014. Perchlorate decreased in June 2018 to 29 µg/L in C-03 compared to a detection of 170 µg/L in December 2017.
- Concentrations of TCE and perchlorate in Wilcox Formation well MW-14 decreased in the June 2018 groundwater sampling event compared to both June and December 2017. The detections in June 2018 are comparable to those in December 2016. The methylene chloride concentration decreased to below the detection limits in June 2018 which is the same as the result from December 2016.
- Monitoring wells MW-20 and 126 continue to have no or low level detections of methylene chloride, TCE, and perchlorate. These wells should be considered for removal from the monitoring program.

In general, other than the changes observed above in perchlorate, TCE, and methylene chloride concentrations, the COC concentration trends indicate that the plumes are stable, suggesting that the extraction system is effective in containing the plumes.

2.5 Groundwater Treatment Plant Sampling and Analysis

As part of the GWTP operations, samples from various water streams are required to be collected and analyzed for the parameters in accordance with the *Final Revised Sampling and Analysis Plan for Groundwater Treatment Plan and Well Fields* (AECOM Technical Services, Inc. [AECOM], September 2017), which was developed in accordance with the Interim Record of Decision (ROD) and the TCEQ letter dated January 8, 2002 (see Administrate Record Volume 1 of 4 in 2002, Document A). Besides the ROD sampling requirement, additional sample analyses are typically performed on the influent and effluent samples to monitor the effectiveness of the perchlorate treatment (FBR and/or ion exchange vessels) process. Sections 2.5.1 through 2.5.4 present the results of analyses conducted during the 2nd quarter of 2018. The complete laboratory results are provided on a compact disc (CD) (**Appendix F**).

2.5.1 Perchlorate Sampling

Table 7 presents the effluent perchlorate results for the 2nd quarter of 2018. None of the effluent samples exceeded the protocol for discharge (**Appendix G**) for perchlorate. Commencing in mid-June 2018, effluent was discharged to the INF Pond. Prior to discharging, analytical results for perchlorate were received from the laboratory to ensure that the treated effluent met the requirements of the protocol. Effluent released to the INF pond was treated by the ion exchange vessels prior to discharge resulting in non-detect results for perchlorate. Samples presented in **Table 7** also include samples collected before the ion exchange to assess the FBR performance. Treated groundwater from the GWTP was discharged to Harrison Bayou during the current

quarter when effluent perchlorate concentrations were less than the daily maximum concentration of 589 µg/L and adequate flow in the bayou was observed. When the flow in the bayou ceased, effluent was discharged to the INF pond once the water was analyzed and determined to have less than 17 µg/L of perchlorate.

Table 7 also presents the effluent concentration of ammonia as N and ortho-phosphate, which are soluble nutrients used by the microbes in the metabolic process within the FBR. Effluent samples at the reactor outlet are analyzed to verify that trace amounts of these are present, which indicates that there is enough to sustain the biomass. If there is bypassing or short circuiting in the reactor and perchlorate is not being fully degraded, elevated levels of these nutrients may be present at the FBR outlet. While ortho-phosphate was not elevated and did not vary significantly throughout the quarter, ammonia frequently increased when the total organic carbon increased. This is likely a sign that maintenance of the FBR is required for optimal treatment by the reactor. The table also notes which samples were collected after the ion exchange vessels. Perchlorate in the effluent is treated by the FBR prior to the ion exchange vessels.

Three monthly grab samples from the influent to the GWTP (TK-140) and one quarterly grab sample (total of four influent samples) were collected in the 2nd quarter of 2018. The perchlorate concentrations in these samples ranged from 6,400 µg/L to 21,000 µg/L.

2.5.2 VOC Sampling

Tables 8 through 10 present the effluent VOC results for April, May, and June 2018. Sampling of the effluent for VOCs was conducted on a biweekly basis beginning on April 4, 2018. The results, where applicable, were below the discharge limits. The tables also provide monthly influent concentrations for VOCs and perchlorate.

2.5.3 Monthly Metals Sampling

As per the Final Installation-Wide Work Plan (AECOM, July 2014), the monthly metals sampling is reported in **Tables 8 through 10**. None of the metals exceeded the effluent discharge limits.

2.5.4 Quarterly Sampling

Sampling of the effluent for VOCs, anions, chemical oxygen demand (COD), oil and grease, and perchlorate was conducted during this quarter and the results were below the discharge limits. Zinc was the only metal that slightly exceeded the daily maximum discharge criteria. **Table 11** presents the analytical results for the 2nd quarter of 2018.

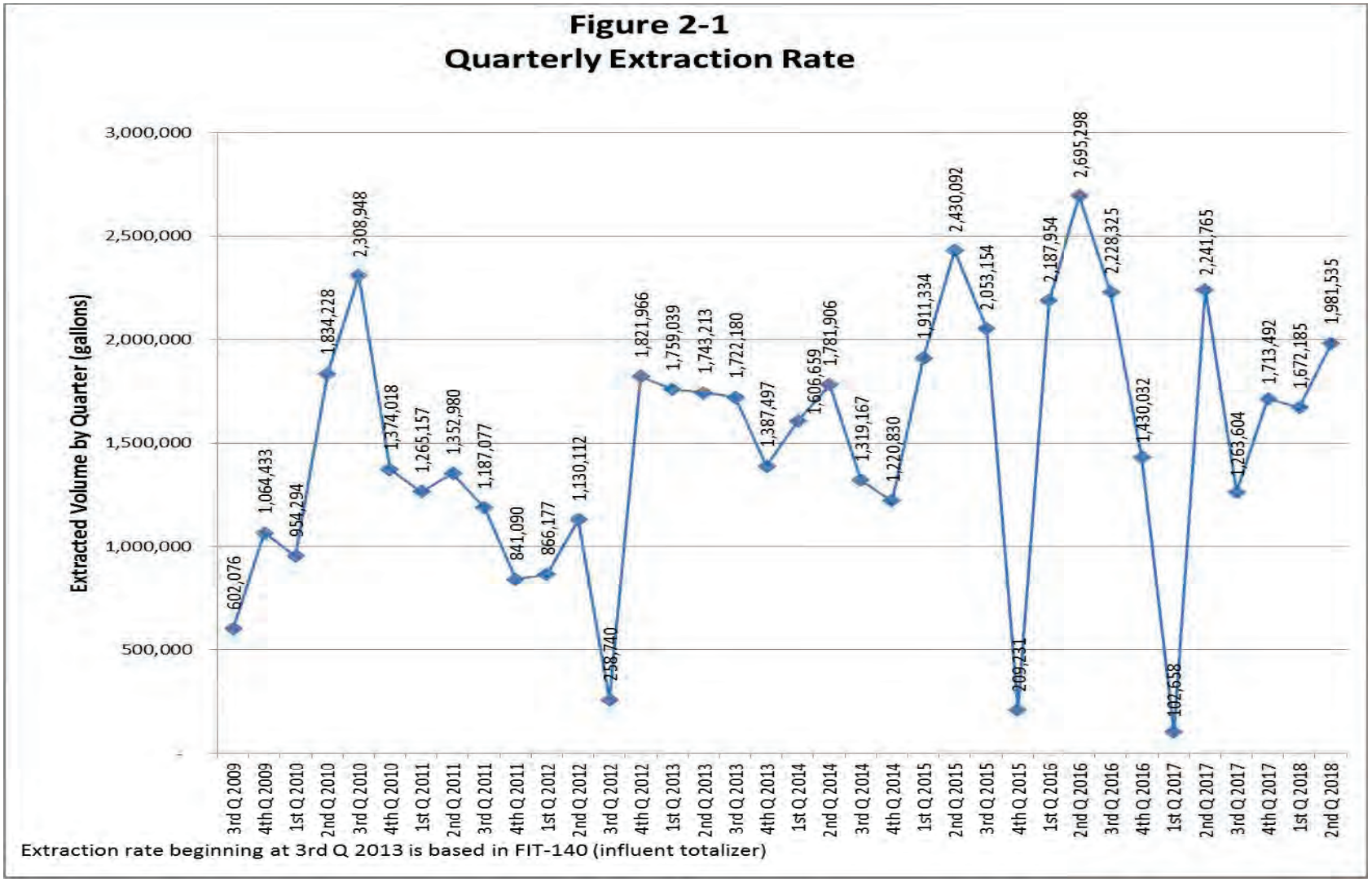
Figure 2-1
Quarterly Extraction Rate
Extracted Volume by Quarter (gallons)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
602,076
1,064,433
954,294
1,834,228
2,308,948
1,374,018
1,265,157
1,352,980
1,187,077
841,090
866,177
1,130,112
258,740
1,821,966
1,759,039
1,743,213
1,722,180
1,387,497
1,606,659
1,781,906
1,319,167
1,220,830
1,911,334
2,430,092
2,053,154
209,731
2,187,954
2,695,298
2,228,325
1,430,032
102,658
2,241,765
1,263,604
1,713,492
1,672,185
1,981,535
3rd Q 2009
4th Q 2009
1st Q 2010
2nd Q 2010
3rd Q 2010
4th Q 2010
1st Q 2011
2nd Q 2011
3rd Q 2011
4th Q 2011
1st Q 2012
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3rd Q 2014
4th Q 2014
1st Q 2015
2nd Q 2015
3rd Q 2015
4th Q 2015
1st Q 2016
2nd Q 2016
3rd Q 2016
4th Q 2016
1st Q 2017
2nd Q 2017
3rd Q 2017
4th Q 2017
1st Q 2018
2nd Q 2018
Extraction rate beginning at 3rd Q 2013 is based in FIT-140 (influent totalizer)

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Table 3. Groundwater Elevations at LHAAP-18/24 Piezometers, Monitoring Wells, and Surface Water
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 4/25/18	Groundwater Elevation (feet amsl) 4/25/18	Depth to Water (feet) 5/31/18	Groundwater Elevation (feet amsl) 5/31/18	Depth to Water (feet) 6/26/18	Groundwater Elevation (feet amsl) 6/26/18
BGPZ-1	Piezometer	184.99	5.27	179.72	7.33	177.66	8.65	176.34
BGPZ-2	Piezometer	184.39	12.63	171.76	13.41	170.98	14.12	170.27
BGPZ-3	Piezometer	180.35	9.05	171.30	10.29	170.06	10.65	169.70
BGPZ-4	Piezometer	177.77	5.07	172.70	7.30	170.47	10.15	167.62
BGPZ-5	Piezometer	180.76	11.40	169.36	12.39	168.37	13.09	167.67
BGPZ-6	Piezometer	197.82	27.98	169.84	28.54	169.28	28.79	169.03
BGPZ-7	Piezometer	195.96	27.20	168.76	27.73	168.23	28.10	167.86
BGPZ-8	Piezometer	197.08	29.61	167.47	30.03	167.05	30.41	166.67
BGPZ-9	Piezometer	196.45	28.08	168.37	28.69	167.76	28.95	167.50
BGPZ-10	Piezometer	197.00	27.73	169.27	28.19	168.81	28.47	168.53
BGPZ-11	Piezometer	196.99	27.31	169.68	27.90	169.09	28.19	168.80
BGPZ-12	Piezometer	188.17	NA	Plugged	NA	Plugged	NA	Plugged
AWD-1	Monitoring Well	182.27	9.81	172.46	10.25	172.02	10.85	171.42
AWD-2	Monitoring Well	186.78	12.19	174.59	12.61	174.17	13.14	173.64
AWD-3	Monitoring Well	200.13	28.01	172.12	28.45	171.68	29.29	170.84
AWD-4	Monitoring Well	193.89	24.49	169.40	24.90	168.99	24.15	169.74
MW-1	Monitoring Well	199.22	27.77	171.45	28.11	171.11	28.25	170.97
MW-2	Monitoring Well	196.73	27.36	169.37	27.70	169.03	27.57	169.16
MW-3	Monitoring Well	196.54	26.58	169.96	26.93	169.61	27.30	169.24
MW-4	Monitoring Well	197.27	26.58	170.69	26.91	170.36	27.25	170.02
MW-5	Monitoring Well	194.97	25.00	169.97	25.75	169.22	25.85	169.12
MW-6	Monitoring Well	192.18	22.16	170.02	22.79	169.39	23.40	168.78
MW-7	Monitoring Well	188.47	18.34	170.13	18.63	169.84	19.28	169.19
MW-8	Monitoring Well	187.13	17.48	169.65	17.91	169.22	17.61	169.52
MW-9	Monitoring Well	184.73	13.51	171.22	14.05	170.68	14.89	169.84
MW-10	Monitoring Well	178.12	7.81	170.31	8.77	169.35	9.15	168.97
MW-11	Monitoring Well	184.65	10.80	173.85	12.10	172.55	13.29	171.36
MW-12	Monitoring Well	178.33	8.51	169.82	9.06	169.27	9.87	168.46
MW-13	Monitoring Well	176.72	6.28	170.44	7.15	169.57	8.09	168.63
MW-14	Monitoring Well	186.19	12.90	173.29	13.55	172.64	14.05	172.14
MW-16	Monitoring Well	178.59	7.28	171.31	8.03	170.56	10.00	168.59
MW-17	Monitoring Well	179.03	8.75	170.28	9.29	169.74	10.10	168.93
MW-18	Monitoring Well	178.58	8.36	170.22	8.84	169.74	9.15	169.43
MW-19	Monitoring Well	178.60	8.55	170.05	8.97	169.63	9.25	169.35
MW-20	Monitoring Well	186.64	9.89	176.75	10.61	176.03	11.48	175.16
MW-21	Monitoring Well	198.70	31.48	167.22	31.95	166.75	30.25	168.45
MW-22	Monitoring Well	197.51	28.19	169.32	28.50	169.01	28.27	169.24
MW-23	Monitoring Well	198.79	28.51	170.28	28.89	169.90	27.54	171.25
101	Monitoring Well	197.53	4.73	192.80	6.17	191.36	8.55	188.98
102	Monitoring Well	193.94	20.56	173.38	20.91	173.03	21.60	172.34
109	Monitoring Well	197.02	28.20	168.82	28.81	168.21	28.02	169.00
120	Monitoring Well	184.19	12.69	171.50	13.09	171.10	14.48	169.71
123	Monitoring Well	186.21	9.49	176.72	10.62	175.59	13.81	172.40

Table 3. Groundwater Elevations at LHAAP-18/24 Piezometers, Monitoring Wells, and Surface Water
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 4/25/18	Groundwater Elevation (feet amsl) 4/25/18	Depth to Water (feet) 5/31/18	Groundwater Elevation (feet amsl) 5/31/18	Depth to Water (feet) 6/26/18	Groundwater Elevation (feet amsl) 6/26/18
125	Monitoring Well	196.28	25.16	171.12	25.79	170.49	27.10	169.18
126	Monitoring Well	199.37	29.38	169.99	29.89	169.48	29.47	169.90
129	Monitoring Well	197.24	26.54	170.70	27.15	170.09	26.67	170.57
130	Monitoring Well	177.73	6.82	170.91	8.19	169.54	7.80	169.93
C-01	Monitoring Well	193.89	23.81	170.08	24.29	169.60	24.32	169.57
C-02	Monitoring Well	175.95	4.73	171.22	6.20	169.75	6.80	169.15
C-03	Monitoring Well	196.34	26.54	169.80	26.93	169.41	27.33	169.01
C-04	Monitoring Well	194.64	25.02	169.62	25.52	169.12	25.80	168.84
C-04A	Monitoring Well	194.61	24.78	169.83	25.21	169.40	25.54	169.07
C-05	Monitoring Well	180.74	11.65	169.09	12.59	168.15	13.10	167.64
C-06	Monitoring Well	192.22	24.11	168.11	24.65	167.57	26.00	166.22
C-07	Monitoring Well	196.80	27.47	169.33	28.23	168.57	28.49	168.31
C-08	Monitoring Well	193.10	24.07	169.03	24.60	168.50	24.12	168.98
C-09	Monitoring Well	202.35	32.76	169.59	33.08	169.27	33.20	169.15
C-10	Monitoring Well	201.86	32.28	169.58	32.51	169.35	32.64	169.22
17WW08	Monitoring Well	179.72	9.89	169.83	10.64	169.08	10.45	169.27
18WW01	Monitoring Well	201.31	31.30	170.01	31.88	169.43	32.02	169.29
18WW02	Monitoring Well	179.30	8.75	170.55	9.77	169.53	10.00	169.30
18WW03	Monitoring Well	195.59	26.20	169.39	27.05	168.54	26.82	168.77
18WW04	Monitoring Well	183.74	14.91	168.83	15.73	168.01	16.11	167.63
18WW05	Monitoring Well	189.59	19.85	169.74	20.45	169.14	21.17	168.42
18WW06	Monitoring Well	179.70	9.47	170.23	10.40	169.30	11.37	168.33
18WW07	Monitoring Well	183.67	5.64	178.03	6.93	176.74	7.59	176.08
18WW08	Monitoring Well	177.77	6.71	171.06	8.12	169.65	10.57	167.20
18WW09	Monitoring Well	177.51	7.31	170.20	8.71	168.80	9.05	168.46
18WW10	Monitoring Well	182.26	9.61	172.65	10.59	171.67	11.03	171.23
18WW11	Monitoring Well	182.29	11.23	171.06	11.98	170.31	12.49	169.80
18WW14	Monitoring Well	186.47	17.03	169.44	17.53	168.94	17.50	168.97
18WW15	Monitoring Well	186.24	16.47	169.77	16.91	169.33	17.04	169.20
18WW16	Monitoring Well	201.88	32.04	169.84	32.39	169.49	33.43	168.45
18WW18	Monitoring Well	196.82	27.29	169.53	27.67	169.15	27.93	168.89
18WW19	Monitoring Well	179.56	9.27	170.29	10.20	169.36	12.12	167.44
18WW20	Monitoring Well	180.42	10.24	170.18	11.10	169.32	12.85	167.57
18WW21	Monitoring Well	195.20	26.17	169.03	26.49	168.71	26.68	168.52
18WW22	Monitoring Well	195.37	25.85	169.52	26.32	169.05	27.77	167.60
18WW24	Monitoring Well	176.40	3.72	172.68	7.29	169.11	8.00	168.40
18WW25	Monitoring Well	175.15	4.03	171.12	7.53	167.62	7.75	167.40
18CPTMW01SW	Monitoring Well	198.20	27.42	170.78	27.70	170.50	28.12	170.08
18CPTMW01DW	Monitoring Well	197.92	27.96	169.96	28.21	169.71	28.70	169.22
18CPTMW03SW	Monitoring Well	198.53	28.71	169.82	29.43	169.10	29.61	168.92
18CPTMW04	Monitoring Well	196.60	24.57	172.03	25.02	171.58	25.12	171.48
18CPTMW04SW	Monitoring Well	196.42	26.56	169.86	26.92	169.50	27.46	168.96
18CPTMW06	Monitoring Well	198.12	28.35	169.77	28.96	169.16	29.12	169.00

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Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 4/25/18	Groundwater Elevation (feet amsl) 4/25/18	Depth to Water (feet) 5/31/18	Groundwater Elevation (feet amsl) 5/31/18	Depth to Water (feet) 6/26/18	Groundwater Elevation (feet amsl) 6/26/18
18CPTMW07	Monitoring Well	197.32	27.68	169.64	28.05	169.27	28.47	168.85
18CPTMW08SW	Monitoring Well	196.38	26.48	169.90	27.32	169.06	27.50	168.88
18CPTMW08DW	Monitoring Well	196.59	26.67	169.92	27.44	169.15	28.00	168.59
18CPTMW10SW	Monitoring Well	186.98	16.99	169.99	17.41	169.57	18.09	168.89
18CPTMW10DW	Monitoring Well	187.38	17.41	169.97	17.84	169.54	18.92	168.46
18CPTMW12SW	Monitoring Well	190.90	21.03	169.87	21.52	169.38	22.07	168.83
18CPTMW12DW	Monitoring Well	190.25	20.35	169.90	20.87	169.38	21.61	168.64
18CPTMW14	Monitoring Well	196.69	27.49	169.20	28.11	168.58	27.47	169.22
18CPTMW15	Monitoring Well	179.79	8.01	171.78	10.08	169.71	11.10	168.69
18CPTMW16	Monitoring Well	175.37	4.17	171.20	7.14	168.23	7.29	168.08
18CPTMW18	Monitoring Well	194.53	27.00	167.53	27.49	167.04	27.08	167.45
18CPTMW19	Monitoring Well	193.59	24.13	169.46	24.67	168.92	24.32	169.27
18CPTMW19SW	Monitoring Well	193.29	23.33	169.96	23.94	169.35	24.70	168.59
18CPTMW22SW	Monitoring Well	187.79	18.25	169.54	18.88	168.91	18.98	168.81
18CPTMW22R	Monitoring Well	187.23	5.16	182.07	6.22	181.01	10.60	176.63
18CPTMW22DW	Monitoring Well	188.00	18.26	169.74	18.81	169.19	19.00	169.00
18CPTMW23	Monitoring Well	177.47	5.42	172.05	7.07	170.40	9.04	168.43
18CPTMW23SW	Monitoring Well	177.43	6.98	170.45	8.21	169.22	8.73	168.70
18CPTMW24	Monitoring Well	194.89	26.35	168.54	26.79	168.10	26.85	168.04
18CPTMW26	Monitoring Well	182.60	16.90	165.70	17.12	165.48	17.30	165.30
18CPTMW26SW	Monitoring Well	182.00	12.21	169.79	13.06	168.94	12.82	169.18
1824HBSW7	Surface Water Sample	167.92	2.48	170.40	0.68	168.60	0.25	168.17

Notes:
amsl - above mean sea level

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Table 4. Treated Groundwater Discharged to Harrison Bayou - April 2018 through June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Date	Harrison Bayou Flow (gpm)	Maximum Rate Allowed (gpm)	Released Flow Rate From GWTP To Harrison Bayou (gpm)	Volume Release to Harrison Bayou from GWTP (Gallons)	Volume Released to INF Pond from GWTP (Gallons)	Combined Total Flow Rate Released To Harrison Bayou (gpm)	Combined Total Volume Released from GWTP (Gallons)
04/01/2018	FLOOD STAGE	MAXIMUM	15.4	22,115	0.0	15.4	22,115
04/02/2018	32,171	10,763	11.4	16,438	0.0	11.4	16,438
04/03/2018	21,127	7,068	16.1	23,232	0.0	16.1	23,232
04/04/2018	22,693	7,592	5.9	8,520	0.0	5.9	8,520
04/05/2018	13,254	4,434	16.1	23,255	0.0	16.1	23,255
04/06/2018	6,580	2,201	14.9	21,388	0.0	14.9	21,388
04/07/2018	FLOOD STAGE	MAXIMUM	15.6	22,472	0.0	15.6	22,472
04/08/2018	FLOOD STAGE	MAXIMUM	4.7	6,813	0.0	4.7	6,813
04/09/2018	17,987	6,018	18.8	27,072	0.0	18.8	27,072
04/10/2018	13,865	4,639	1.2	1,770	0.0	1.2	1,770
04/11/2018	6,594	2,206	17.2	24,795	0.0	17.2	24,795
04/12/2018	5,627	1,882	15.3	22,030	0.0	15.3	22,030
04/13/2018	4,783	1,600	16.0	22,970	0.0	16.0	22,970
04/14/2018	4,548	1,521	11.6	16,680	0.0	11.6	16,680
04/15/2018	6,260	2,094	16.5	23,743	0.0	16.5	23,743
04/16/2018	3,925	1,313	25.4	36,542	0.0	25.4	36,542
04/17/2018	2,912	974	16.9	24,295	0.0	16.9	24,295
04/18/2018	2,411	806	14.9	21,510	0.0	14.9	21,510
04/19/2018	2,116	708	13.9	20,006	0.0	13.9	20,006
04/20/2018	1,417	474	12.7	18,283	0.0	12.7	18,283
04/21/2018	1,306	437	14.8	21,351	0.0	14.8	21,351
04/22/2018	FLOOD STAGE	MAXIMUM	16.4	23,615	0.0	16.4	23,615
04/23/2018	FLOOD STAGE	MAXIMUM	19.1	27,445	0.0	19.1	27,445
04/24/2018	FLOOD STAGE	MAXIMUM	15.1	21,760	0.0	15.1	21,760
04/25/2018	24,588	8,226	15.3	22,006	0.0	15.3	22,006
04/26/2018	16,474	5,512	13.8	19,884	0.0	13.8	19,884
04/27/2018	10,368	3,469	13.6	19,655	0.0	13.6	19,655
04/28/2018	5,316	1,778	15.5	22,391	0.0	15.5	22,391
04/29/2018	3,443	1,152	15.7	22,679	0.0	15.7	22,679
04/30/2018	2,824	944	18.2	26,173	0.0	18.2	26,173
05/01/2018	2,282	885	9.0	12,958	0.0	9.0	12,958

Table 4. Treated Groundwater Discharged to Harrison Bayou - April 2018 through June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Date	Harrison Bayou Flow (gpm)	Maximum Rate Allowed (gpm)	Released Flow Rate From GWTP To Harrison Bayou (gpm)	Volume Release to Harrison Bayou from GWTP (Gallons)	Volume Released to INF Pond from GWTP (Gallons)	Combined Total Flow Rate Released To Harrison Bayou (gpm)	Combined Total Volume Released from GWTP (Gallons)
05/02/2018	1,815	704	8.5	12,217	0.0	8.5	12,217
05/03/2018	1,499	581	9.5	13,747	0.0	9.5	13,747
05/04/2018	1,255	486	7.4	10,632	0.0	7.4	10,632
05/05/2018	1,518	589	2.3	3,332	0.0	2.3	3,332
05/06/2018	1,925	747	10.2	14,728	0.0	10.2	14,728
05/07/2018	1,582	613	16.2	23,299	0.0	16.2	23,299
05/08/2018	1,359	527	6.6	9,501	0.0	6.6	9,501
05/09/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/10/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/11/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/12/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/13/2018	No Release	NA	0.0	0.0	0.0	0.0	0
05/14/2018	583	226	5.5	7,971	0.0	5.5	7,971
05/15/2018	532	206	17.9	25,718	0.0	17.9	25,718
05/16/2018	382	148	17.0	24,539	0.0	17.0	24,539
05/17/2018	338	131	9.3	13,461	0.0	9.3	13,461
05/18/2018	334	129	7.7	11,111	0.0	7.7	11,111
05/19/2018	351	136	9.3	13,324	0.0	9.3	13,324
05/20/2018	328	127	9.2	13,301	0.0	9.2	13,301
05/21/2018	289	112	14.2	20,498	0.0	14.2	20,498
05/22/2018	244	94	9.9	14,220	0.0	9.9	14,220
05/23/2018	205	79	15.1	21,692	0.0	15.1	21,692
05/24/2018	185	71	15.4	22,105	0.0	15.4	22,105
05/25/2018	199	77	12.6	18,201	0.0	12.6	18,201
05/26/2018	185	71	10.8	15,599	0.0	10.8	15,599
05/27/2018	168	65	11.1	15,953	0.0	11.1	15,953
05/28/2018	236	91	11.7	16,888	0.0	11.7	16,888
05/29/2018	256	99	13.7	19,785	0.0	13.7	19,785
05/30/2018	232	90	9.8	14,129	0.0	9.8	14,129
05/31/2018	274	106	10.0	14,460	0.0	10.0	14,460

Table 4. Treated Groundwater Discharged to Harrison Bayou - April 2018 through June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Date	Harrison Bayou Flow (gpm)	Maximum Rate Allowed (gpm)	Released Flow Rate From GWTP To Harrison Bayou (gpm)	Volume Release to Harrison Bayou from GWTP (Gallons)	Volume Released to INF Pond from GWTP (Gallons)	Combined Total Flow Rate Released To Harrison Bayou (gpm)	Combined Total Volume Released from GWTP (Gallons)
06/01/2018	233	90	7.8	11,288	0.0	7.8	11,288
06/02/2018	168	65	9.5	13,735	0.0	9.5	13,735
06/03/2018	109	42	9.7	14,019	0.0	9.7	14,019
06/04/2018	73	28	12.5	18,062	0.0	12.5	18,062
06/05/2018	491	143	1.8	2,654	0.0	1.8	2,654
06/06/2018	1,408	411	10.0	14,466	0.0	10.0	14,466
06/07/2018	1,457	425	9.9	14,292	0.0	9.9	14,292
06/08/2018	560	163	7.8	11,299	0.0	7.8	11,299
06/09/2018	230	67	8.7	12,589	0.0	8.7	12,589
06/10/2018	202	59	8.9	12,754	0.0	8.9	12,754
06/11/2018	170	49	11.8	17,062	0.0	11.8	17,062
06/12/2018	122	35	9.1	13,168	0.0	9.1	13,168
06/13/2018	193	56	8.6	12,424	0.0	8.6	12,424
06/14/2018	130	38	9.2	13,231	0.0	9.2	13,231
06/15/2018	63	18	8.8	12,626	0.0	8.8	12,626
06/16/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/17/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/18/2018	No Release	NA	0.0	0.0	42,103	0.0	42,103
06/19/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/20/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/21/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/22/2018	No Release	NA	0.0	0.0	3,092	0.0	3,092
06/23/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/24/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/25/2018	No Release	NA	0.0	0.0	65,571	0.0	65,571
06/26/2018	No Release	NA	0.0	0.0	25,013	0.0	25,013
06/27/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/28/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/29/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
06/30/2018	No Release	NA	0.0	0.0	0.0	0.0	0.0
			Totals	1,227,926	135,779		1,363,705

Notes:
gpm - gallons per minute NA - not applicable
FLOOD STAGE - does not have a value and is based upon the bayou flowing outside of the banks.
MAXIMUM - Flow rate of 120 gpm based upon the discharge pump. However, typically flow is limited by the discharge from the FBR at 30 gpm.

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Table 5. Monthly Groundwater Extraction Quantities
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

ICT or Well Number	April 2018 (gallons)	May 2018 (gallons)	June 2018 (gallons)	Total
1	0	0	0	0
2	41,284	42,973	48,983	133,240
3	0	0	0	0
4	82,435	65,278	51,863	199,576
5	0	0	0	0
EW-1	1,848	2,319	7,041	11,208
7	12,115	7,790	5,024	24,929
8	102,277	76,116	103,286	281,679
18WW17	10,623	9,692	9,204	29,519
10	0	0	0	0
11	0	0	32,414	32,414
12A	10,364	9,196	8,404	27,964
12B	0	0	339	339
12C	21,071	15,740	3,305	40,116
12D	49,676	38,439	32,059	120,174
12E	24,455	16,631	12,601	53,687
13A	28,073	27,721	24,689	80,483
13B	50,679	73,072	57,058	180,809
13C	46,487	0	0	46,487
13D	34,264	21,977	15,721	71,962
13E	0	0	0	0
13F	4,770	882	121	5,773
14A	0	0	0	0
14B	32,792	18,283	19,909	70,984
14C	73,717	79	7,280	81,076
14D	149,398	45,276	0	194,674
14E	60,750	61,039	64,506	186,295
Total LHAAP-18/24	***837,078***	***532,503***	***503,807***	***1,873,388***
LHAAP-16	71,921	25,901	10,325	
Total LHAAP-16	***71,921***	***25,901***	***10,325***	***108,147***
TOTAL	**908,999**	**558,404**	**514,132**	**1,981,535**

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	AWD1_061218 6/12/18	AWD3_061818 6/18/18	AWD4_061918 6/19/18	18CPTMW01DW _060618 6/6/18	18CPTMW01SW _060618 6/6/18	18CPTMW03SW _061118 6/11/18	18CPTMW04 _060718 6/7/18	18CPTMW04 _060718_a 6/7/18	18CPTMW04SW _060718 6/7/18	18CPTMW06 _060718 6/7/18	18CPTMW07 _061418 6/14/18	18CPTMW08SW -060418 6/4/18	18CPTMW08DW -060418+ 6/4/18	18CPTMW10SW _062118 6/21/18	18CPTMW10DW _062118 6/21/18
		Aquifer Zone:	Shallow	Shallow	Shallow	Wilcox	Wilcox	Wilcox	Shallow	Shallow	Wilcox	Wilcox	Wilcox	Wilcox	Wilcox	Wilcox	Wilcox
		Lab Package	HS18060613	HS18060954	HS18060947	HS18060352	HS18060352	HS18060552	HS18060425	HS18060425	HS18060425	HS18060425	HS18060725	HS18060188	HS18060188	HS18061144	HS18061144
Perchlorate (6850)																	
Perchlorate	µg/L	17*	NA	**250**	< 2.0 U	< 2.0 U	< 2.0 U	**62**	**410**	**430**	< 2.0 U	< 2.0 U	**2.1 J**	**61,000**	**1,000**	< 2.0 U	**12**
Volatile Organic Compounds (8260C)																	
1,1,1,2-Tetrachloroethane	µg/L	110	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethene	µg/L	7	NA	< 0.5 U	< 0.5 U	< 0.5 U	**79**	< 0.5 U	**2.1**	**2.0**	< 0.5 U	< 0.5 U	< 0.5 UJ	**3.4**	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloroethane	µg/L	5	NA	**1.8**	< 0.5 U	< 0.5 U	< 25 U	**2.9**	**3.3**	**3.3**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichloropropane	µg/L	29	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Acetone	µg/L	92,000	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	**1.4**	**0.59 J**	**0.55 J**	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromochloromethane	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	µg/L	140	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	µg/L	100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	µg/L	41,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroform	µg/L	1,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	**1.3**	**1.2**	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	NA	**4.3**	**0.71 J**	< 0.5 U	< 25 U	**4.9**	**42**	**42**	< 0.5 U	< 0.5 U	< 0.5 UJ	**11**	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	µg/L	380	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Ethylbenzene	µg/L	700	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	NA	< 1.0 U	< 1.0 U	**2.1**	**840**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	NA	< 0.5 UJ	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 UJ
n-Butylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	AWD1_061218 6/12/18	AWD3_061818 6/18/18	AWD4_061918 6/19/18	18CPTMW01DW _060618 6/6/18	18CPTMW01SW _060618 6/6/18	18CPTMW03SW _061118 6/11/18	18CPTMW04 _060718 6/7/18	18CPTMW04 _060718_a 6/7/18	18CPTMW04SW _060718 6/7/18	18CPTMW06 _060718 6/7/18	18CPTMW07 _061418 6/14/18	18CPTMW08SW -060418 6/4/18	18CPTMW08DW -060418+ 6/4/18	18CPTMW10SW _062118 6/21/18	18CPTMW10DW _062118 6/21/18
n-Propylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	µg/L	100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	µg/L	1,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	**1.4**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	NA	**100**	**1.8**	< 0.5 U	**81**	**28**	**800**	**790**	< 0.5 U	< 0.5 U	< 0.5 UJ	**43**	< 0.5 U	< 0.5 U	**1.9**
Trichlorofluoromethane	µg/L	31,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 25 U	< 0.5 U	**0.66 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.9**	< 0.5 U	< 0.5 U	< 0.5 U
Metals (6020A)																	
Aluminum	mg/L	100	NA	**0.980**	**1.66**	**0.0444**	**0.0185**	0.0131 UB	NA	NA	**0.117**	NA	NA	NA	NA	NA	**0.201**
Antimony	mg/L	0.006	NA	< 0.00200 U	< 0.00200 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	NA	NA	NA	NA	< 0.00100 U
Arsenic	mg/L	0.01	NA	**0.00142 J**	**0.000586 J**	**0.00249**	**0.0131**	< 0.00100 U	NA	NA	**0.00327**	NA	NA	NA	NA	NA	**0.00231**
Barium	mg/L	2	NA	**0.0750**	**0.253**	**0.109**	**0.991**	**0.564**	NA	NA	**0.888**	NA	NA	NA	NA	NA	**0.119**
Beryllium	mg/L	0.004	NA	**0.000409 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	NA	NA	NA	NA	< 0.00100 U
Cadmium	mg/L	0.005	NA	< 0.00100 U	< 0.00100 U	**0.000206 J**	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	NA	NA	NA	NA	< 0.00100 U
Calcium	mg/L	NV	NA	**1.15**	**9.37**	**7.11**	**31.0**	**44.2**	NA	NA	**29.4**	NA	NA	NA	NA	NA	**7.34**
Chromium	mg/L	0.1	NA	**1.68**	**1.22**	**0.0172**	< 0.00100 U	**0.00748**	NA	NA	**0.0104**	NA	NA	NA	NA	NA	**0.00681**
Cobalt	mg/L	6.1	NA	**0.00769**	**0.0219**	**0.000456 J**	**0.000762 J**	**0.00104 J**	NA	NA	**0.0140**	NA	NA	NA	NA	NA	**0.000471 J**
Copper	mg/L	1.3	NA	**0.0212**	**0.0148**	< 0.00200 U	< 0.00200 U	< 0.00200 U	NA	NA	< 0.00200 U	NA	NA	NA	NA	NA	**0.00138 J**
Iron	mg/L	NV	NA	**7.23**	**9.66**	**0.837**	**58.5**	**6.15**	NA	NA	**14.3**	NA	NA	NA	NA	NA	**3.41**
Lead	mg/L	0.015	NA	**0.000822 J**	**0.000652 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	NA	NA	NA	NA	**0.000748 J**
Magnesium	mg/L	NV	NA	**0.721**	**5.53**	**4.85**	**19.0**	**18.8**	NA	NA	**16.8**	NA	NA	NA	NA	NA	**5.33**
Manganese	mg/L	1.1*	NA	**0.0833**	**0.179**	**0.0264**	**0.632**	**0.287**	NA	NA	**0.713**	NA	NA	NA	NA	NA	**0.0734**
Nickel	mg/L	0.49*	NA	**0.277**	**1.37**	**0.00235**	**0.00125 J**	**0.00461**	NA	NA	**0.00849**	NA	NA	NA	NA	NA	**0.00219**
Potassium	mg/L	NV	NA	**0.736**	**0.647**	**184**	**4.95**	**165**	NA	NA	**70.9**	NA	NA	NA	NA	NA	**92.7**
Selenium	mg/L	0.05	NA	**0.00365**	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	NA	NA	< 0.00200 U	NA	NA	NA	NA	NA	< 0.00200 U
Silver	mg/L	0.51	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	NA	NA	NA	NA	< 0.00100 U
Sodium	mg/L	NV	NA	**28.5**	**56.9**	**291**	**103**	**250**	NA	NA	**116**	NA	NA	NA	NA	NA	**176**
Thallium	mg/L	0.002	NA	< 0.00100 U	< 0.00100 U	**0.000383 J**	< 0.00100 U	**0.000295 J**	NA	NA	< 0.00100 U	NA	NA	NA	NA	NA	< 0.00100 U
Vanadium	mg/L	0.72	NA	**0.00559**	**0.00258 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	**0.000798 J**	NA	NA	NA	NA	NA	**0.00162 J**
Zinc	mg/L	31	NA	**0.0128**	**0.00749**	**0.00393 J**	**0.00504**	**0.00617**	NA	NA	**0.0279**	NA	NA	NA	NA	NA	**0.00500**
Mercury	mg/L	0.002	NA	< 0.000500 U	0.0000930 UB	< 0.0000500 U	< 0.0000500 U	< 0.000500 U	NA	NA	< 0.0000500 U	NA	NA	NA	NA	NA	< 0.000500 U
1,4-Dioxane (8270D SIM)																	
1,4-Dioxane	µg/L	9.1	**8.3**	NA	**0.055**	**0.016**	< 0.010 U	**0.48**	**2.8**	**3.4**	< 0.010 U	**0.78**	< 0.010 U	**0.38**	**0.15**	< 0.010 U	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC/PCL - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

a - duplicate sample

+ - VOCs were inadvertently analyzed

Wells 18WW16 and 125 were dry

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	18CPTMW12SW _061818 6/18/18	18CPTMW12DW _061818 6/18/18	18CPTMW14 _061318 6/13/18	18CPTMW15 _060618 6/6/18	18CPTMW15 _06062018_a 6/6/18	18CPTMW16 _061518 6/15/18	18CPTMW18 _061118 6/11/18	18CPTMW19 _061218 6/12/18	18CPTMW19SW _061218 6/12/18	18CPTMW22R _061518 6/15/18	18CPTMW22SW _061518 6/15/18	18CPTMW22DW _061518 6/15/18	18CPTMW23 -060418 6/4/18	18CPTMW23SW -060418 6/4/18	18CPTMW24 _061318 6/13/18
		Aquifer Zone:	Wilcox	Wilcox	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Wilcox	Shallow	Wilcox	Wilcox	Shallow	Wilcox	Shallow
		Lab Package	HS18060954	HS18060954	HS18060669	HS18060352	HS18060352	HS18060825	HS18060552	HS18060613	HS18060613	HS18060825	HS18060825	HS18060825	HS18060188	HS18060188	HS18060669
Perchlorate (6850)																	
Perchlorate	µg/L	17*	**1.0 J**	**3.0 J**	**1,600**	**380**	**400**	< 200 U	<2.0 U	**15**	**5.9**	< 200 U	**4,800**	< 2,000 U	**5,700**	< 2.0 U	**23**
Volatile Organic Compounds (8260C)																	
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**0.93 J**	< 0.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	**0.97 J**	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**7.6**	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	**4.9**	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**250**	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Acetone	µg/L	92,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	**0.43 J**	**3.3 J**	**1.4 J**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**1.5**	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	µg/L	140	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	µg/L	41,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	**7.8**	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**4.1**	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	**3.1**	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**180**	< 0.5 U	**23**
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Ethylbenzene	µg/L	700	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	18CPTMW12SW _061818 6/18/18	18CPTMW12DW _061818 6/18/18	18CPTMW14 _061318 6/13/18	18CPTMW15 _060618 6/6/18	18CPTMW15 _06062018_a 6/6/18	18CPTMW16 _061518 6/15/18	18CPTMW18 _061118 6/11/18	18CPTMW19 _061218 6/12/18	18CPTMW19SW _061218 6/12/18	18CPTMW22R _061518 6/15/18	18CPTMW22SW _061518 6/15/18	18CPTMW22DW _061518 6/15/18	18CPTMW23 -060418 6/4/18	18CPTMW23SW -060418 6/4/18	18CPTMW24 _061318 6/13/18
n-Propylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 0.5 U	< 0.5 U	**16**	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**0.96 J**	< 0.5 U	< 0.5 U
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	**3.5**	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	< 0.5 U	**600**	**1.8**	**1.8**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**2.0 J**	< 0.5 U	**3,400**	< 0.5 U	**8**
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**2.9**	< 0.5 U	< 0.5 U
Metals (6020A)																	
Aluminum	mg/L	100	**0.0208**	0.0124 UB	**1.40**	NA	NA	NA	**0.0252**	NA	**0.622**	**13.5**	**0.174**	**0.121**	NA	NA	NA
Antimony	mg/L	0.006	< 0.00100 U	< 0.00100 U	**0.000451 J**	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	NA
Arsenic	mg/L	0.01	**0.00137 J**	**0.00304**	**0.00217**	NA	NA	NA	**0.00145 J**	NA	**0.00310**	**0.00347**	**0.000721 J**	**0.00702**	NA	NA	NA
Barium	mg/L	2	**0.810**	**0.124**	**2.05**	NA	NA	NA	**0.665**	NA	**0.164**	**0.280**	**0.242**	**0.101**	NA	NA	NA
Beryllium	mg/L	0.004	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	**0.00150 J**	< 0.00100 U	< 0.00100 U	NA	NA	NA
Cadmium	mg/L	0.005	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	NA
Calcium	mg/L	NV	**54.4**	**6.71**	**268**	NA	NA	NA	**292**	NA	**11.2**	**2.72**	**141**	**11.7**	NA	NA	NA
Chromium	mg/L	0.1	**0.0109**	**0.00984**	**0.0545**	NA	NA	NA	**0.00831**	NA	**0.00557**	**0.0156**	**0.0374**	< 0.00100 U	NA	NA	NA
Cobalt	mg/L	6.1	**0.00532**	< 0.00100 U	**0.00219 J**	NA	NA	NA	**0.0150**	NA	**0.00700**	**0.0199**	< 0.00100 U	**0.000655 J**	NA	NA	NA
Copper	mg/L	1.3	< 0.00200 U	< 0.00200 U	**0.00191 J**	NA	NA	NA	< 0.00200 U	NA	**0.00371**	**0.0120**	< 0.00200 U	< 0.00200 U	NA	NA	NA
Iron	mg/L	NV	**2.03**	**1.10**	**0.919**	NA	NA	NA	**1.02**	NA	**9.75**	**16.8**	**0.109 J**	**2.73**	NA	NA	NA
Lead	mg/L	0.015	< 0.00100 U	< 0.00100 U	**0.000625 J**	NA	NA	NA	< 0.00100 U	NA	**0.000870 J**	**0.0107**	< 0.00100 U	< 0.00100 U	NA	NA	NA
Magnesium	mg/L	NV	**33.9**	**3.84**	**43.2**	NA	NA	NA	**182**	NA	**5.44**	**2.93**	**6.60**	**5.26**	NA	NA	NA
Manganese	mg/L	1.1*	**0.835**	**0.0395**	**0.0800**	NA	NA	NA	**2.06**	NA	**0.391**	**0.145**	**0.0895**	**0.101**	NA	NA	NA
Nickel	mg/L	0.49*	**0.00772**	< 0.00100 U	**0.00223**	NA	NA	NA	**0.0131**	NA	**0.00241**	**0.0156**	< 0.00100 U	< 0.00100 U	NA	NA	NA
Potassium	mg/L	NV	**59.4**	**96.1**	**17.9**	NA	NA	NA	**4.87**	NA	**2.05**	**1.35**	**159**	**2.49**	NA	NA	NA
Selenium	mg/L	0.05	< 0.00200 U	< 0.00200 U	< 0.00200 U	NA	NA	NA	< 0.00200 U	NA	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	NA	NA	NA
Silver	mg/L	0.51	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	NA
Sodium	mg/L	NV	**236**	**179**	**358**	NA	NA	NA	**737**	NA	**25.7**	**23.0**	**266**	**231**	NA	NA	NA
Thallium	mg/L	0.002	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	**0.000223 J**	< 0.00100 U	< 0.00100 U	NA	NA	NA
Vanadium	mg/L	0.72	< 0.00100 U	< 0.00100 U	**0.00188 J**	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	**0.0248**	< 0.00100 U	< 0.00100 U	NA	NA	NA
Zinc	mg/L	31	**0.0130**	**0.00336 J**	**0.00521**	NA	NA	NA	**0.0131**	NA	**0.0153**	**0.0473**	**0.00543**	**0.00401**	NA	NA	NA
Mercury	mg/L	0.002	< 0.000500 U	< 0.000500 U	< 0.000500 U	NA	NA	NA	< 0.000500 U	NA	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	NA	NA	NA
1,4-Dioxane (8270D SIM)																	
1,4-Dioxane	µg/L	9.1	**0.05**	**0.084**	< 0.010 U	**0.065 J**	**0.031 J**	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	**0.43**	< 0.010 U	**3.9**	< 0.010 U	< 0.010 U

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC/PCL - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residentia

a - duplicate sample

+ - VOCs were inadvertently analyzed

Wells 18WW16 and 125 were dry

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	18CPTMW26SW _061418 6/14/18	17WW08 _061418 6/14/18	18WW02 _061918 6/19/18	18WW03 _061218 6/12/18	18WW03 _061218_a 6/12/18	18WW06 _061918 6/19/18	18WW08 _060718 6/7/18	18WW09 _060718 6/7/18	18WW14 _061918 6/19/18	18WW17 _060618 6/6/18	18WW18 _060618 6/6/18	18WW19 _061918 6/19/18	18WW19 _061918_a 6/19/18	18WW20 _061918 6/19/18	18WW22 _061118 6/11/18	18WW24 _060418 6/4/18
		Aquifer Zone:	Wilcox	Shallow	Wilcox	Wilcox	Wilcox	Wilcox	Shallow	Wilcox	Shallow	Shallow	Wilcox	Wilcox	Wilcox	Shallow	Shallow	Shallow
		Lab Package	HS18060725	HS18060725	HS18060947	HS18060613	HS18060613	HS18060947	HS18060425	HS18060425	HS18060947	HS18060352	HS18060352	HD18060947	HS18060947	HS18060947	HS18060552	HS18060188
Perchlorate (6850)																		
Perchlorate	µg/L	17*	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**2,400**	**130**	< 2.0 U	< 2.0 U	**97,000**	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	<2.0 U	< 2.0 U
Volatile Organic Compounds (8260C)																		
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Acetone	µg/L	92,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	**0.50 J**	**0.75 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	µg/L	140	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	µg/L	41,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	**0.83 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Ethylbenzene	µg/L	700	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

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n-Propylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	**40**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Metals (6020A)																		
Aluminum	mg/L	100	NA	**0.406**	**0.537**	0.0100 UB	0.0103 UB	NA	NA	**1.71**	**1.26**	**0.00998 J**	**0.466**	**0.592 J**	**0.836 J**	**0.0783**	**0.433**	**0.195**
Antimony	mg/L	0.006	NA	**0.000565 J**	**0.000755 J**	< 0.00100 U	< 0.00100 U	NA	NA	**0.00153 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U
Arsenic	mg/L	0.01	NA	**0.0101**	**0.000533 J**	< 0.00100 U	< 0.00100 U	NA	NA	**0.00741**	**0.00205**	**0.000631 J**	**0.00589**	**0.000726 J**	**0.000632 J**	< 0.00100 U	**0.00182 J**	**0.000955 J**
Barium	mg/L	2	NA	**0.487**	**0.0477**	**0.169**	**0.164**	NA	NA	**0.293**	**1.02**	**3.43**	**1.30**	**0.129**	**0.127**	**0.111**	**0.179**	**0.0467**
Beryllium	mg/L	0.004	NA	< 0.00100 U	< 0.0100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	**0.000202 J**	< 0.00100 U	**0.000218 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00131 J**
Cadmium	mg/L	0.005	NA	**0.000425 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	**0.000617 J**	**0.000580 J**	**0.000414 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U
Calcium	mg/L	NV	NA	**94.4**	**7.27**	**7.71**	**7.69**	NA	NA	**19.2**	**41.8**	**332**	**54.4**	**6.98**	**7.07**	**2.74**	**53.4**	**44.4**
Chromium	mg/L	0.1	NA	**1.23**	**0.00569**	**0.00150 J**	**0.00126 J**	NA	NA	**0.0417**	**2.05**	**0.0452**	**0.0161**	**0.0127**	**0.0141**	**0.00471**	**0.0303**	**0.000925 J**
Cobalt	mg/L	6.1	NA	**0.0172**	**0.000277 J**	< 0.00100 U	< 0.00100 U	NA	NA	**0.00287 J**	**0.0106**	**0.000732 J**	**0.000661 J**	**0.000584 J**	**0.000640 J**	**0.00126 J**	**0.000415 J**	**0.0109**
Copper	mg/L	1.3	NA	**0.0198**	**0.00601**	< 0.00200 U	< 0.00200 U	NA	NA	**0.00262**	**0.0369**	**0.00112 J**	**0.00480**	**0.00173 J**	**0.00196 J**	< 0.00200 U	**0.00135 J**	< 0.00200 U
Iron	mg/L	NV	NA	**31.6**	**2.11**	**4.17**	**4.36**	NA	NA	**45.1**	**8.78**	**0.294**	**102**	**17.7**	**18.6**	**12.8**	**0.0590 J**	**0.195 J**
Lead	mg/L	0.015	NA	**0.000947 J**	**0.00136 J**	< 0.00100 U	< 0.00100 U	NA	NA	**0.00192 J**	**0.00128 J**	< 0.00100 U	**0.000775 J**	**0.00102 J**	**0.00110 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U
Magnesium	mg/L	NV	NA	**57.8**	**1.26**	**5.27**	**5.15**	NA	NA	**10.3**	**30.7**	**217**	**32.4**	**3.25**	**3.36**	**1.75**	**1.29**	**38.4**
Manganese	mg/L	1.1*	NA	**1.35**	**0.0905**	**0.0854**	**0.0864**	NA	NA	**0.874**	**0.514**	**0.0362**	**2.12**	**0.270**	**0.287**	**0.182**	**0.00264 J**	**0.932**
Nickel	mg/L	0.49*	NA	**0.559**	**0.00282**	< 0.00100 U	< 0.00100 U	NA	NA	**0.0403**	**0.304**	**0.0512**	**0.00906**	**0.00222**	**0.00274**	**0.00259**	< 0.00100 U	**0.0508**
Potassium	mg/L	NV	NA	**2.10**	**1.89**	**1.88**	**1.88**	NA	NA	**3.16**	**3.95**	**1.72**	**3.58**	**2.08**	**2.15**	**1.45**	**6.20**	**0.604**
Selenium	mg/L	0.05	NA	**0.00226**	< 0.00200 U	< 0.00200 U	< 0.00200 U	NA	NA	< 0.00200 U	< 0.00200 U	**0.0122**	**0.00151 J**	< 0.00200 U	< 0.00200 U	< 0.00200 U	**0.00164 J**	**0.00409**
Silver	mg/L	0.51	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U
Sodium	mg/L	NV	NA	**411**	**19.8**	**98.5**	**97.5**	NA	NA	**38.5**	**109**	**1,060**	**143**	**19.9**	**20.5**	**25.6**	**56.6**	**699**
Thallium	mg/L	0.002	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.000463 J**
Vanadium	mg/L	0.72	NA	**0.00153 J**	**0.000628 J**	< 0.00100 U	< 0.00100 U	NA	NA	**0.00666**	**0.00956**	**0.00233 J**	< 0.00100 U	**0.00117 J**	**0.00106 J**	< 0.00100 U	**0.0285**	**0.00156 J**
Zinc	mg/L	31	NA	**0.0161**	**0.00605**	< 0.00250 U	**0.00206 J**	NA	NA	**0.0128**	**0.0241**	**0.0367**	**0.00670**	**0.00762**	**0.00690**	**0.00501**	< 0.00250 U	**0.0355**
Mercury	mg/L	0.002	NA	< 0.000500 U	0.0000600 UB	< 0.000500 U	< 0.000500 U	NA	NA	< 0.0000500 U	0.0000410 UB	< 0.0000500 U	**0.0000530 J**	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.0000500 U
1,4-Dioxane (8270D SIM)																		
1,4-Dioxane	µg/L	9.1	< 0.010 U	NA	0.012	< 0.010 U	< 0.010 U	**0.018**	< 0.010 U	< 0.010 U	NA	NA	< 0.010 U	NA	NA	< 0.010 U	< 0.010 U	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC/PCL - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residentia

a - duplicate sample

+ - VOCs were inadvertently analyzed

Wells 18WW16 and 125 were dry

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	18WW25 _060418 6/4/18	C01_062018 6/20/18	C02_061818 6/18/18	C03_061118 6/11/18	C04_060618 6/6/18	C06_062018 6/20/18	C08_061318 6/13/18	C09_062018 6/20/18	MW1_061118 6/11/18	MW1_061118_a 6/11/18	MW2_060618 6/6/18	MW3_061418 6/14/18	MW5_060418 6/4/18	MW6_062018 6/20/18	MW7_061818 6/18/18	MW8_060518 6/5/18
		Aquifer Zone:	Shallow	Wilcox	Shallow	Wilcox	Wilcox	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS18060188	HS18061144	HS18060954	HS18060552	HS18060352	HS18061144	HS18060669	HS18061144	HS18060552	HS18060552	HS18060352	HS18060725	HS18060188	HS18061144	HS18060954	HS18060281
Perchlorate (6850)																		
Perchlorate	µg/L	17*	< 2.0 U	< 2.0 U	< 2.0 U	**29**	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**5,900**	**6,000**	**1.3 J**	**16,000**	**41,000**	**5,600**	**21,000**	**8,800 J**
Volatile Organic Compounds (8260C)																		
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	**3.7**	**2.2**	**2.0**	**1.1**	< 0.5 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	**21**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**240**	**240**	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	**13**	**3.8**
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	**0.87 J**	< 0.5 U	< 0.5 UJ
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 500 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 500 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 500 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Acetone	µg/L	92,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 500 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**2.8 J**	**3.0 J**	< 250 U	**0.28 J**	< 0.5 U	< 0.5 U	< 0.5 U	**0.45 J**
Bromobenzene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	µg/L	140	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 5.0 U	< 500 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	µg/L	41,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**9.3 J**	**8.5 J**	< 250 U	**1.3**	< 0.5 U	< 0.5 U	**5.1**	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1,900**	**1,900**	**34,000**	**76**	**8.7**	**5.9**	**4.7**	**6.8**
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Ethylbenzene	µg/L	700	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 500 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	**240,000**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 UJ	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	18WW25 _060418 6/4/18	C01_062018 6/20/18	C02_061818 6/18/18	C03_061118 6/11/18	C04_060618 6/6/18	C06_062018 6/20/18	C08_061318 6/13/18	C09_062018 6/20/18	MW1_061118 6/11/18	MW1_061118_a 6/11/18	MW2_060618 6/6/18	MW3_061418 6/14/18	MW5_060418 6/4/18	MW6_062018 6/20/18	MW7_061818 6/18/18	MW8_060518 6/5/18
n-Propylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	**1**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	**2.6**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**5,900**	**6,100**	**5,000**	**300**	**27**	**15**	**420**	**190**
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 250 U	**6.5**	**1.1**	**0.99 J**	< 0.5 U	< 0.5 U
Metals (6020A)																		
Aluminum	mg/L	100	**0.110**	NA	NA	0.00810 UB	NA	0.0181 UB	NA	**0.325**	**0.0481**	**0.0444**	NA	0.00590 UB	NA	0.0103 UB	NA	NA
Antimony	mg/L	0.006	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	**0.00102 J**	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	NA	NA
Arsenic	mg/L	0.01	**0.0166**	NA	NA	**0.00168 J**	NA	**0.000942 J**	NA	**0.000406 J**	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	**0.00103 J**	NA	NA
Barium	mg/L	2	**0.646**	NA	NA	**1.44**	NA	**0.876**	NA	**0.125**	**1.09**	**1.12**	NA	**0.516**	NA	**0.780**	NA	NA
Beryllium	mg/L	0.004	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00200 U	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	NA	NA
Cadmium	mg/L	0.005	< 0.00100 U	NA	NA	**0.000303 J**	NA	< 0.00100 U	NA	**0.000203 J**	**0.000510 J**	**0.000461 J**	NA	**0.000290 J**	NA	< 0.00100 U	NA	NA
Calcium	mg/L	NV	**27.0**	NA	NA	**51.2**	NA	**21.7**	NA	**39.7**	**38.1**	**37.5**	NA	**26.2**	NA	**26.7**	NA	NA
Chromium	mg/L	0.1	**0.000504 J**	NA	NA	< 0.00100 U	NA	< 0.00100 U	NA	**0.00271 J**	**1.60**	**1.63**	NA	**0.00722**	NA	**0.0977**	NA	NA
Cobalt	mg/L	6.1	**0.00464 J**	NA	NA	**0.000367 J**	NA	**0.00173 J**	NA	**0.000582 J**	**0.0353**	**0.0322**	NA	**0.00544**	NA	**0.00132 J**	NA	NA
Copper	mg/L	1.3	< 0.00200 U	NA	NA	< 0.00200 U	NA	< 0.00200 U	NA	< 0.00200 U	**0.0101**	**0.0103**	NA	< 0.00200 U	NA	**0.00176 J**	NA	NA
Iron	mg/L	NV	**45.5**	NA	NA	**81.7**	NA	**43.7**	NA	**0.280**	**11.1**	**9.74**	NA	**0.723**	NA	**0.992**	NA	NA
Lead	mg/L	0.015	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	NA	NA
Magnesium	mg/L	NV	**16.1**	NA	NA	**30.1**	NA	**9.40**	NA	**9.50**	**31.1**	**32.7**	NA	**15.4**	NA	**22.6**	NA	NA
Manganese	mg/L	1.1*	**3.60**	NA	NA	**1.48**	NA	**0.760**	NA	**0.0365**	**1.51**	**1.47**	NA	**1.03**	NA	**0.0568**	NA	NA
Nickel	mg/L	0.49*	**0.00157 J**	NA	NA	< 0.00100 U	NA	**0.00176 J**	NA	**0.00157 J**	**1.31**	**1.18**	NA	**0.00392**	NA	**0.0214**	NA	NA
Potassium	mg/L	NV	**1.36**	NA	NA	**3.28**	NA	**3.25**	NA	**0.530**	**3.06**	**3.03**	NA	**1.54**	NA	**2.22**	NA	NA
Selenium	mg/L	0.05	< 0.00200 U	NA	NA	< 0.00200 U	NA	< 0.00200 U	NA	**0.00131 J**	< 0.00200 U	< 0.00200 U	NA	< 0.00200 U	NA	< 0.00200 U	NA	NA
Silver	mg/L	0.51	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	NA	NA
Sodium	mg/L	NV	**41.1**	NA	NA	**149**	NA	**168**	NA	**46.9**	**244**	**243**	NA	**223**	NA	**201**	NA	NA
Thallium	mg/L	0.002	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	**0.000289 J**	< 0.00100 U	NA	< 0.00100 U	NA	< 0.00100 U	NA	NA
Vanadium	mg/L	0.72	**0.000965 J**	NA	NA	< 0.00100 U	NA	< 0.00100 U	NA	**0.00212 J**	**0.00273 J**	**0.00270 J**	NA	< 0.00100 U	NA	**0.00130 J**	NA	NA
Zinc	mg/L	31	**0.00422**	NA	NA	**0.00764**	NA	**0.00697**	NA	**0.00397 J**	**0.00879**	**0.00847**	NA	**0.00618**	NA	**0.00958**	NA	NA
Mercury	mg/L	0.002	< 0.0000500 U	NA	NA	< 0.000500 U	NA	**0.000186 J**	NA	< 0.000500 U	< 0.000500 U	< 0.000500 U	NA	**0.0000980 J**	NA	< 0.000500 U	NA	NA
1,4-Dioxane (8270D SIM)																		
1,4-Dioxane	µg/L	9.1	**0.13**	NA	NA	< 0.010 U	NA	NA	< 0.010 U	NA	NA	NA	**4.5**	NA	**0.29**	NA	**5.1**	**2.2**

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC/PCL - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residentia

a - duplicate sample

+ - VOCs were inadvertently analyzed

Wells 18WW16 and 125 were dry

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	MW9_062118 6/21/18	MW10_061118 6/11/18	MW12_061318 6/13/18	MW12_061318_a 6/13/18	MW13_061818 6/18/18	MW14_061218 6/12/18	MW16_061318 6/13/18	MW17_061818 6/18/18	MW18_060718 6/7/18	MW19_061418 6/14/18	MW20_061518 6/15/18	MW21-060518 6/5/18	MW21-060518-a 6/5/18	MW22_060718 6/7/18	MW23_061118 6/11/18
		Aquifer Zone:	Shallow	Shallow	Shallow	Shallow	Wilcox	Wilcox	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS18061144	HS18060552	HS18060669	HS18060669	HS18060954	HS18060613	HS18060669	HS18060954	HS18060425	HS18060725	HS18060825	HS18060281	HS18060281	HS18060425	HS18060552
Perchlorate (6850)																	
Perchlorate	µg/L	17*	**590**	<2.0 U	<2.0 U	<2.0 U	< 2.0 U	**94,000**	< 2.0 U	< 2.0 U	<2.0 U	<2.0 U	< 2,000 U	**35,000**	**36,000**	**66 J**	**91,000**
Volatile Organic Compounds (8260C)																	
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	**9.9**	**9.9**	< 0.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	**0.41 J**	< 0.5 U	**1.5**	< 0.5 U	< 0.5 U	**18**	**1.2**	NA	< 0.5 U	< 0.5 U	< 0.5 U	**1.9**	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	**3.0**	**2.7**	< 0.5 U	**75**	**7.3**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**10**	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	**1.4**	**1.4**	< 0.5 U	**50**	**47**	NA	< 0.5 U	< 0.5 U	< 0.5 U	**27**	**26**	**4.7**	**58**
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Acetone	µg/L	92,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	**47**	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	**0.23 J**	< 0.5 U	< 0.5 U	**3.0 J**	**0.24 J**	NA	**0.22 J**	< 0.5 U	< 0.5 U	**2.2**	**2.2**	**0.29 J**	**0.81 J**
Bromobenzene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	µg/L	140	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	µg/L	41,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroform	µg/L	1,000	**2.5**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	**9.4**	**9.1**	**2.6**	**5.2**
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	**45**	< 0.5 U	**23**	**22**	< 0.5 U	**1,800**	**23**	NA	**0.62 J**	**2.2**	< 0.5 U	**110**	**110**	**3.0**	**9.6**
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**4.8**	< 0.5 U	< 0.5 U
Ethylbenzene	µg/L	700	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	**1.5 J**	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	MW9_062118 6/21/18	MW10_061118 6/11/18	MW12_061318 6/13/18	MW12_061318_a 6/13/18	MW13_061818 6/18/18	MW14_061218 6/12/18	MW16_061318 6/13/18	MW17_061818 6/18/18	MW18_060718 6/7/18	MW19_061418 6/14/18	MW20_061518 6/15/18	MW21-060518 6/5/18	MW21-060518-a 6/5/18	MW22_060718 6/7/18	MW23_061118 6/11/18
n-Propylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
Styrene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	**0.56 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	**4.6**	**4.7**	< 0.5 U	**1.5**
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	**1,200**	< 0.5 U	**230**	**220**	< 0.5 U	**7,300**	**520**	NA	**5.3**	**1.6**	< 0.5 U	**4,800**	**4,700**	**260**	**1,500**
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	**15**	**14**	< 0.5 U	< 0.5 U
Metals (6020A)																	
Aluminum	mg/L	100	0.0221 UB	NA	NA	NA	**0.169**	**0.0347**	NA	NA	NA	**1.58**	**1.15**	**0.0426 J**	**0.0406 J**	**0.0139**	NA
Antimony	mg/L	0.006	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	**0.00220**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA
Arsenic	mg/L	0.01	< 0.00100 U	NA	NA	NA	**0.000572 J**	**0.00498**	NA	NA	NA	**0.0111**	**0.000508 J**	**0.000547 J**	**0.000540 J**	**0.000914 J**	NA
Barium	mg/L	2	**0.0897**	NA	NA	NA	**0.574**	**0.451**	NA	NA	NA	**0.534**	**0.469**	**6.46**	**6.40**	**1.00**	NA
Beryllium	mg/L	0.004	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	**0.000296 J**	< 0.00100 U	**0.000227 J**	**0.000230 J**	< 0.00100 U	NA
Cadmium	mg/L	0.005	< 0.00100 U	NA	NA	NA	**0.000228 J**	**0.000588 J**	NA	NA	NA	**0.00195 J**	**0.000301 J**	**0.000789 J**	**0.000792 J**	**0.00128 J**	NA
Calcium	mg/L	NV	**7.70**	NA	NA	NA	**29.3**	**86.4**	NA	NA	NA	**48.6**	**41.4**	**168**	**167**	**107**	NA
Chromium	mg/L	0.1	**0.136**	NA	NA	NA	**0.0461**	**0.133**	NA	NA	NA	**0.882**	**0.0140**	**0.602**	**0.557**	**0.181 J**	NA
Cobalt	mg/L	6.1	**0.000476 J**	NA	NA	NA	**0.000805 J**	**0.0250**	NA	NA	NA	**0.0237**	**0.0219**	**0.0699**	**0.0669**	**0.00531**	NA
Copper	mg/L	1.3	**0.00178 J**	NA	NA	NA	**0.00328**	**0.00292**	NA	NA	NA	**0.0209**	**0.00362**	**0.0444**	**0.0423**	**0.00366**	NA
Iron	mg/L	NV	**0.898**	NA	NA	NA	**97.4**	**67.3**	NA	NA	NA	**48.5**	**2.16**	**4.45**	**4.12**	**0.872**	NA
Lead	mg/L	0.015	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	**0.00235**	**0.00145 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA
Magnesium	mg/L	NV	**2.43**	NA	NA	NA	**13.4**	**36.9**	NA	NA	NA	**25.5**	**11.3**	**138**	**130**	**32.5**	NA
Manganese	mg/L	1.1*	**0.0206**	NA	NA	NA	**1.28**	**2.53**	NA	NA	NA	**2.22**	**0.294**	**1.81**	**1.80**	**0.0744**	NA
Nickel	mg/L	0.49*	**0.0292**	NA	NA	NA	**0.0265**	**0.292**	NA	NA	NA	**0.324**	**0.554**	**0.736**	**0.683**	**0.321**	NA
Potassium	mg/L	NV	**0.459**	NA	NA	NA	**3.76**	**21.2**	**NA**	**NA**	NA	**3.64**	**0.855**	**2.13**	**2.08**	**2.26**	NA
Selenium	mg/L	0.05	< 0.00200 U	NA	NA	NA	< 0.00200 U	< 0.00200 U	NA	NA	NA	**0.00192 J**	< 0.00200 U	**0.00489**	**0.00481**	< 0.00200 U	NA
Silver	mg/L	0.51	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.0100	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA
Sodium	mg/L	NV	**13.8**	NA	NA	NA	**88.8**	**275**	NA	NA	NA	**432**	**58.9**	**452**	**453**	**378**	NA
Thallium	mg/L	0.002	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA
Vanadium	mg/L	0.72	**0.00199 J**	NA	NA	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	**0.00674**	< 0.00100 U	**0.00271 J**	**0.00303 J**	**0.00242 J**	NA
Zinc	mg/L	31	**0.00307 J**	NA	NA	NA	**0.0120**	**0.413**	NA	NA	NA	**0.0183**	**0.00850**	**0.0238**	**0.0221**	**0.0125**	NA
Mercury	mg/L	0.002	< 0.000500 U	NA	NA	NA	< 0.000500 U	< 0.000500 U	NA	NA	NA	**0.0000300 J**	< 0.000500 U	< 0.0000500 U	< 0.0000500 U	< 0.0000500 U	NA
1,4-Dioxane (8270D SIM)																	
1,4-Dioxane	µg/L	9.1	**0.5**	< 0.010 U	NA	NA	NA	**120**	< 0.010 U	< 0.010 U	NA	NA	NA	**0.77**	**0.57**	NA	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC/PCL - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residentia

a - duplicate sample

+ - VOCs were inadvertently analyzed

Wells 18WW16 and 125 were dry

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	102_061318 6/13/18	109_061418 6/14/18	120_061418 6/14/18	123_061418 6/14/18	126_061518 6/15/18	126_061518_a 6/15/18	129_061418 6/14/18	130_062118 6/21/18	ICT2_062818 6/28/18	ICT4_062818 6/28/18	ICT7_062818 6/28/18	ICT8_062818 6/28/18	ICT8_062818_a 6/28/18	ICT11_062818 6/28/18	ICT12B_062818 6/28/18	ICT12C_062818 6/28/18
		Aquifer Zone:	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS18060669	HS18060725	HS18060725	HS18060725	HS18060825	HS18060825	HS18060725	HS18061144	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493
Perchlorate (6850)																		
Perchlorate	µg/L	17*	**170**	**4,300**	**26,000**	**59**	< 2,000 U	< 2,000 U	**3,900**	**5.6**	**6,200**	**14,000**	**350**	**1,900**	**1,800**	**17,000**	**19,000**	**10,000**
Volatile Organic Compounds (8260C)																		
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	**28**	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**0.47 J**	< 12 U	< 0.5 U	< 50 U	< 50 U	**0.47 J**	< 0.5 U	< 5.0 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	**1.3**	**150**	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**3.9**	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	**0.65 J**	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	**0.56 J**	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 12 UJ	< 0.5 UJ	< 50 UJ	< 50 UJ	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	**38**	**2**	< 0.5 U	< 0.5 U	**11**	< 0.5 U	**49**	**200**	< 0.5 U	**87 J**	**81 J**	**9.8**	**7.9**	**42**
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U	< 50 U	< 50 U	< 1.0 U	< 1.0 U	< 10 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
2-Hexanone	µg/L	6,100	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U	< 50 U	< 50 U	< 1.0 U	< 1.0 U	< 10 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U	< 50 U	< 50 U	< 1.0 U	< 1.0 U	< 10 U
Acetone	µg/L	92,000	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U	< 50 U	< 50 U	< 1.0 U	< 1.0 U	< 10 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	**5.4 J**	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromobenzene	µg/L	2,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	**270 J**	**87 J**	< 0.5 U	< 0.5 U	< 5.0 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromoform	µg/L	36	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromomethane	µg/L	140	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 UJ	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Carbon disulfide	µg/L	10,000	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U	< 100 U	< 100 U	< 1.0 U	< 1.0 U	< 10 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	**1.7**	**7.4**	< 5.0 U
Chlorobenzene	µg/L	100	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Chloroethane	µg/L	41,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Chloroform	µg/L	1,000	< 0.5 U	**1.3**	**41**	< 5.0 U	< 0.5 U	< 0.5 U	**1.9**	< 0.5 U	**0.78 J**	< 12 U	< 0.5 U	< 50 U	< 50 U	**4.7**	**7.5**	< 5.0 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	**110**	**1,700**	**6.6**	< 0.5 U	< 0.5 U	**3.9**	< 0.5 U	**66**	**1,300**	< 0.5 U	**17,000 J**	**10,000 J**	**140**	**41**	**23**
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Ethylbenzene	µg/L	700	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U	< 100 U	< 100 U	< 1.0 U	< 1.0 U	< 10 U
Methylene chloride	µg/L	5	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**53**	< 1.0 U	**100,000 J**	**56,000 J**	< 1.0 U	**39**	< 10 U
Naphthalene	µg/L	2,000	< 0.5 U	< 0.5 U	< 5.0 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 12 UJ	< 0.5 UJ	< 50 UJ	< 50 UJ	< 0.5 U	< 0.5 U	< 5.0 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: / Sample Date:	Units	MCL/MSC/ PCL	102_061318 6/13/18	109_061418 6/14/18	120_061418 6/14/18	123_061418 6/14/18	126_061518 6/15/18	126_061518_a 6/15/18	129_061418 6/14/18	130_062118 6/21/18	ICT2_062818 6/28/18	ICT4_062818 6/28/18	ICT7_062818 6/28/18	ICT8_062818 6/28/18	ICT8_062818_a 6/28/18	ICT11_062818 6/28/18	ICT12B_062818 6/28/18	ICT12C_062818 6/28/18
n-Propylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
o-Xylene	µg/L	10,000**	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Styrene	µg/L	100	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Tetrachloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.7**	< 12 U	< 0.5 U	**260 J**	**380**	< 0.5 U	< 0.5 U	< 5.0 U
Toluene	µg/L	1,000	< 0.5 U	**0.58 J**	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	**0.47 J**	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	**1.1**	**17**	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.5**	< 12 U	< 0.5 U	< 50 U	< 50 U	**1.7**	< 0.5 U	< 5.0 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Trichloroethene	µg/L	5	< 0.5 U	**670**	**17,000**	**70**	< 0.5 U	< 0.5 U	**890**	**0.70 J**	**750**	**7,400**	**0.52 J**	**8,400**	**11,000**	**1,300**	**1,200**	**5,800**
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 0.5 U	< 5.0 U	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U	< 50 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U
Vinyl chloride	µg/L	2	< 0.5 U	< 0.5 U	**82**	0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.8**	**23 J**	< 0.5 U	**86 J**	**66 J**	**0.57 J**	**2.2**	< 5.0 U
Metals (6020A)																		
Aluminum	mg/L	100	**0.0370**	NA	NA	NA	**0.0446**	**0.0405**	**0.182**	**0.196**	**0.0425**	0.00509 UB	**4.70**	**0.0172**	**0.0129**	0.00386 UB	**0.0184**	**0.144**
Antimony	mg/L	0.006	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00200 U	< 0.00100 U	**0.000558 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00120 J**	< 0.00100 U	< 0.00100 U
Arsenic	mg/L	0.01	< 0.00100 U	NA	NA	NA	**0.00266**	**0.00281**	< 0.00100 U	**0.00228**	**0.0116**	**0.000422 J**	**0.00128 J**	**0.00236**	**0.00254**	< 0.00100 U	**0.000625 J**	**0.00236**
Barium	mg/L	2	**0.170**	NA	NA	NA	**9.13**	**9.03**	**0.156**	**0.0998**	**0.360**	**0.128**	**0.107**	**0.975**	**0.958**	**0.847**	**0.327**	**0.143**
Beryllium	mg/L	0.004	**0.000289 J**	NA	NA	NA	< 0.00100 U	< 0.00200 U	< 0.00100 U	< 0.00100 U	**0.000200 J**	< 0.00100 U	**0.000482 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.000260 J**
Cadmium	mg/L	0.005	< 0.00100 U	NA	NA	NA	**0.000521 J**	**0.000481 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.000527 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.000208 J**
Calcium	mg/L	NV	**4.39**	NA	NA	NA	**292**	**286**	**6.80**	**37.2**	**26.3**	**30.8**	**2.30**	**28.6**	**27.9**	**24.4**	**9.74**	**8.57**
Chromium	mg/L	0.1	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00400	**0.00162 J**	**0.00172 J**	**0.0401**	**0.0170**	**0.00765**	**0.000861 J**	**0.00155 J**	**0.00522**	**0.0449**	**0.599**
Cobalt	mg/L	6.1	**0.00416 J**	NA	NA	NA	**0.0113**	**0.0109**	**0.000396 J**	**0.0137**	**0.0167**	**0.00798**	**0.00232 J**	**0.0101**	**0.0102**	**0.000245 J**	**0.00207 J**	**0.00523**
Copper	mg/L	1.3	< 0.00200 U	NA	NA	NA	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	**0.112**	< 0.00200 U	**0.00462**	< 0.00200 U	< 0.00200 U	**0.178**	**0.0739**	**0.00440**
Iron	mg/L	NV	**0.0294 J**	NA	NA	NA	**2.26**	**2.27**	**0.223**	**1.34**	**31.2**	**0.103 J**	**5.50**	**3.43**	**3.54**	**0.0390 J**	**1.52**	**7.41**
Lead	mg/L	0.015	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00259**	< 0.00100 U	< 0.00100 U	**0.000735 J**	**0.00236**	**0.000882 J**
Magnesium	mg/L	NV	**3.72**	NA	NA	NA	**231**	**226**	**5.02**	**25.2**	**26.9**	**28.2**	**2.45**	**23.6**	**23.8**	**19.4**	**7.04**	**6.27**
Manganese	mg/L	1.1*	**0.0127**	NA	NA	NA	**0.197**	**0.197**	**0.00458 J**	**1.06**	**0.576**	**0.455**	**0.0650**	**0.668**	**0.681**	**0.0387**	**0.123**	**0.222**
Nickel	mg/L	0.49*	**0.00850**	NA	NA	NA	**0.0131**	**0.0133**	**0.00170 J**	**0.00421**	**0.0252**	**0.0117**	**0.00827**	**0.00845**	**0.00885**	**0.0153**	**0.0663**	**0.187**
Potassium	mg/L	NV	**0.684**	NA	NA	NA	**3.54**	**3.54**	**0.240**	**0.607**	**1.23**	**1.04**	**1.07**	**1.50**	**1.45**	**1.40**	**0.859**	**0.501**
Selenium	mg/L	0.05	< 0.00200 U	NA	NA	NA	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U
Silver	mg/L	0.51	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U
Sodium	mg/L	NV	**43.7**	NA	NA	NA	**787**	**793**	**106**	**656**	**243**	**233**	**23.5**	**123**	**123**	**125**	**86.4**	**83.6**
Thallium	mg/L	0.002	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	**0.000427 J**	< 0.00200 U	**0.000399 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U
Vanadium	mg/L	0.72	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00213 J**	**0.0103**	< 0.00100 U	**0.00767**	**0.000887 J**	**0.00106 J**	< 0.00100 U	**0.00125 J**	**0.00562**
Zinc	mg/L	31	**0.00497**	NA	NA	NA	**0.0372**	**0.0372**	**0.00291 J**	**0.00987**	**0.694**	**0.00661**	**0.0238**	**0.00261 J**	**0.00205 J**	**0.626**	**0.0232**	**0.0119**
Mercury	mg/L	0.002	< 0.000500 U	NA	NA	NA	**0.0000380 J**	**0.0000300 J**	**0.000216**	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	**0.0000630 J**	< 0.000500 U	< 0.000500 U
1,4-Dioxane (8270D SIM)																		
1,4-Dioxane	µg/L	9.1	NA	**0.090**	**120**	< 0.010 U	< 0.010 U	< 0.010 U	**4.3**	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC/PCL - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residentia

a - duplicate sample

+ - VOCs were inadvertently analyzed

Wells 18WW16 and 125 were dry

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	ICT12D_062818 6/28/18	ICT12E_062818 6/28/18	ICT13A_062818 6/28/18	ICT13B_062818 6/28/18	ICT13B_062818_a 6/28/18	ICT13D_062818 6/28/18	ICT13E_062818 6/28/18	ICT13F_062818 6/28/18	ICT14B_062818 6/28/18	ICT14C_062818 6/28/18	ICT14D_062818 6/28/18
		Aquifer Zone:	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493	HS18061493
Perchlorate (6850)													
Perchlorate	µg/L	17*	73,000	81,000	24,000	700	540	< 2.0 U	< 2.0 U	56	6,800	710 J	1.9 J
Volatile Organic Compounds (8260C)													
1,1,1,2-Tetrachloroethane	µg/L	110	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	1.6
1,1-Dichloroethane	µg/L	10,000	< 50 U	130	19	1.2	0.94 J	< 0.5 U	< 0.5 U	< 0.5 U	2.1	< 12 U	5.6
1,1-Dichloroethene	µg/L	7	< 50 U	570	46	5.4	4.5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	56	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 50 U	< 50 U	< 5.0 U	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 12 UJ	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,2-Dichloroethane	µg/L	5	340	230	83	50	50	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	2.8
1,2-Dichloropropane	µg/L	5	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,3-Dichloropropane	µg/L	29	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
2-Butanone	µg/L	61,000	< 50 U	< 50 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 50 U	< 50 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	0.5 U
4-Isopropyltoluene	µg/L	10,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 50 U	< 50 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U
Acetone	µg/L	92,000	< 50 U	< 50 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U
Benzene	µg/L	5	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	0.80 J
Bromobenzene	µg/L	2,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Bromochloromethane	µg/L	4,100	120	340	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	51	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Bromoform	µg/L	36	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Bromomethane	µg/L	140	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 100 U	< 100 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Chlorobenzene	µg/L	100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Chloroethane	µg/L	41,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Chloroform	µg/L	1,000	< 50 U	76 J	12	0.97 J	0.95 J	< 0.5 U	< 0.5 U	< 0.5 U	1.2	< 12 U	5.9
Chloromethane	µg/L	220	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	13,000	11,000	930	150	150	0.69 J	< 0.5 U	< 0.5 U	180	2,900 J	1,700
cis-1,3-Dichloropropene	µg/L	5.3	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Dibromomethane	µg/L	380	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Ethylbenzene	µg/L	700	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 100 U	< 100 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 25 U	< 1.0 U
Methylene chloride	µg/L	5	77,000	120,000	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	7,000 J	< 1.0 U
Naphthalene	µg/L	2,000	< 50 U	< 50 U	< 5.0 U	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 12 UJ	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U

Table 6. Summary of Analytical Results for Site LHAAP-18/24 - June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location ID: Sample Date:	Units	MCL/MSC/ PCL	ICT12D_062818 6/28/18	ICT12E_062818 6/28/18	ICT13A_062818 6/28/18	ICT13B_062818 6/28/18	ICT13B_062818_a 6/28/18	ICT13D_062818 6/28/18	ICT13E_062818 6/28/18	ICT13F_062818 6/28/18	ICT14B_062818 6/28/18	ICT14C_062818 6/28/18	ICT14D_062818 6/28/18
n-Propylbenzene	µg/L	4,100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Styrene	µg/L	100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**0.77 J**	< 0.5 U	< 12 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 50 U	< 50 U	< 5.0 U	**1.1**	**0.98 J**	< 0.5 U	< 0.5 U	< 0.5 U	**1.1**	< 12 U	**8.9**
Toluene	µg/L	1,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	**0.62 J**
trans-1,2-Dichloroethene	µg/L	100	< 50 U	< 50 U	**7.2 J**	**1.3**	**1.2**	< 0.5 U	< 0.5 U	< 0.5 U	**2.3**	**18 J**	**16**
trans-1,3-Dichloropropene	µg/L	29	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 12 U	< 0.5 U
Trichloroethene	µg/L	5	**70,000**	**65,000**	**9,600**	**1,200**	**910**	**2.9**	< 0.5 U	< 0.5 U	**410**	**1,800 J**	**530**
Trichlorofluoromethane	µg/L	31,000	< 50 U	< 50 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	0.5 U	0.5 U	0.5 U	< 12 U	0.5 U
Vinyl chloride	µg/L	2	**300**	**410**	**18**	**4.8**	**3.9**	< 0.5 U	0.5 U	0.5 U	**9.8**	**530**	**790**
Metals (6020A)													
Aluminum	mg/L	100	**0.0803**	**0.0816**	0.00923 UB	**0.0370**	**0.0397**	**0.0191**	**8.58**	**2.17**	**0.0271**	**0.526**	**0.0263**
Antimony	mg/L	0.006	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00431**	< 0.00100 U	**0.000461 J**	**0.00110 J**
Arsenic	mg/L	0.01	**0.00307**	**0.000675 J**	**0.000962 J**	**0.0521**	**0.0559**	**0.00397**	**0.00303**	**0.000491 J**	**0.000700 J**	**0.149**	**0.0167**
Barium	mg/L	2	**0.327**	**0.274**	**0.173**	**0.171**	**0.180**	**0.186**	**0.138**	**0.0736**	**0.365**	**2.21**	**1.01**
Beryllium	mg/L	0.004	**0.000238 J**	**0.000577 J**	< 0.00100 U	**0.00154 J**	**0.00160 J**	< 0.00100 U	**0.000960 J**	**0.000353 J**	< 0.00200 U	**0.00766**	**0.000288 J**
Cadmium	mg/L	0.005	**0.000396 J**	**0.000588 J**	**0.000240 J**	**0.000219 J**	**0.000244 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00862**	< 0.00200 U
Calcium	mg/L	NV	**25.2**	**37.1**	**27.3**	**13.1**	**13.0**	**4.70**	**1.20**	**0.946**	**9.99**	**68.5**	**81.8**
Chromium	mg/L	0.1	**0.00264 J**	**0.0179**	**0.00465**	**0.0151**	**0.0189**	**0.00682**	**0.0323**	**0.00579**	**0.0288**	**0.470**	**0.00513**
Cobalt	mg/L	6.1	**0.0343**	**0.0304**	**0.0273**	**0.0224**	**0.0225**	**0.00917**	**0.00529**	**0.00371 J**	**0.00202 J**	**0.0179**	**0.0236**
Copper	mg/L	1.3	**0.00206**	**0.00498**	**0.0105**	**0.00619**	**0.00660**	**0.00122 J**	**0.0135**	**0.266**	< 0.00200 U	**0.0228**	**0.00474**
Iron	mg/L	NV	**3.78**	**0.449**	**6.83**	**148**	**167**	**12.3**	**12.8**	**2.65**	**0.457**	**70.6**	**39.9**
Lead	mg/L	0.015	< 0.00100 U	**0.000706 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.0102**	**0.00547**	< 0.00100 U	**0.00473**	< 0.00100 U
Magnesium	mg/L	NV	**24.0**	**29.7**	**23.1**	**16.3**	**15.7**	**4.97**	**1.51**	**0.828**	**8.82**	**52.0**	**64.8**
Manganese	mg/L	1.1*	**1.45**	**1.51**	**0.520**	**0.533**	**0.509**	**0.148**	**0.0603**	**0.0500**	**0.123**	**1.21**	**1.63**
Nickel	mg/L	0.49*	**0.0165**	**0.0223**	**0.0481**	**0.0155**	**0.0156**	**0.0149**	**0.0223**	**0.0848**	**0.00611**	**0.0849**	**0.0518**
Potassium	mg/L	NV	**0.432**	**1.67**	**1.65**	**1.81**	**1.80**	**0.826**	**1.76**	**0.950**	**0.322**	**1.76**	**2.09**
Selenium	mg/L	0.05	< 0.00200 U	**0.00255**	< 0.00200 U	**0.00212**	**0.00210**	< 0.00200 U	< 0.00200 U	< 0.00200 U	< 0.00200 U	**0.00119 J**	< 0.00200 U
Silver	mg/L	0.51	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.000213 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U
Sodium	mg/L	NV	**99.7**	**405**	**404**	**107**	**102**	**48.4**	**8.66**	**8.34**	**85.5**	**230**	**321**
Thallium	mg/L	0.002	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.000445 J**
Vanadium	mg/L	0.72	**0.00126 J**	**0.000628 J**	**0.00248 J**	**0.00342 J**	**0.00365 J**	< 0.00100 U	**0.0232**	**0.00369 J**	**0.00100 J**	**0.0400**	< 0.00100 U
Zinc	mg/L	31	**0.0155**	**0.0211**	**0.0719**	**0.0362**	**0.0372**	**0.0128**	**0.0454**	**1.69**	**0.00500**	**0.121**	**0.0332**
Mercury	mg/L	0.002	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	< 0.000500 U	**0.000235**	< 0.000500 U
1,4-Dioxane (8270D SIM)													
1,4-Dioxane	µg/L	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC/PCL - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residentia

a - duplicate sample

+ - VOCs were inadvertently analyzed

Wells 18WW16 and 125 were dry

Table 7. Weekly Perchlorate Sample Results
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Sample Identification	Lab Package	Date Sampled	Sample Location	Effluent Discharge Point	Harrison Bayou Maximum Allowable Daily Discharge Perchlorate Concentration (µg/L)	INF Pond Discharge Criteria for Perchlorate (µg/L)	Reporting Limit	Influent Perchlorate (6850)	Effluent Perchlorate (6850)		Does Concentration Meet Discharge Limit? (Yes/No)	No Daily Maximum Concentration		
								Result (µg/L)	Result (µg/L)	DVQ		Ammonia as N (350.3) (mg/L)	Ortho-Phosphate (365.3) (mg/L)	Organic Carbon (415.1) (mg/L)
LH18/24-SP650_040418 (BIX)	HS18040240	4/4/2018	TK-650	Harrison Bayou	589	17	4	NA	**2.3**	J	Yes	**12**	**3.74**	**40.1**
LH18/24-SP650_041118 (BIX)	HS18040597	4/11/2018	TK-650	Harrison Bayou	589	17	4	NA	**6.9**		Yes	**11**	**1.19**	**13.4**
LH18/24-SP650_041118 (Monthly) (BIX)	HS18040595	4/11/2018	TK-650	Harrison Bayou	589	17	4	NA	**12**		Yes	--	--	--
LH18/24-SP140_041118 (Monthly) (BIX)	HS18040596	4/11/2018	TK-140	--	--	--	NA	**6,400**	NA		NA	--	--	--
LH18/24-SP650_041818 (BIX)	HS18040989	4/18/2018	TK-650	Harrison Bayou	589	17	4	NA	**55**		Yes	**28**	**2.42**	**17.7**
LH18/24-SP650_042518 (BIX)	HS18041331	4/25/2018	TK-650	Harrison Bayou	589	17	4	NA	**46**		Yes	**17**	**2.24**	**44.3**
LH18/24-SP650_050318 (BIX)	HS18050220	5/3/2018	TK-650	Harrison Bayou	589	17	4	NA	**4.9**		Yes	**22**	**3.78**	**87.6**
LH18/24-SP650_051718 (BIX)	HS18050925	5/17/2018	TK-650	Harrison Bayou	589	17	4	NA	< 2.0	U	Yes	**49**	**4.3**	**233**
LH18/24-SP650_052418 (Monthly) (BIX)	HS18051260	5/24/2018	TK-650	Harrison Bayou	589	17	4	NA	**23**		Yes	**15**	**2.4**	**19.2**
LH18/24-SP650_052418 (Monthly) (BIX)	HS18051257	5/24/2018	TK-650	Harrison Bayou	589	17	4	NA	**34**		Yes	--	--	--
LH18/24-SP140_052418 (Monthly) (BIX)	HS18051255	5/24/2018	TK-140	Harrison Bayou	589	17	NA	**12,000**	NA		NA	--	--	--
LH18/24-SP650_053018	HS18051489	5/30/2018	TK-650	--	--	--	--	--	--		--	**18**	**3**	**150**
LH18/24-SP650_053018_Before IX	HS18051489	5/30/2018	TK-650	Harrison Bayou	589	17	4	NA	**18**		Yes	--	--	--
LH18/24-SP650_053018_After IX	HS18051489	5/30/2018	TK-650	Harrison Bayou	589	17	4	NA	**2.2**	J	Yes	--	--	--
LH18/24-SP650_060618 (AIX)	HS18060310	6/6/2018	TK-650	Harrison Bayou	589	17	4	NA	< 10	U	Yes	**20**	**2.59**	**161**
LH18/24-SP650_060618 (Monthly) (AIX)	HS18060306	6/6/2018	TK-650	Harrison Bayou	589	17	4	NA	< 10	U	Yes	--	--	--
LH18/24-SP140_060618 (Monthly) (AIX)	HS18060308	6/6/2018	TK-140	--	--	--	NA	**21,000**	NA		NA	--	--	--
LH18/24-SP650_061218 (rush) (AIX)	HS18060609	6/12/2018	TK-650	Harrison Bayou	589	17	4	NA	< 10	U	Yes	--	--	--
LH18/24-SP650_061318 (AIX)	HS18060661	6/13/2018	TK-650	Harrison Bayou	589	17	4	NA	< 10	U	Yes	**36**	**2.17**	**165**
LH18/24-SP650_061818 (rush) (AIX)	HS18060892	6/18/2018	TK-650	INF Pond	589	17	4	NA	< 10	U	Yes	--	--	--
LH18/24-SP650_062018 (quarterly) (BIX)	HS18061039	6/20/2018	TK-650	INF Pond	589	17	4	NA	**15**		Yes	--	--	--
LH18/24_SP140_062018 (quarterly) (BIX)	HS18061036	6/20/2018	TK-140	--	--	--	NA	**9,400**	NA		NA	--	--	--
LH18/24-SP650_062018 (BIX)	HS18061031	6/20/2018	TK-650	INF Pond	589	17	4	NA	**13**		Yes	**16**	**3.34**	**18.4**
LH18/24-SP650_062618 (rush) (AIX)	HS18061367	6/26/2018	TK-650	INF Pond	589	17	4	NA	< 10	U	Yes	--	--	--
LH18/24-SP650_062718 (AIX)	HS18061423	6/27/2018	TK-650	INF Pond	589	17	4	NA	NA		NA	**12**	**2.84**	**34**

Notes:
Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (PCL)
SP140 samples are influent samples.
µg/L - micrograms per liter
DVQ - data validation qualifier
J - Estimated concentration
NA - not applicable
U - non detect
AIX - After ion exchange
BIX - before ion exchange
mg/L - milligrams per liter

Table 8. Bi-Weekly GWTP Analytical Sampling Results for April 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

			Sample Location	EFFLUENT - Biweekly		EFFLUENT - Biweekly		EFFLUENT - Monthly		INFLUENT - Monthly*		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_040418		LH18/24-SP650_041818		LH18/24-SP650_041118		LH18/24-SP140_041118		
			Lab Package	HS18040244		HS18040991		HS18040595		HS18040596		
			Sample Date	4/4/2018		4/18/2018		4/11/2018		4/11/2018		
			Sample Type	GRAB		GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD											
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit	Result	DVQ	Result	DVQ	Result	DVQ	Result	DVQ	
VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		**µg/L**		
1,1,1-Trichloroethane	3,417	7,230	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
1,1,2-Trichloroethane	102.5	216.9	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
1,1-Dichloroethane	6,633	14,032	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
1,1-Dichloroethene	119	253	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
1,2-Dichloroethane	85	181	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
1,2-Dichloropropane	NA	NA	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Acetone	1,132	2,395	2	< 1.0	U	**3.0**		**2.9**		NA		Yes
Benzene	85	181	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Carbon Tetrachloride	85	181	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Chlorobenzene	22,300	47,180	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Chloroform	1,708	3,615	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Ethylbenzene	26,954	57,025	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
m,p-Xylenes	39.5	83.6	2	< 1.0	U	< 1.0	U	< 1.0	U	NA		Yes
Methylene Chloride	803	1,699	2	< 1.0	U	< 1.0	U	< 1.0	U	NA		Yes
o-Xylene	39.5	83.6	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Styrene	2,829	5,987	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Tetrachloroethene	85.4	180.7	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Toluene	1,980	4,189	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
Trichloroethene	85	181	1	**4.1**		**4.6**		**4.8**		NA		Yes
Vinyl Chloride	34	72	1	< 0.5	U	< 0.5	U	< 0.5	U	NA		Yes
ANIONS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		**mg/L**		
Chloride	NA	NA	10	**293**		**387**		NA		NA		NA
Sulfate	NA	NA	10	**48.1**		**151**		NA		NA		NA
PERCHLORATE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		**µg/L**		
Perchlorate	278	589	4	NA		NA		**12**		**6,400**		Yes
METALS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		**mg/L**		
Hexavalent Chromium	0.058	0.124	0.010	NA		NA		< 0.0100	U	< 0.0100	U	Yes
Barium	1	2	0.004	NA		NA		**0.124**		NA		Yes
Lead	0.0022	0.0046	0.002	NA		NA		< 0.00200	U	NA		Yes
Selenium	0.0057	0.0120	0.002	NA		NA		< 0.00200	U	< 0.00200	U	Yes
Silver	0.0014	0.0030	0.002	NA		NA		< 0.00200	U	< 0.00200	U	Yes
SEMI-VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		**µg/L**		
1,4-Dioxane**	NA	134.2	1	NA		NA		**3.6**		NA		Yes

Notes:
µg/L - micrograms per liter
mg/L - milligrams per liter
DVQ - data validation qualifier
NA - not applicable or not analyzed
GWTP - Groundwater Treatment Plant
ROD - Record of Decision
Grab samples are compared to the daily maximum and composite samples to the daily average.
U - not detected; J - estimated concentration
Protective Concentration Level (PCL).
*Influent sample not compared to discharge limits
** Calculated Effluent Limit

Table 9. Bi-Weekly GWTP Analytical Sampling Results for May 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

			Sample Location	EFFLUENT - Biweekly		EFFLUENT - Biweekly		EFFFLUENT - Monthly		INFLUENT - Monthly*		EFFLUENT - Biweekly		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_050318		LH18/24-SP650_051718		LH18/24-SP650_052418		LH18/24-SP140_052418		LH18/24-SP650_0530218		
			Lab Package	HS18050260		HS18050932		HS18051257		HS18051255		HS18051472		
			Sample Date	5/3/2018		5/17/2018		5/24/2018		5/24/2018		5/30/2018		
			Sample Type	GRAB		GRAB		GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD													
	Daily Average Concentration	Daily Maximum Concentration	Detection Limit	Result	DVQ	Result	DVQ	Result	DVQ	Result	DVQ	Result	DVQ	
VOLATILES	µg/L	µg/L	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		
1,1,1-Trichloroethane	3,417	7,230	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
1,1,2-Trichloroethane	102.5	216.9	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
1,1-Dichloroethane	6,633	14,032	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
1,1-Dichloroethene	119	253	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
1,2-Dichloroethane	85	181	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
1,2-Dichloropropane	NA	NA	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Acetone	1,132	2,395	2	**11**		**21**		< 5.0	U	NA		**35**		Yes
Benzene	85	181	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Carbon Tetrachloride	85	181	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Chlorobezene	22,300	47,180	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Chloroform	1,708	3,615	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Ethylbenzene	26,954	57,025	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
m,p-Xylenes	39.5	83.6	2	< 1.0	U	< 1.0	U	< 5.0	U	NA		< 5.0	U	Yes
Methylene Chloride	803	1,699	2	< 1.0	U	< 1.0	U	< 5.0	U	NA		< 5.0	U	Yes
o-Xylene	39.5	83.6	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Styrene	2,829	5,987	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Tetrachloroethene	85.4	180.7	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
Toluene	1,980	4,189	1	**0.32**	J	**0.44**	J	< 2.5	U	NA		< 2.5	U	Yes
Trichloroethene	85	181	1	**2.3**		**2.1**		< 2.5	U	NA		< 2.5	U	Yes
Vinyl Chloride	34	72	1	< 0.5	U	< 0.5	U	< 2.5	U	NA		< 2.5	U	Yes
ANIONS	mg/L	mg/L	mg/L	mg/L		mg/L		mg/L		mg/L		mg/L		
Chloride	NA	NA	10	**429**		**492**		NA		NA		**634**		NA
Sulfate	NA	NA	10	**116**		**153**		NA		NA		**87.9**		NA
PERCHLORATE	µg/L	µg/L	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		
Perchlorate	278	589	4	NA		NA		**34**		**12,000**		NA		Yes
METALS	mg/L	mg/L	mg/L	mg/L		mg/L		mg/L		mg/L		mg/L		
Hexavalent Chromium	0.058	0.124	0.010	NA		NA		< 0.0100	U	< 0.0100	U	NA		Yes
Barium	1	2	0.004	NA		NA		**0.186**		NA		NA		Yes
Lead	0.0022	0.0046	0.002	NA		NA		< 0.00100	U	NA		NA		Yes
Selenium	0.0057	0.0120	0.002	NA		NA		< 0.00200	U	< 0.00200	U	NA		Yes
Silver	0.0014	0.0030	0.002	NA		NA		< 0.00100	U	< 0.00100	U	NA		Yes
SEMI-VOLATILES	µg/L	µg/L	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		
1,4-Dioxane**	NA	134.2	1	NA		NA		**11**		NA		NA		Yes

Notes:
µg/L - micrograms per liter
mg/L - milligrams per liter
U - non detect; J - estimated concentration
DVQ - data validation qualifier
ROD - Record of Decision
Grab samples are compared to the daily maximum and composite samples to the daily average.
GWTP - Groundwater Treatment Plant
*Influent sample not compared to discharge limits
* *Calculated Effluent Limit
NA - not applicable or not analyzed

Table 10. Bi-Weekly Analytical GWTP Sampling Results for June 2018
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

			Sample Location	EFFLUENT - Monthly		INFLUENT - Monthly*		EFFLUENT - Biweekly		EFFLUENT - Biweekly		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_060618		LH18/24-SP140_060618		LH18/24-SP650_061318		LH18/24-SP650_062718		
			Lab Package	HS18060306		HS18060308		HS18060751		HS18061470		
			Sample Date	6/6/2018		6/6/2018		6/13/2018		6/27/2018		
			Sample Type	GRAB		GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD											
	Daily Average Concentration	Daily Maximum Concentration	Detection Limit	Result	DVQ	Result	DVQ	Result	DVQ	Result	DVQ	
VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**				**µg/L**		
1,1,1-Trichloroethane	3,417	7,230	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,1,2-Trichloroethane	102.5	216.9	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,1-Dichloroethane	6,633	14,032	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,1-Dichloroethene	119	253	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,2-Dichloroethane	85	181	1	< 0.5	U	NA		< 0.5	U	**0.56**	J	Yes
1,2-Dichloropropane	NA	NA	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Acetone	1,132	2,395	2	**9.7**		NA		**7.7**		**6.0**		Yes
Benzene	85	181	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Carbon Tetrachloride	85	181	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Chlorobenzene	22,300	47,180	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Chloroform	1,708	3,615	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Ethylbenzene	26,954	57,025	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
m,p-Xylenes	39.5	83.6	2	< 1.0	U	NA		< 1.0	U	< 1.0	U	Yes
Methylene Chloride	803	1,699	2	< 1.0	U	NA		< 1.0	U	< 1.0	U	Yes
o-Xylene	39.5	83.6	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Styrene	2,829	5,987	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Tetrachloroethene	85.4	180.7	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Toluene	1,980	4,189	1	**0.36**	J	NA		**0.40**	J	< 0.5	U	Yes
Trichloroethene	85	181	1	**4.2**		NA		**1.2**		**1.9**		Yes
Vinyl Chloride	34	72	1	**1.5**		NA		< 0.5	U	< 0.5	U	Yes
ANIONS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		**mg/L**		
Chloride	NA	NA	10	NA		NA		**473**		**536**		NA
Sulfate	NA	NA	10	NA		NA		**40.2**		**87.9**		NA
PERCHLORATE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		**µg/L**		
Perchlorate	278	589	4	< 10	U	**21,000**		NA		NA		Yes
METALS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		**mg/L**		
Hexavalent Chromium	0.058	0.124	0.010	< 0.0100	U	< 0.0100	U	NA		NA		Yes
Barium	1	2	0.004	**0.0999**		NA		NA		NA		Yes
Lead	0.0022	0.0046	0.002	< 0.00100 U	U	NA		NA		NA		Yes
Selenium	0.0057	0.0120	0.002	**0.00111**	J	< 0.00200 U	U	NA		NA		Yes
Silver	0.0014	0.0030	0.002	< 0.00100 U	U	< 0.00100 U	U	NA		NA		Yes
SEMI-VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		**µg/L**		
1,4-Dioxane**	NA	134.2	1	**4.8**		NA		NA		NA		Yes

Notes:
µg/L - micrograms per liter
DVQ - data validation qualifier
GWTP - Groundwater Treatment Plant
J - estimated concentration
mg/L - milligrams per liter
U - Non detect
NA - not applicable or not analyzed
Grab samples are compared to the daily maximum and composite samples to the daily average
*Influent sample not compared to discharge limits
** Calculated Effluent Limit

Table 11. Quarterly GWTP Analytical Sampling Results
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

			Sample Location	EFFLUENT*		INFLUENT		Does Concentration Meet Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_062018		LH18/24_SP140_062018		
			Lab Package	HS18061039		HS18061036		
			Sample Date	6/20/2018		6/20/2018		
			Sample Type	GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Protocol							
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit	Result	DVQ	Result	DVQ	
VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		
1,1,1-Trichloroethane	3,417	7,230	1	< 0.5	U	< 10	U	Yes
1,1,2-Trichloroethane	102.5	216.9	1	< 0.5	U	< 10	U	Yes
1,1-Dichloroethane	6,633	14,032	1	< 0.5	U	**8.9**	J	Yes
1,1-Dichloroethene	119	253	1	< 0.5	U	< 10	U	Yes
1,2-Dichloroethane	85	181	1	**0.59**	J	**56**		Yes
1,2-Dichloropropane	NA	NA	1	< 0.5	U	< 10	U	Yes
Acetone	1,132	2,395	2	< 1.0	U	< 10	U	Yes
Benzene	85	181	1	< 0.5	U	< 10	U	Yes
Carbon Tetrachloride	85	181	1	< 0.5	U	< 10	U	Yes
Chlorobenzene	22,300	47,180	1	< 0.5	U	< 10	U	Yes
Chloroform	1,708	3,615	1	< 0.5	U	< 10	U	Yes
Ethylbenzene	26,954	57,025	1	< 0.5	U	< 10	U	Yes
m,p-Xylenes	39.5	83.6	2	< 1.0	U	< 20	U	Yes
Methylene Chloride	803	1,699	2	< 1.0	U	**28**	J	Yes
o-Xylene	39.5	83.6	1	< 0.5	U	< 10	U	Yes
Styrene	2,829	5,987	1	< 0.5	U	< 10	U	Yes
Tetrachloroethene	85.4	180.7	1	< 0.5	U	**51**		Yes
Toluene	1,980	4,189	1	< 0.5	U	< 10	U	Yes
Trichloroethene	85	181	1	**2.2**		**6,000**		Yes
Vinyl Chloride	34	72	1	< 0.5	U	**33**		Yes
ANIONS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
Chloride	NA	NA	10	**427**		**374**		NA
Sulfate	NA	NA	10	**7.17**		**50.6**		NA
PERCHLORATE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		
Perchlorate	278	589	4	**15**		**9,400**		Yes
METALS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
Aluminum	0.777	1.644	0.0100	0.0170	UB	0.0160	UB	Yes
Antimony	NA	NA	0.00200	< 0.00100	U	**0.000585**	J	NA
Arsenic	0.365	0.772	0.00200	**0.00110**	J	**0.000735**	J	Yes

Table 11. Quarterly GWTP Analytical Sampling Results
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

			Sample Location	EFFLUENT*		INFLUENT		Does Concentration Meet Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_062018		LH18/24_SP140_062018		
			Lab Package	HS18061039		HS18061036		
			Sample Date	6/20/2018		6/20/2018		
			Sample Type	GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Protocol							
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit	Result	DVQ	Result	DVQ	
Barium	1	2	0.00400	**0.0709**		**0.440**		Yes
Beryllium	NA	NA	0.00200	< 0.00100	U	< 0.00100	U	NA
Cadmium	0.0016	0.0034	0.00200	**0.000222**	J	**0.00103**	J	Yes
Calcium	NA	NA	0.500	**7.66**		**33.4**		NA
Chromium	0.355	0.752	0.00400	**0.00540**		**0.00147**	J	Yes
Cobalt	5.433	11.495	0.00500	**0.00222**	J	**0.0128**		Yes
Iron	1.132	2.395	0.200	**0.261**		**0.283**		Yes
Lead	0.0022	0.0046	0.00200	< 0.00100	U	< 0.00100	U	Yes
Magnesium	NA	NA	0.200	**19.0**		**25.0**		NA
Manganese	7.323	15.494	0.00500	**0.0777**		**0.637**		Yes
Nickel	0.087	0.184	0.00200	**0.0125**		**0.0296**		Yes
Potassium	NA	NA	0.200	**1.82**		**1.63**		NA
Selenium	0.0057	0.012	0.00200	**0.00150**	J	**0.00199**	J	Yes
Silver	0.0014	0.003	0.00200	< 0.00100	U	< 0.00100	U	Yes
Sodium	NA	NA	1.00	**334**		**177**		NA
Thallium	NA	NA	0.00200	< 0.00100	U	**0.000338**	J	NA
Vanadium	1.698	3.592	0.00500	**0.00143**	J	< 0.00100	U	Yes
Zinc	0.146	0.31	0.00400	**0.455**		**0.651**		No
Mercury	NA	NA	0.000200	< 0.0000500	U	**0.0000640**	J	NA
1,4-DIOXANE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		
1,4-Dioxane	NA	134.2	1	**4.5**		**13**		Yes
CHEMICAL OXYGEN DEMAND (COD)	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
COD	NA	200	75	**66**		**12**	J	Yes
OIL AND GREASE (O&G)	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
O&G	NA	15	2	**2.92**		**0.625**	J	Yes

Notes:
µg/L - micrograms per liter
GWTP - Groundwater Treatment Plant
NA - not applicable
DVQ - data validation qualifier
J - Estimated concentration
mg/L - milligrams per liter
ROD - Record of Decision
Grab samples are compared to the daily maximum and composite samples to the daily average
U - non detect
UB - considered non detect due to blank contamination
* only Effluent sample is compared to discharge limits

Table 12. Groundwater Elevations at LHAAP-16 Piezometers and Monitoring Wells
2nd Quarter 2018 Groundwater Treatment Plant Report
Longhorn Army Ammunition Plant

Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 4/26/18	Groundwater Elevation (feet amsl) 4/26/18	Depth to Water (feet) 5/30/18	Groundwater Elevation (feet amsl) 5/30/18	Depth to Water (feet) 6/28/18	Groundwater Elevation (feet amsl) 6/28/18
16PZ-1	Piezometer	199.44	27.23	172.21	28.18	171.26	28.31	171.13
16PZ-2	Piezometer	199.75	28.02	171.73	28.47	171.28	28.65	171.10
16PZ-3	Piezometer	198.61	26.37	172.24	26.79	171.82	26.97	171.64
16PZ-4	Piezometer	198.81	27.00	171.81	27.53	171.28	27.77	171.04
16PZ-5	Piezometer	198.31	25.97	172.34	26.44	171.87	26.55	171.76
16PZ-6	Piezometer	198.61	26.76	171.85	27.09	171.52	27.43	171.18
16PZ-7	Piezometer	200.10	28.02	172.08	28.59	171.51	28.82	171.28
16PZ-8	Piezometer	199.93	27.78	172.15	28.13	171.80	28.49	171.44
16PZ-9	Piezometer	196.49	24.23	172.26	24.75	171.74	25.06	171.43
16PZ-10	Piezometer	196.65	24.80	171.85	25.29	171.36	25.58	171.07
16PZ-11	Piezometer	198.88	26.59	172.29	26.96	171.92	27.29	171.59
16PZ-12	Piezometer	199.00	27.07	171.93	27.63	171.37	27.94	171.06
16PZ-13	Piezometer	196.58	24.35	172.23	24.92	171.66	25.31	171.27
16PZ-14	Piezometer	196.09	24.12	171.97	24.59	171.50	24.92	171.17
16PZ-15	Piezometer	191.93	19.57	172.36	19.98	171.95	20.19	171.74
16PZ-16	Piezometer	190.79	18.86	171.93	19.25	171.54	19.57	171.22
16PZ-17	Piezometer	186.67	14.20	172.47	14.79	171.88	15.04	171.63
16PZ-18	Piezometer	185.99	14.22	171.77	14.85	171.14	15.12	170.87
16PZ-19	Piezometer	183.98	11.52	172.46	12.14	171.84	12.59	171.39
16PZ-20	Piezometer	183.12	11.03	172.09	11.73	171.39	12.05	171.07
16WW12	Monitoring Well	188.81	16.62	172.19	17.17	171.64	17.37	171.44
16WW14	Monitoring Well	198.87	25.60	173.27	26.08	172.79	26.31	172.56
16WW22	Monitoring Well	200.13	27.63	172.50	28.12	172.01	28.44	171.69
16WW25	Monitoring Well	188.77	15.77	173.00	16.39	172.38	16.51	172.26
16WW26	Monitoring Well	188.83	16.50	172.33	17.11	171.72	17.36	171.47
16WW29	Monitoring Well	178.24	5.50	172.74	7.59	170.65	8.12	170.12
16WW30	Monitoring Well	178.47	5.83	172.64	7.91	170.56	8.61	169.86
16WW31	Monitoring Well	202.78	29.95	172.83	30.43	172.35	30.62	172.16
16WW33	Monitoring Well	203.09	30.12	172.97	30.57	172.52	30.71	172.38
16WW35	Monitoring Well	191.23	18.28	172.95	18.87	172.36	19.11	172.12
16WW36	Monitoring Well	190.94	17.77	173.17	18.21	172.73	18.45	172.49

00900002

3 EVALUATION OF LHAAP-16 EXTRACTION SYSTEM

3.1 Quantity of Groundwater Extracted From LHAAP-16

Groundwater was extracted from LHAAP-16 during April (71,921 gallons), May (25,901 gallons) and June (10,325 gallons) 2018. The volume of extracted groundwater from LHAAP-16 is shown in **Table 5** and on **Figure ES-1**. These flows are based on the sum of individual flow meter readings. The extracted volume decreased throughout the quarter due to repairs required on the pump as well as decreasing precipitation.

3.2 Groundwater Elevation

The groundwater elevations in the piezometers and monitoring wells at LHAAP-16 for April, May, and June 2018 are presented in **Table 12**. The potentiometric surface maps for the shallow and Upper Wilcox (intermediate) groundwater zones at LHAAP-16 for April, May, and June 2018 are presented on **Figures B-7** through **B-12** in **Appendix B**. Based on the potentiometric surface maps, the general groundwater flow direction in the shallow and intermediate zone is southeast. The intermediate zone also demonstrated a northeastern to eastern flow direction in the southern portion of the site.

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4 QUALITY CONTROL

This report summarizes the data for samples collected during April, May, and June 2018. The samples were reviewed and validated in accordance with the guidelines in the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, January 2017); *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, January 2017); and the quality control criteria specified in the *Basewide Uniform Federal Policy - Quality Assurance Project Plan Longhorn Army Ammunition Plant* which is in Appendix C of the *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas* (Bhate, May 2018).

The purpose of the sampling program is to evaluate the effectiveness of the groundwater pump and treat system, assess water quality within the capture zone, and assure compliance with the effluent discharge requirements of the Interim ROD. Quality control and quality assurance problems noted in the case narratives received from the laboratory are minor and do not affect the usability of the data for compliance at the GWTP. No sample results from the 2nd quarter of 2018 were rejected due to quality control problems.

ALS Environmental analyzed the compliance samples collected from the GWTP. Independent data verification and validation was performed by the Bhate Environmental Associates, Inc. (Bhate) project chemist as described in the Quality Control Summary Report in **Appendix H**. The laboratory reports for the 2nd quarter of 2018 are included in **Appendix F** on a CD and the laboratory results for sampling conducted at LHAAP-18/24 are included in **Appendix C** on CD. Air monitoring data is presented in **Appendix I, Attachment 3** on CD.

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5 TREATED GROUNDWATER DISCHARGED

Reinjection of groundwater in ICT 6 and ICT 9 was discontinued as of July 15, 2012. The last injection occurred on May 24, 2012, immediately prior to the scrubber system malfunction which caused GWTP operation to cease temporarily.

Treated groundwater that met the perchlorate discharge criteria was discharged to Harrison Bayou or the INF Pond in accordance with the Protocol for Discharging GWTP Effluent (**Appendix G**). **Table 4** summarizes flow rates from the GWTP to the Harrison Bayou, the maximum flow rate allowed by chloride and sulfate concentrations, the daily volume discharged to the INF Pond, and the approximate flow rate discharged for April, May, and June 2018.

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6 AIR MONITORING

6.1 Summary of Air Monitoring Approach

Operation of the GWTP without air abatement was approved by the TCEQ and USEPA conditioned on collection of air monitoring data to determine the effect of GWTP operation on ambient air quality with respect to potential human health exposure risk. An Interim Air Monitoring Plan was developed by AECOM in August 2012 and used to implement the air monitoring program. The air monitoring program included sampling emission concentrations from the air stripper, ambient air at the GWTP, and ambient air downwind of the GWTP. Collection of air data occurred on a weekly basis between September 2012 and September 2013, on a monthly basis between September 2013 and September 2014, and on a quarterly basis since that time. The sampling program includes use of Summa canisters and a photoionization detector (PID) to measure vapor phase concentrations. The air stripper emission sample is collected as a grab sample, while the ambient air samples are collected as composite samples. The GWTP sample is collected over 8 hours to represent a work day and the downwind sample is collected over 24 hours to represent potential exposure to an off-site receptor[1]. The downwind sample is collected at the closest downwind property boundary, based on prevailing wind direction.

PID data (after system calibration) are collected each time the GWTP is operated and serve as a real-time indicator of ambient air conditions at and downwind of the GWTP. Correlations between definitive analytical air data and PID measurements were established and a means to calculate contaminant concentration from PID measurements was developed. A PID threshold of 0.4 parts per million by volume (ppmv) in ambient air was established, such that Summa canister measurements would occur when the PID threshold is exceeded.

The Summa canister samples are analyzed for VOCs using USEPA Method TO-15. The PID measurements are collected after instrument calibration. The air sampling results are summarized and reported to the USEPA and TCEQ in the GWTP quarterly reports; however, the air results are reviewed immediately upon receipt for the potential presence of any exceedances of ambient air concentrations. **Appendix I** includes a summary of analytical results and PID readings, calculations of emission rates from the emission point, comparison of ambient air concentrations with TCEQ Air Monitoring Comparison Values (AMCVs) or the short-term Effects Screening Levels (ESLs) for chemicals with no published AMCVs, and a compilation of PID results and calibration records. The air monitoring results to date indicate that all ambient air

[1] Off-site receptor - Any recreational area, residence, commercial/industrial facility, or other normally occupied structures not used solely by the owner or operator of the facilities or the owner of the site upon which the facilities are located. Measurements of distances to determine compliance with this distance restriction must be taken toward structures that are in use as of the date that a notification is filed with the commission.

concentrations are lower than the AMCVs or ESLs. The stripper stack sample concentrations are used to calculate emission rates in pounds per hour (lbs/hr) and tons per year (tpy). The calculated emission rates in lbs/hr are then compared to the allowable emission rates per 30 Texas Administrative Code (TAC) §106.533(f)(1). The emission rates have been lower than the allowable emission rates to the conservatively-selected off-site receptor. The calculated emission rate in tpy is compared to the allowable limit of 5 tpy per chemical.

The air monitoring results from the first few months of operation between September and November 2012 were compiled and submitted in a separate report (December 2012) (along with validated data) to TCEQ to demonstrate compliance with Texas Permit by Rule emission standards. Approval of the analytical results and concurrence that the site will continue to meet Title 30 TAC §106.533 without the use of air abatement using a catalytic oxidation system was obtained from the TCEQ via email on February 22, 2013.

On February 18, 2013, AECOM presented analysis of the approach applicable to obtaining a variance for operating the GWTP without air abatement equipment to the TCEQ and USEPA. The analysis indicated that the use of an Explanation of Significant Difference (ESD) was the appropriate approach for the site. Approval of use of an ESD was obtained from the USEPA via email on March 21, 2013. The ESD was developed, reviewed, and accepted by USEPA and TCEQ. The ESD was signed by the designated parties on April 3, 2014, and concurrence from the TCEQ was obtained in a letter dated April 16, 2014.

6.2 Air Monitoring Results for the 2nd Quarter of 2018

During the 2nd quarter of 2018, air sampling was completed on May 29, 2018. A summary of the air sampling results is presented in **Appendix I**. All results met the criteria described in Section 6.1.

6.2.1 Summa Canister Monitoring Results

One sampling event was conducted on May 29, 2018, for presentation during the 2nd Quarter 2018 reporting period using Summa canisters. The samples were collected and analyzed as described in Section 6.1 and per the approved air monitoring plan dated August 2012. The analytical results were then compiled in spreadsheets where calculations were completed and comparisons to applicable criteria were made as described in Section 6.1.

6.2.1.1 Ambient Air Results

Acetone, benzene, TCE, n-hexane, styrene, toluene, ethylbenzene, xylenes, propene (C3H6), dichlorodifluoromethane, ethanol, trichlorofluoromethane, trichlorotrifluoroethane, alpha-pinene, and d-limonene were detected in May 2018 in ambient air downwind of the GWTP.

Compounds originating at the GWTP would be expected to have lower concentrations in the

downwind sampling location than at the GWTP sampling location. Lower concentrations were found for many of the chlorinated compounds. Compounds such as dichlorodifluoromethane, trichlorofluoromethane, and alpha-pinene typically have had similar concentrations in both GWTP ambient air and downwind ambient air and are suspected to be present in the ambient (background) air. However, several of these compounds were detected at higher concentrations downwind than within the GWTP ambient air. It is possible that equipment operation such as tractor or truck exhaust is a contributor to higher levels of benzene, toluene, ethylbenzene, and xylenes which are typically not detected or detected at low levels in the groundwater.

All ambient air results during the quarter met the ambient air criteria, as presented in **Table 1** within **Appendix I**.

6.2.1.2 Air Stripper Effluent Results

The VOCs present in groundwater that are removed via the air stripper include 1,1-dichloroethene (DCE); 1,2-dichloroethane; cis-1,2-DCE; methylene chloride; tetrachloroethene; TCE; and trichlorotrifluoroethane. The highest reported concentrations from the air stripper stack exhaust (air) are for TCE; methylene chloride; cis-1,2-DCE; and trichlorotrifluoroethane. These compounds are frequently reported in groundwater at the site, with the exception of trichlorotrifluoroethane which is not typically a groundwater analyte at LHAAP. Trichlorotrifluoroethane, however, appears to be present in groundwater as indicated by limited analysis conducted in December 2013, where it was detected in several wells, and from historical accounts. Many of the chemicals that are reported in ambient air are not detected in the air stripper effluent. This is likely because the reporting limit for the air stripper effluent is higher than the reporting limit for the ambient air samples or the source for some of these chemicals are extraneous to groundwater.

All air stripper effluent concentrations were below the emission criteria, as presented in **Table 2** within **Appendix I**.

6.2.2 PID Results

Along with collection of Summa canister air samples, PID measurements from the same sources/areas are collected and recorded. These simultaneous measurements allowed establishing a correlation between PID readings and VOC concentrations in the Summa canister air samples. Conversion from PID to compound concentrations was established by TCEQ in 30 TAC §106.533(h). The TCEQ equation allows use of a PID to determine individual compound concentrations if the distribution of chemicals in the ambient air is known or assumed. This allows the use of a PID as a tool to measure VOC concentrations and convert the PID results to estimates of compound concentrations. All ambient air PID measurements during this quarter at the GWTP were reported at 0.0 parts per million. The results of the PID readings collected during GWTP operations are presented in **Table 3** within **Appendix I**.

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7 COMMENTS AND RESPONSES

The following comments were received from the USEPA on 24 August 2018, for the 1st Quarter 2018 Report. A response follows each comment.

Comment 1: Table 13, Treated Groundwater Discharge to Harrison Bayou: Under the notes, please include the values for the terms "Flood Stage" and "Maximum".

Response to Comment 1: Flood stage does not have a value and is based upon the bayou flowing outside of the banks. Maximum flow is 120 gpm based upon the discharge pump. However, maximum flow is typically limited by the discharge from the FBR of 30 gpm.

Comment 2: Page 3-1, Section 3.3: When will the extraction of groundwater be ceased at Site 16?

Response to Comment 2: In accordance with the Draft Final LHAAP-16 RAWP Section 3.3.3 Sequencing of Injection Areas, groundwater extraction will continue through a part of the injection activities (Bhate and APTIM, June 2018). Based upon the current schedule for implementation of the RAWP for LHAAP-16, extraction will cease no later than the end of November 2018.

Comment 3: General Comment: Is there a Figure indicating the historical treated water sprinkled onto Site 18/24, such as the Figure ES-2 relating to the historical treated water injected? This is important information to see how the monitoring well system is responding over time.

Response to Comment 3: No such Figure has been created nor maintained. However, should sprinklers be used in the future, such a figure can be created. Further Figure ES-2 will be removed in future reports since injection of treated water into the Site LHAAP-18/24 ceased over 5 years ago and will not be continued.

Comment 4: Page vii., Third Paragraph, Minor Editorial Comment: "Water discharge from INF Pond varied from a flow rate of 18 gpm and 184 gpm". Based on Table ES-1, the maximum flow rate is listed as 154 gpm, please correct.

Response to Comment 4: Concur. The sentence should have read "water discharge from the INF Pond varied from a flow rate of 18 gpm to 154 gpm." A change page for Page vii will be provided along with a new PDF of the document on CD.

Comment 5: Table 12: There are several COCs with J values that exceed the MCL (which are highlighted). It is assumed that these J values exceeded the typical reporting level (< 1 ppb) due to dilution or some other factor. In the QA/QC section, please provide the reasons for the higher reporting level and what reporting level was used for these J values.

Response to Comment 5: Section 1.9.1 and Table 2 of the QCSR explains these estimated values. Specifically Section 1.9.1 states: *The LHAAP-16 RPD, between 16EW05_020718 and its*

duplicate, was exceeded for cis-1,2-dichloroethene, trichloroethene and vinyl chloride. These compounds were qualified estimated "J" in both sample and duplicate.

The estimated value is not due to a dilution but rather that the RPD was above control limits.

Comment 6: General Comment: It appears that monitoring well 18WW07 should be plugged and abandoned due to the screen collapsing. Since it is one of the vital wells close to the Bayou, there should be a replacement well, such as 18CPTMW16.

Response to Comment 6: Monitoring well 18WW07 will no longer be gauged. Monitoring well 18CPTMW16 is currently gauged and sampled and will continue to be.

The following comments were received from the TCEQ on 29 August 2018, for the 1st Quarter 2018 Report. A response follows each comment.

Comment 1: Section 2.4, first sentence: It would be better if this section referenced the [Sampling and Analysis Plan] SAP since these are not the only two documents to list the required samples.

Response to Comment 1: The wording will be revised to state: As part of the GWTP operations, samples from various water streams are required to be collected and analyzed for the parameters in accordance with the *Final Revised Sampling and Analysis Plan for Groundwater Treatment Plant and Well Fields* (AECOM, September 2017), which was developed in accordance with the Interim Record of Decision (ROD) and the TCEQ letter dated January 8, 2002 (see Administrate Record Volume 1 of 4 in 2002, Document A).

Comment 2: Appendix B, Figures: Bhate seems to prefer the natural color aerial images for base map data. This is fine but the figures should include the surface water features and other relevant man-made features (such as roads). Surface water features are especially important to turn-on for the figures because you can't see these important features through the trees.

Response to Comment 2: Revised figures for Appendix B will be provided as change pages and a new CD with the revised PDF will be provided.

Comment 3: Appendix F: Should include the printed summary tables. I believe I requested this last time too (see comment 4 page 7-4). The printed reports should include everything except large data packages.

Response to Comment 3: A printed Appendix F will be provided.

Comment 4: Appendix F: Missing the attached Table 2. Table 2 should be right after Table 1.

Response to Comment 4: A printed Appendix F will be provided along with a revised PDF that includes Table 2.

APPENDIX A
ICT LAYOUT AND GWTP PROCESS FLOW DIAGRAM

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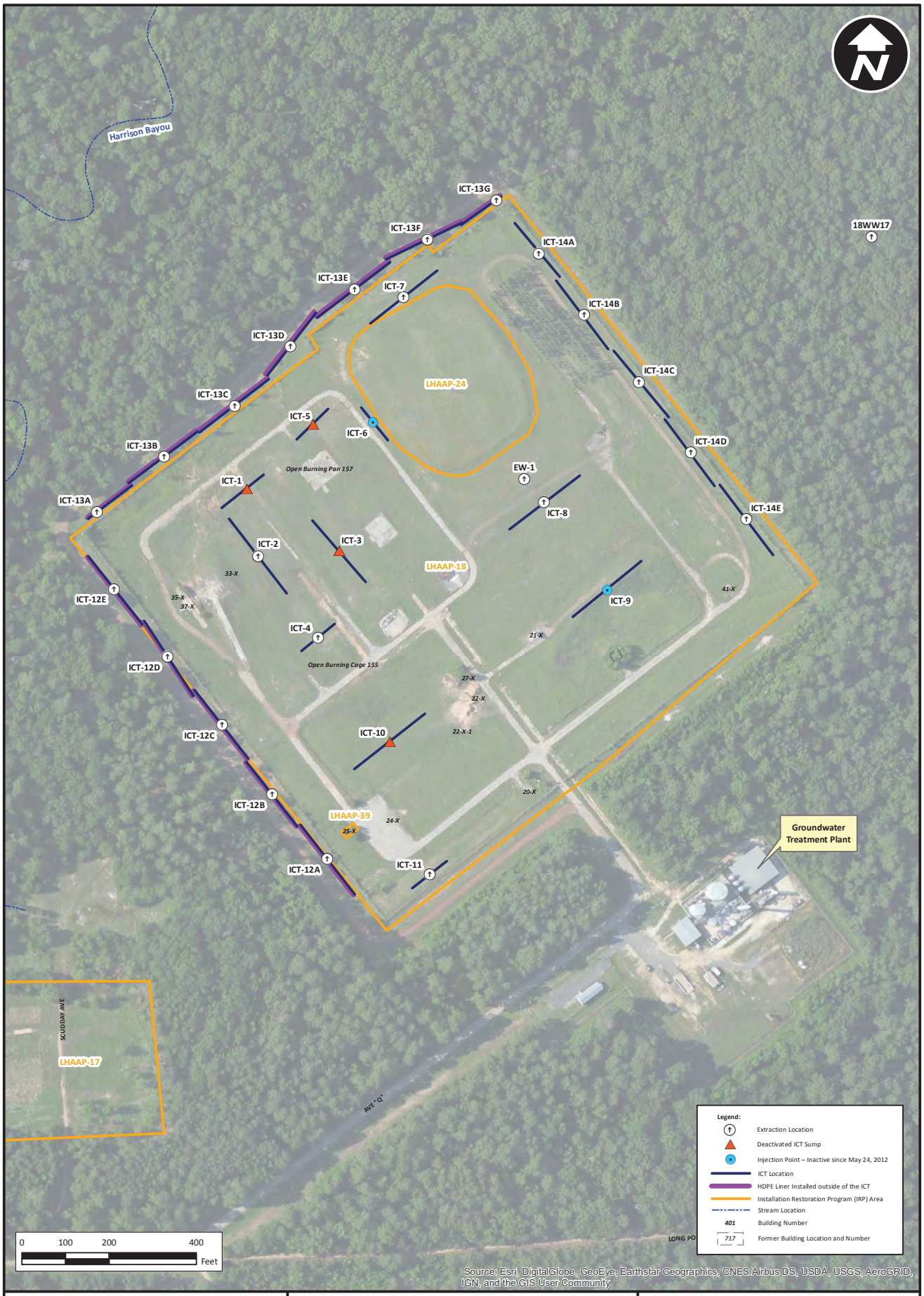


bhate

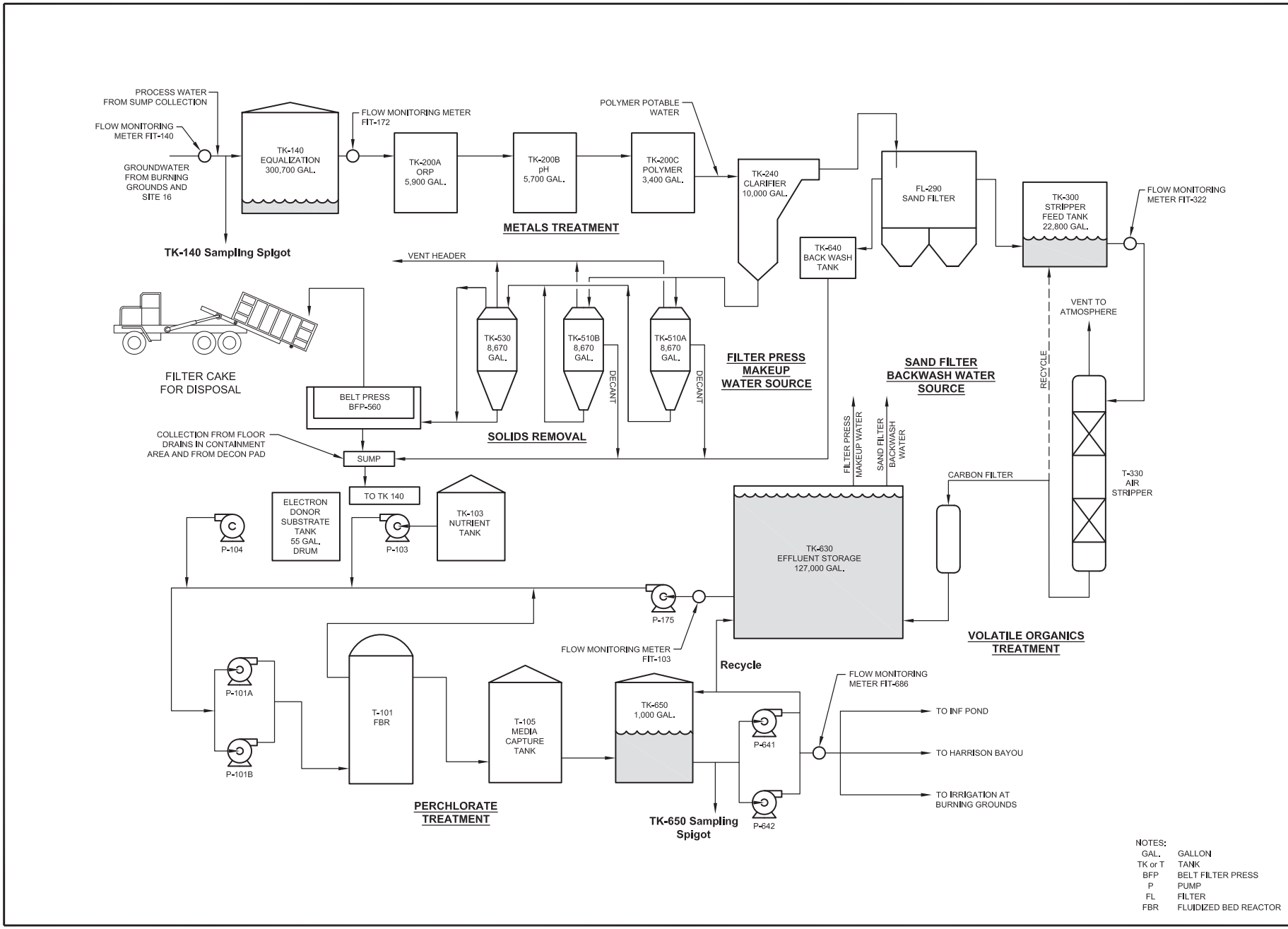
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/10/2018	MRM

ICT Layout Map

Figure A-1

00900018



Process Flow Diagram

Figure A-2

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	Not to Scale	9/10/2018	MRM

bhate

Table A-1: ICTs Completion Depths

ICT	TOC Elevation	Total Depth	Sump Elevation	Comment
1	186.07	22.5	163.57	Taken out of service in 2007.
2	185.02	29.5	155.52	
3	192.27	37.75	154.52	Taken out of service in 2007.
4	193.51	37.5	156.01	
5	192.67	35	157.67	Taken out of service in 2007.
6	197.30	40.75	156.55	Converted to infiltration in 2007. Ceased reinjection in July 2012.
7	198.03	32.33	165.7	
8	198.97	44.5	154.47	
9	197.64	45.5	152.14	Converted to infiltration in 2007. Ceased reinjection in July 2012.
10	198.07	45.42	152.65	Taken out of service in 2007.
11	198.01	43.33	154.68	
12A	189.06	31.5	157.56	Taken out of service in 2007. Reinstituted in December 2012.
12B	191.97	36.25	155.72	
12C	193.90	34.33	159.57	
12D	185.64	33.75	151.89	
12E	183.38	32.25	151.13	
13A	182.59	28.17	154.42	
13B	184.72	29.58	155.14	
13C	186.13	28.17	157.96	
13D	186.72	26.17	160.55	
13E	191.79	27.08	164.71	
13F	197.81	32.33	165.48	
13G	197.03	27.25	169.78	Taken out of service in 2008.
14A	196.8	43.00	153.8	
14B	197.61	43.42	154.19	
14C	197.86	41.33	156.53	
14D	198.47	44.25	154.22	
14E	198.47	43.08	155.39	

Note(s):

ICT - interception-collection trench

TOC - top of casing, measuring point for groundwater elevations

Elevations are reported as feet above mean sea level.

Total depths are reported as feet below TOC.

Sump elevation calculated by subtracting total depth from TOC elevation.

ICTs were installed in 1998.

ICT 12A was replaced on December 5, 2012, and extraction has resumed.

TOC Elevations and total depth measured in October 2003, 4th Quarter 2003, Groundwater Treatment Plant Report.

APPENDIX B
GROUNDWATER ELEVATION CONTOUR MAPS

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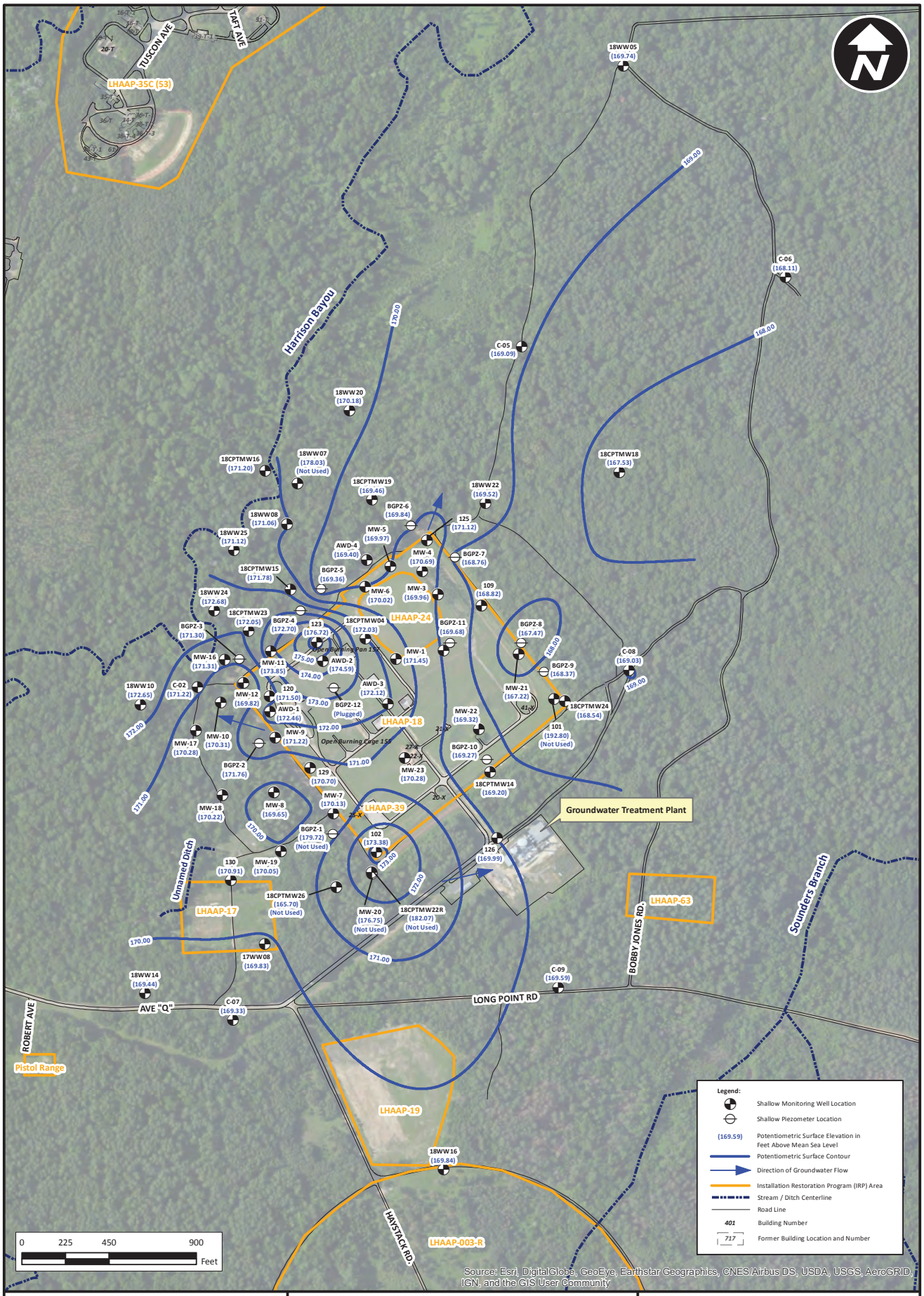


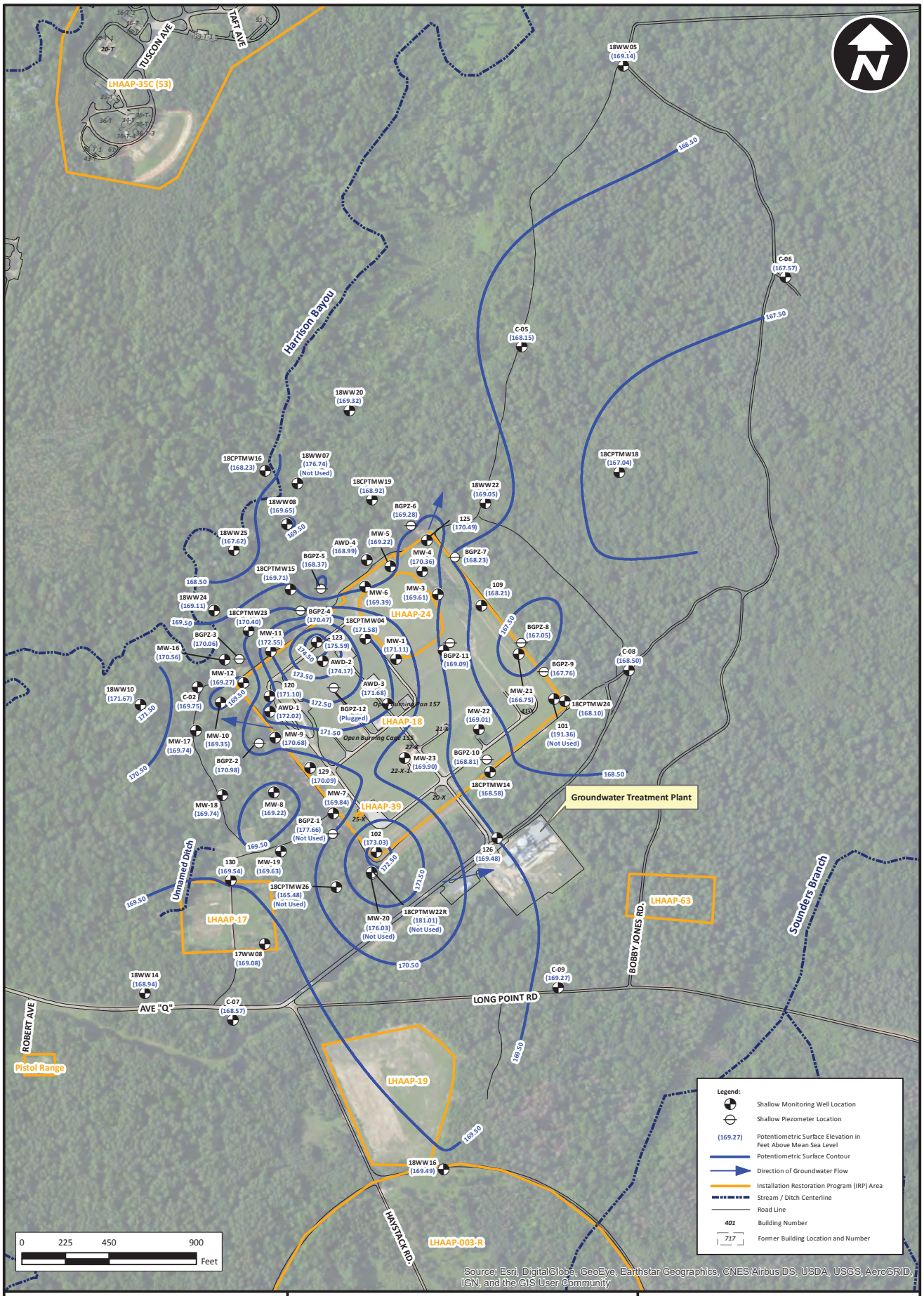
bhate

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

Groundwater Potentiometric Surface Map
Shallow Zone (April 2018) LHAAP-18/24

Figure B-1



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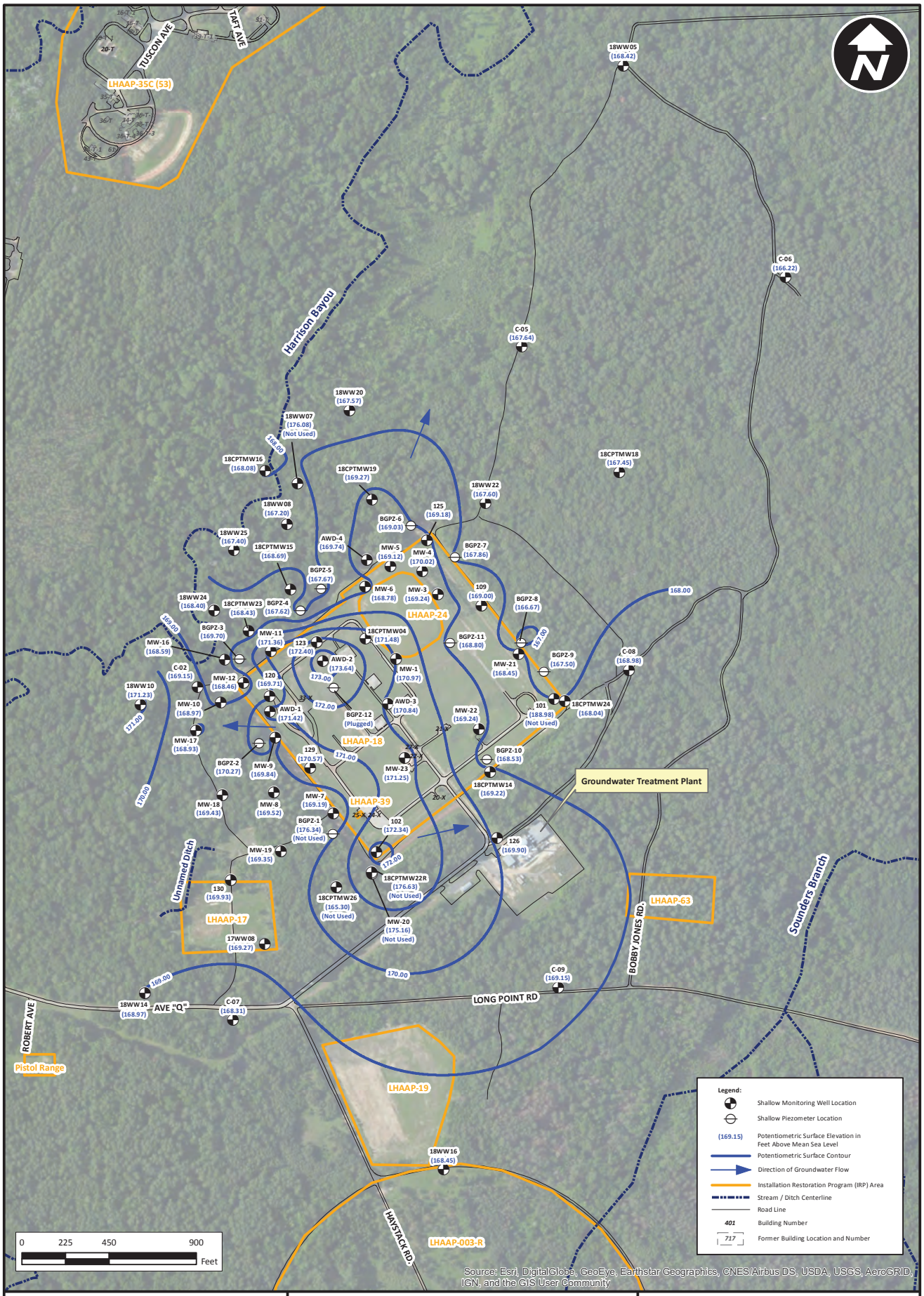
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

Groundwater Potentiometric Surface Map
Shallow Zone (May 2018) LHAAP-18/24

Figure B-2



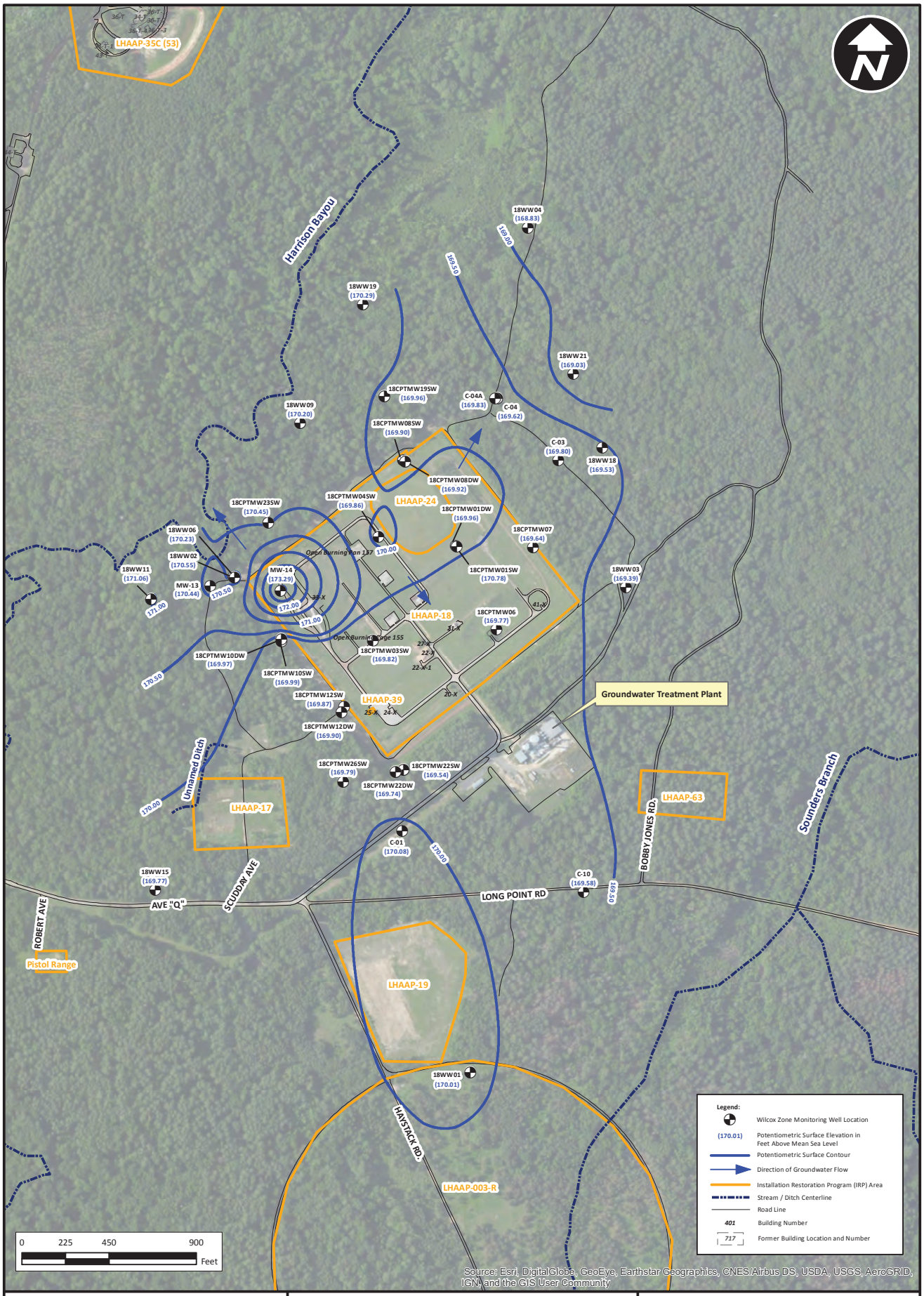
bhate

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

Groundwater Potentiometric Surface Map
Shallow Zone (June 2018) LHAAP-18/24

Figure B-3



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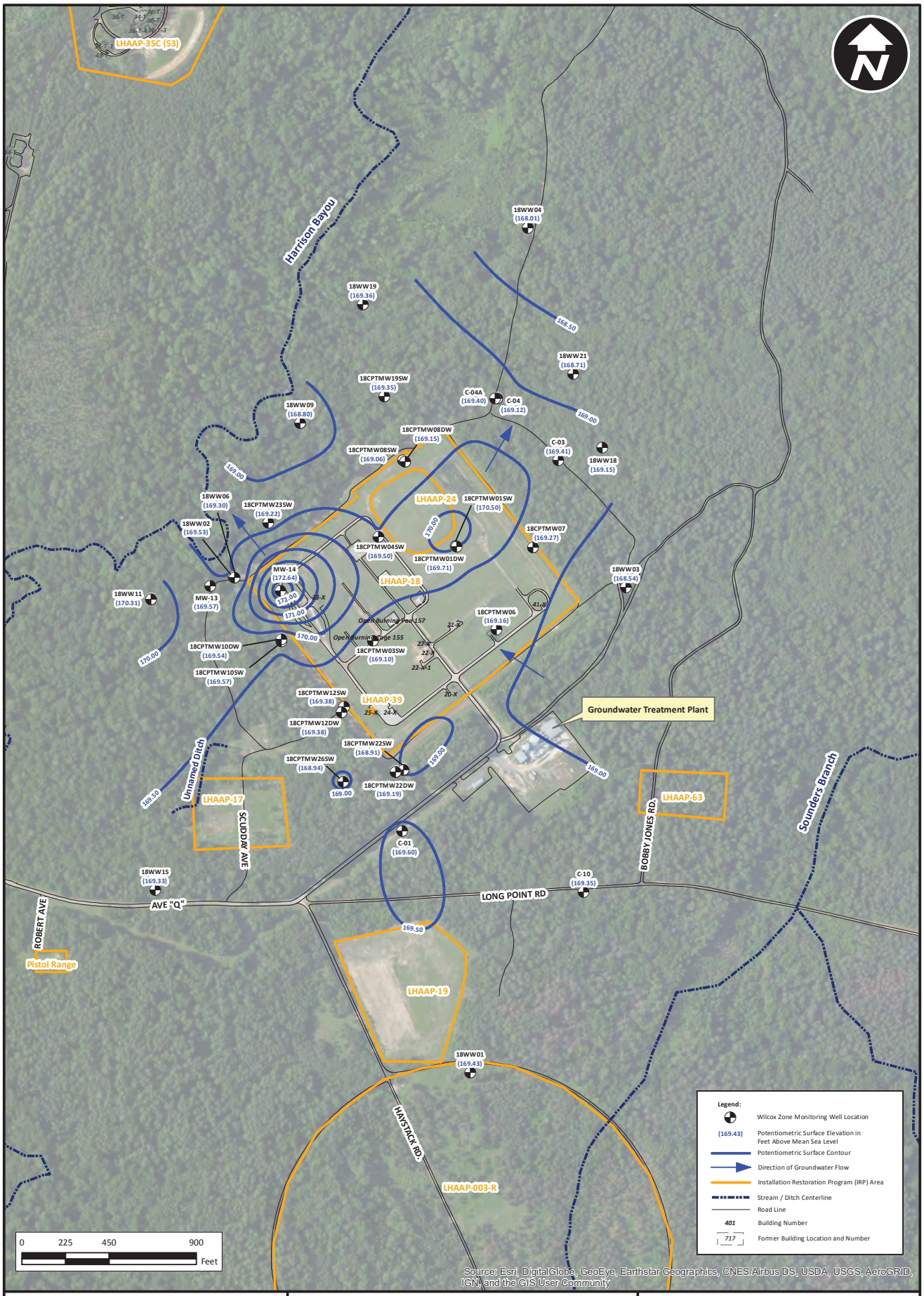
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

Groundwater Potentiometric Surface Map
Wilcox Zone (April 2018) LHAAP-18/24

Figure B-4



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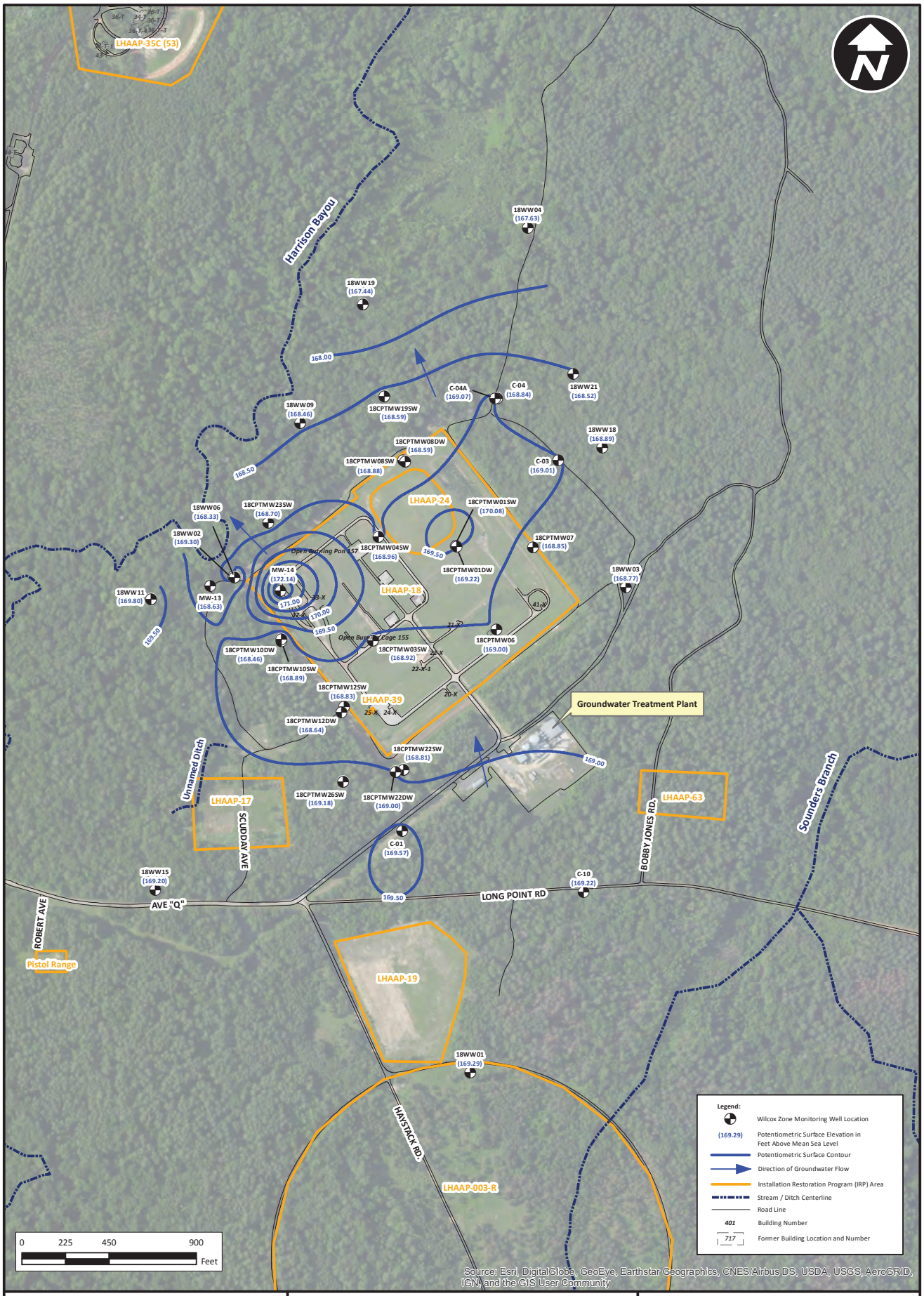
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

Groundwater Potentiometric Surface Map
Wilcox Zone (May 2018) LHAAP-18/24

Figure B-5



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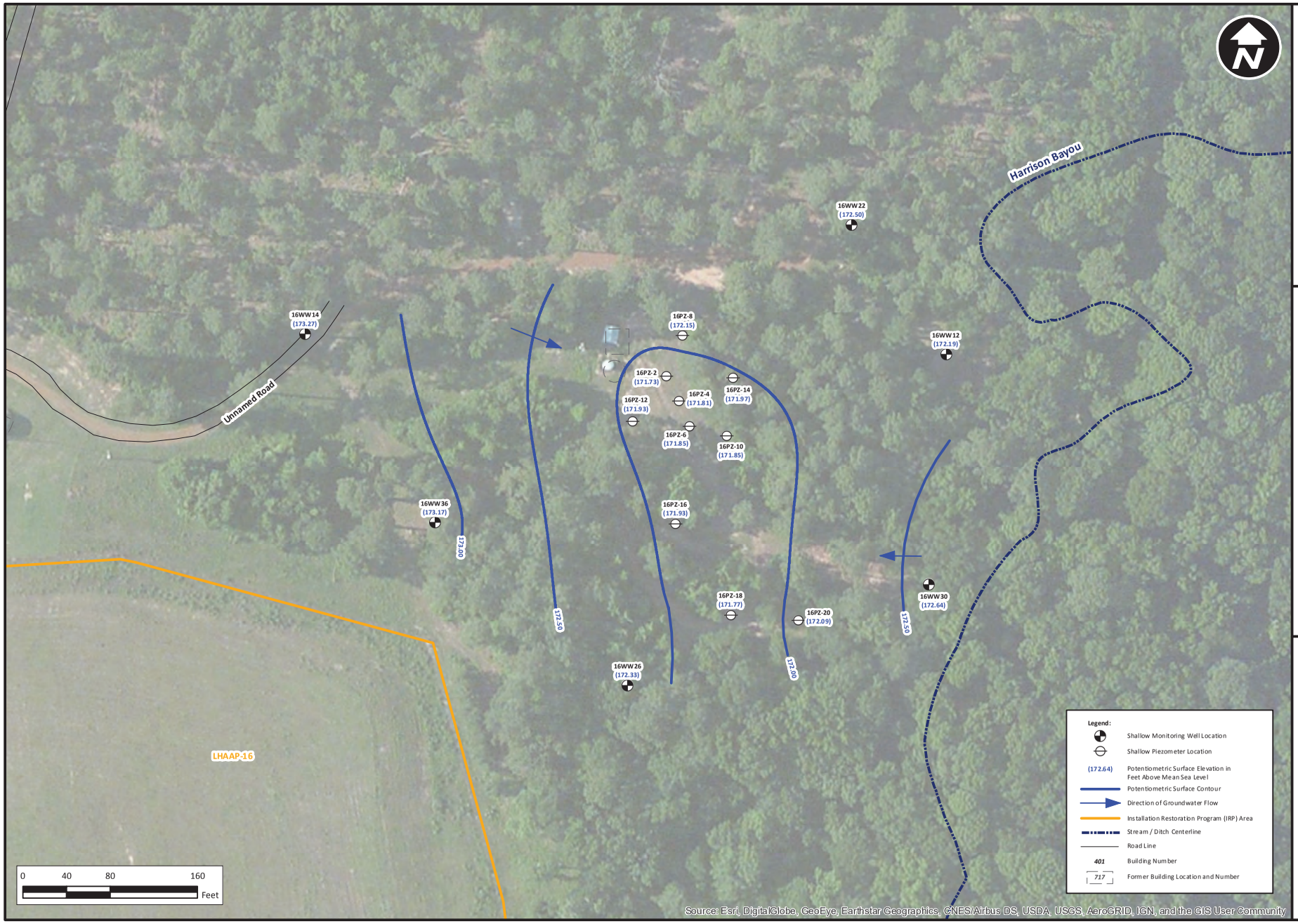
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

Groundwater Potentiometric Surface Map
Wilcox Zone (June 2018) LHAAP-18/24

Figure B-6

00900028



Groundwater Potentiometric Surface Map
Shallow Zone (April 2018) LHAAP-16

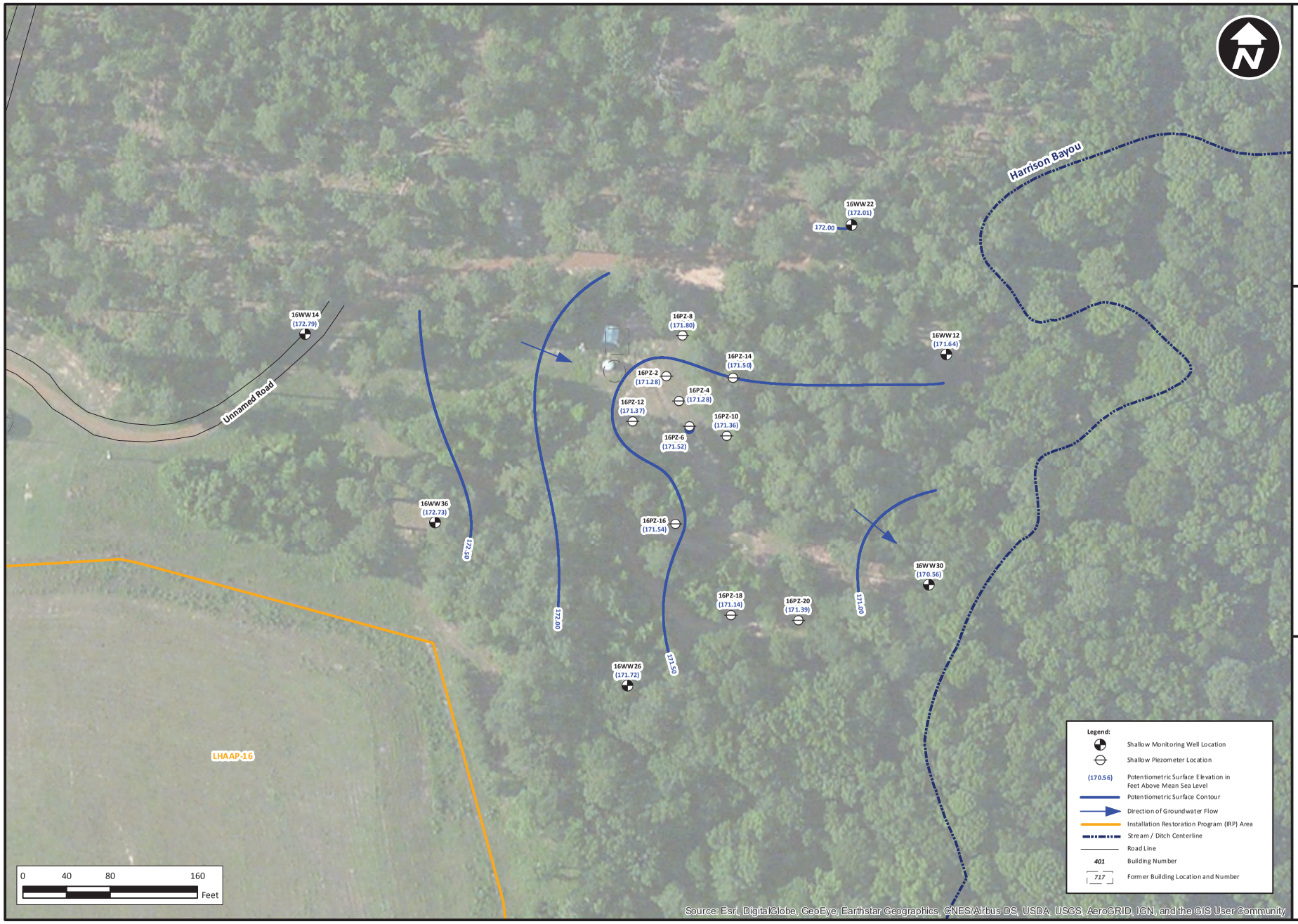
Figure B-7

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

bhate

00900029



Groundwater Potentiometric Surface Map
Shallow Zone (May 2018) LHAAP-16

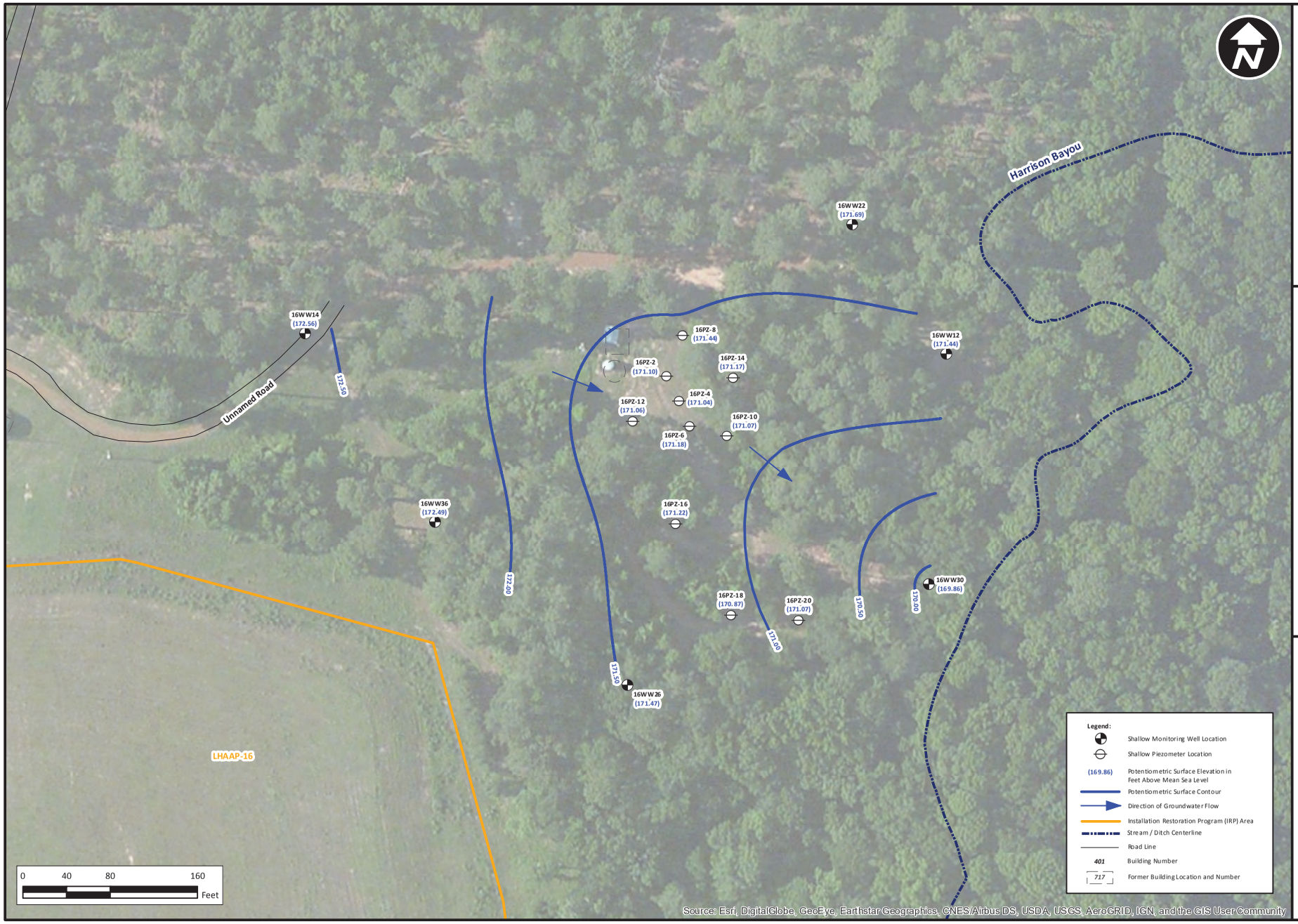
Figure B-8

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/11/2018	MRM

bhate

00900030



Groundwater Potentiometric Surface Map
Shallow Zone (June 2018) LHAAP-16

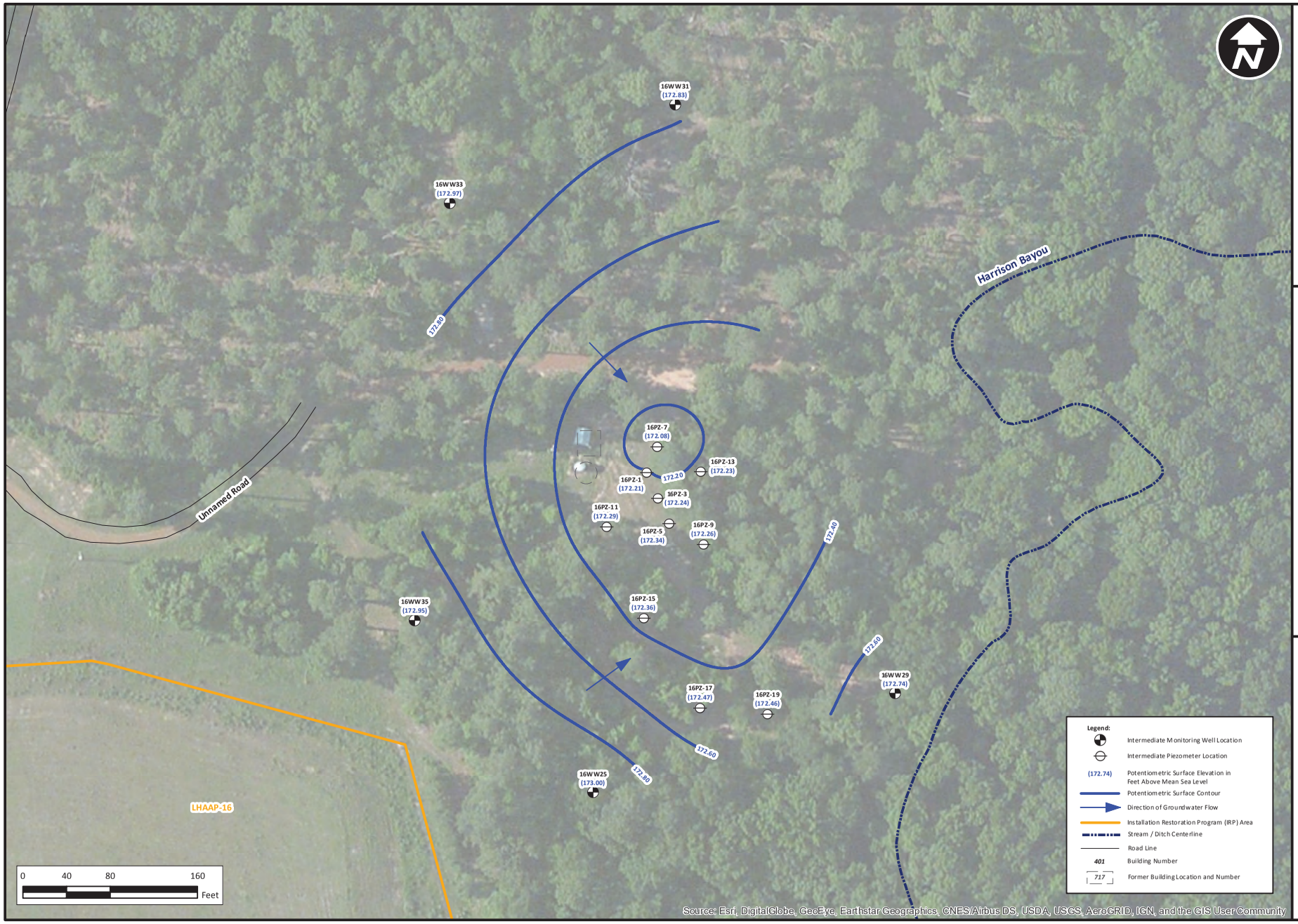
Figure B-9

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

bhate

00900031



Groundwater Potentiometric Surface Map
Intermediate Zone (April 2018) LHAAP-16

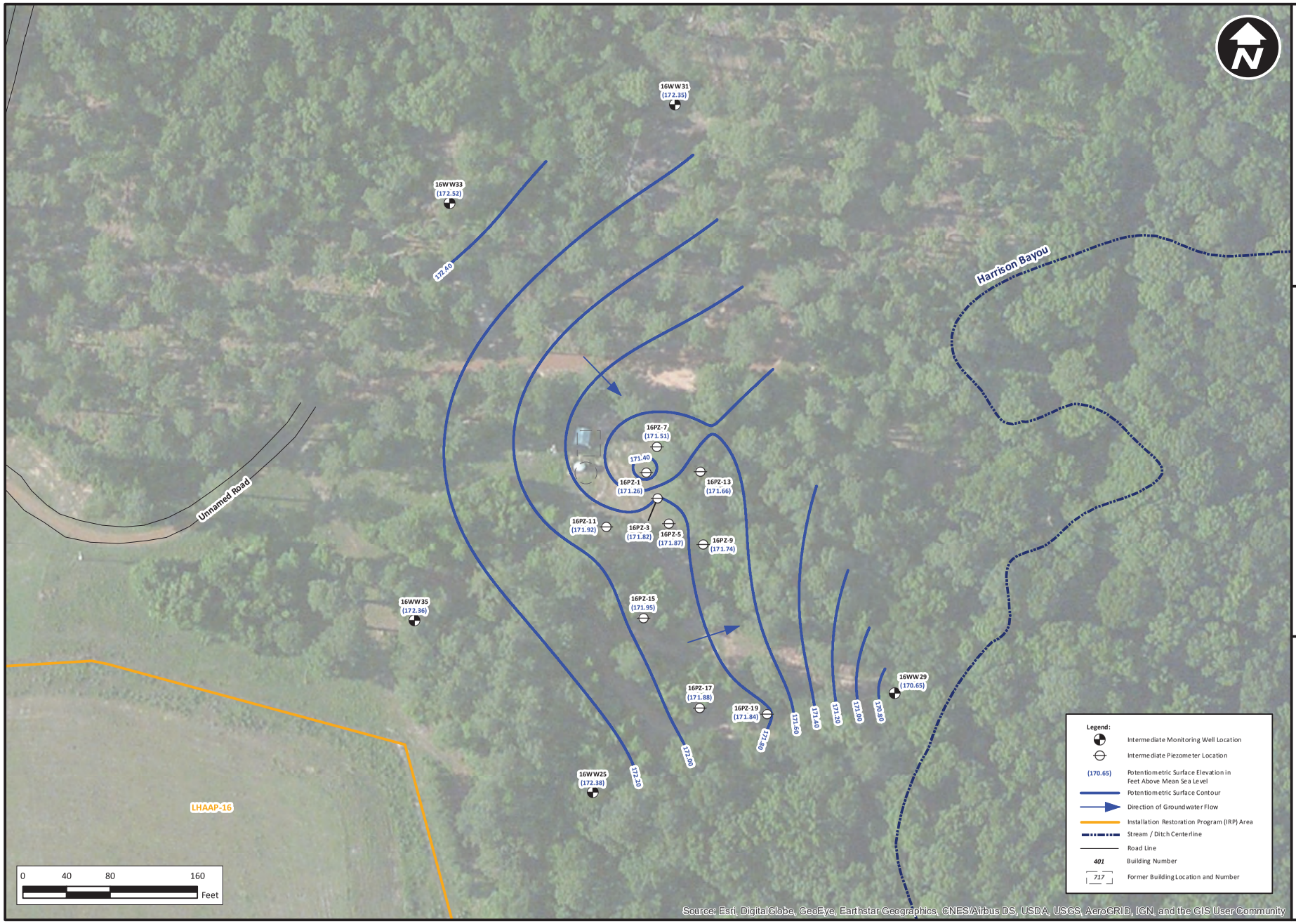
Figure B-10

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NW01312.0150	As Shown	9/12/2018	MRM

bhate

00900032



Groundwater Potentiometric Surface Map
Intermediate Zone (May 2018) LHAAP-16

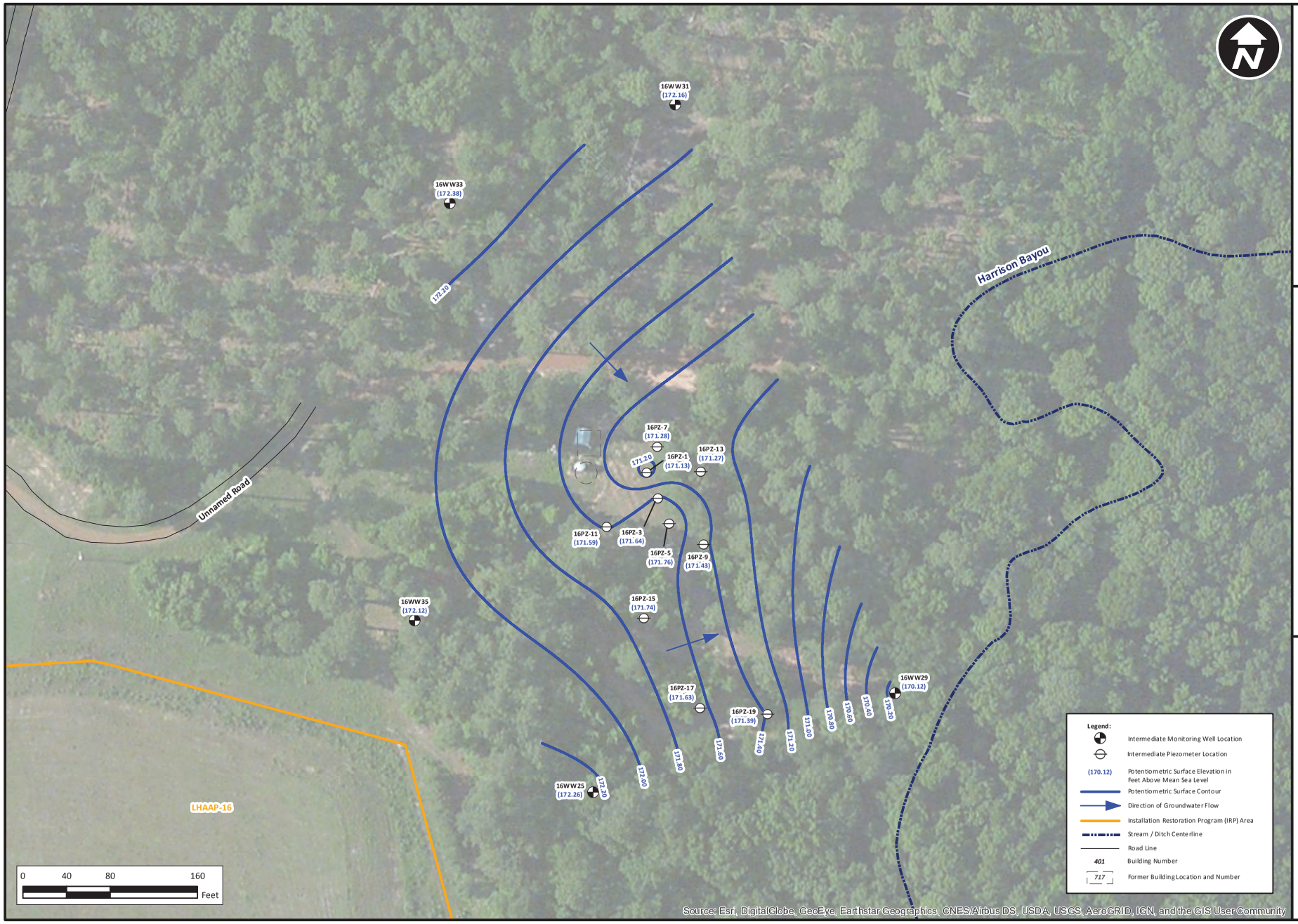
Figure B-11

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

bhate

00900033



Groundwater Potentiometric Surface Map
Intermediate Zone (June 2018) LHAAP-16

Figure B-12

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

bhate

Table B-1: Extraction Equipment Maintenance Since 2011

LHAAP-18/24

Well I.D.	Replaced Parts	Date	Contractor
ICT 14E	Pump	3/15/2012	Shaw
ICT 14D	Pump, motor, level probes	3/16/2012	Shaw
ICT 14B	Pump, level probes, level probe wire	3/16/2012	Shaw
ICT 14A	Pump, motor, level probes, level probe wire	3/17/2012	Shaw
ICT 2	Pump, motor	3/17/2012	Shaw
ICT 13D	Pump	3/19/2012	Shaw
ICT 13B	Pump	3/20/2012	Shaw
ICT 14E	Pump, motor, broken piping	11/19/2012	AECOM
ICT 13C	Pump	11/20/2012	AECOM
ICT13E	Pump	11/20/2012	AECOM
ICT 12A	Pump, motor, wiring harness, level probes, level probe wire	12/5/2012	AECOM
ICT 7	Pump, motor, wiring harness, level probes	12/6/2012	AECOM
ICT2	Pump	6/10/2013	AECOM
ICT 13C	Pump	6/11/2013	AECOM
ICT 13D	Pump	6/12/2013	AECOM
ICT 14E	Pump rebuilt	6/15/2013	AECOM
ICT 14E	Replaced low level switch	6/19/2013	AECOM
ICT 13C	Pump, wiring harness, flow meter	4/15/2014	AECOM
ICT 14D	Repaired level probes	6/24/2014	AECOM
ICT 14E	Repaired level probes	6/24/2014	AECOM
ICT 14E	Pump and motor troubleshooting	6/26/2014	AECOM
ICT2, 13F, 14C, 14D, 14E	Repaired level probes	7/7/2014	AECOM
ICT 12E	Pump, motor	10/2/2014	AECOM
ICT 12E	Wiring harness, fixed leak	10/8/2014	AECOM
ICT 12E	Level probes	10/9/2014	AECOM
ICT13A	Pump, piping	10/15/2014	AECOM
ICT 12E	Repaired leaking fittings	10/16/2014	AECOM
ICT 11	1" tee and 1" elbow	1/13/2015	AECOM
ICT 12B	Flow meter	1/13/2015	AECOM
ICT 7	1" tee, repaired 1" pipe	1/13/2015	AECOM
ICT 13A	Flow meter	1/15/2015	AECOM
ICT 13B	Pump	1/15/2015	AECOM
ICT 13C	Pump	1/16/2015	AECOM
ICT 7	Low level probe	1/16/2015	AECOM
ICT 13D	Pump, level probes	1/17/2015	AECOM
ICT 14C	Low level probe	1/17/2015	AECOM
ICT 14C	Low level probe	1/29/2015	AECOM
ICT 14D	Low level probe	1/29/2015	AECOM
ICT 13D	Level probes	1/29/2015	AECOM
ICT 2	Pump	1/30/2015	AECOM
ICT 8	Fuse	3/2/2015	AECOM
ICT 8	Fuse	3/9/2015	AECOM
ICT 12E	Flow meter	3/13/2015	AECOM
ICT 13D	Union	3/13/2015	AECOM
ICT 14C	Cleaned level probes	4/1/2015	AECOM
ICT 14D	Cleaned level probes	4/1/2015	AECOM
ICT 13A	Cleaned level probes	4/21/2015	AECOM
ICT 14C	Cleaned level probes	4/21/2015	AECOM
ICT 8	Low level probe	7/24/2015	AECOM
ICT 13C	Installed New Pump	7/28/2015	AECOM

Table B-1: Extraction Equipment Maintenance Since 2011

Well I.D.	Replaced Parts	Date	Contractor
ICT 14C	Installed New Pump and Electric Motor	7/29/2015	AECOM
ICT 14E	Installed New Pump and Electric Motor	7/31/2015	AECOM
ICT 12E	Repaired wiring	8/12/2015	AECOM
ICT 13E	Replaced high and low level probes	8/12/2015	AECOM
ICT 2	Installed Rebuilt Pump	9/9/2015	AECOM
ICT 12 E, ICT 14E	Replaced high level probe and wiring	9/15/2015	AECOM
ICT 13A	Installed new pump	12/23/2015	AECOM
ICT 13B	Installed new pump	12/24/2015	AECOM
ICT 13D	Replaced high level probe	2/11/2016	Aerotek
ICT 14C	Replace low level probe on ICT 14C	2/15/2016	Aerotek
ICT 8	Installed new pump and electric motor	2/19/2016	Aerotek
ICT 14C	Repaired piping leak	3/10/2016	Aerotek
ICT 14E	Installed high and low level probes, level probe wire	3/22/2016	Aerotek
ICT 13D, ICT 14B	Installed high and low level probes, level probe wire	3/24/2016	Aerotek
ICT 14B	Installed new pump and electric motor	3/31/2016	Aerotek
ICT 14C	Installed new low level probe	4/20/2016	Aerotek
ICT 12B	Installed new mechanical flow meter	6/16/2016	Aerotek
ICT 13C	Installed rebuilt pump and new flow meter	8/10/2016	Aerotek
ICT 13A	Installed rebuilt pump, new flow meter, and new 1" unions	8/24/2016	Aerotek
ICT 14E	Installed new mechanical flow meter	8/26/2016	Aerotek
ICT 12C	Repair flow meter	8/30/2016	Aerotek
ICT 2	Install rebuilt pump and new flow meter	8/31/2016	Aerotek
ICT 14C	Clean and adjust level probes	9/7/2016	Aerotek
ICT 14C	Replaced level probes	9/12/2016	Aerotek
ICT 14C	Installed new level probe wire and level probes	9/21/2016	Aerotek
ICT 12C	Installed rebuilt pump, new electric motor, new wiring harness, new level probe wire, and new level probes	9/27/2016	Aerotek
ICT 14C	Cleaned and adjusted level probes	10/14/2016	Aerotek
ICT 13C	Cleaned and adjusted level probes	10/21/2016	Aerotek
ICT 13B	Installed rebuilt pump	10/25/2016	Aerotek
ICT 14D	Installed rebuilt pump	10/27/2016	Aerotek
ICT 13C	Replace low level probe	11/8/2016	Aerotek
ICT 13B	Replace relay base plate	11/8/2016	Aerotek
ICT 13E	Clean and adjust low level probe	11/15/2016	Aerotek
ICT 13B	Replace broken relay base plate and bad level probe wire	11/17/2016	Aerotek
ICT 13C	Clean & repair leaking flow meter	11/18/2016	Aerotek
ICT 13B	Clean & adjust low level probe	11/18/2016	Aerotek
ICT 13A, 13B, & 13E	Clean and adjust low level probes	12/2/2016	Aerotek
ICT 13C & 14C	Pulled piping and pumps	2/8/2017	Aerotek
ICT 14C	Installed new electric motor	2/8/2017	Aerotek
ICT 13C & 14C	Installed rebuilt grundfos pumps	2/8/2017	Aerotek
ICT 7, 13A, & 14D	Repaired sample ports	2/9/2017	Aerotek
ICT 13B & 14E	Cleaned and adjusted low level probes	3/30/2017	Aerotek
ICT 13B & 13F	Installed new flow meters	3/30/2017	Aerotek
ICT 12B	Repair flow meter	4/13/2017	Aerotek
ICT 12C	Replace broken 1" tee	5/1/2017	Aerotek
ICT 11	Installed new manual flow meter	5/5/2017	Aerotek
ICT 2	Installed new flow meter	5/9/2017	Aerotek
ICT 14C & 14D	Cleaned and adjusted low level probes	5/31/2017	Aerotek
ICT 14C	Cleaned and adjusted low level probe	6/27/2017	Aerotek
ICT 8	Clean low level probe	7/11/2017	Aerotek
ICT 2 & 14D	Cleaned and replaced level probes	7/17/2017	Aerotek
ICT 14C	Cleaned low level probe	7/24/2017	Aerotek

Table B-1: Extraction Equipment Maintenance Since 2011

Well I.D.	Replaced Parts	Date	Contractor
ICT 13A	Installed new pump and flow meter	8/8/2017	Aerotek
ICT 13C & 13B	Installed new pump and flow meter	8/9/2017	Aerotek
ICT 13B	Installed new low level probe	8/10/2017	Aerotek
ICT 11	Installed new pump and flow meter	8/11/2017	Aerotek
ICT 4	Replaced low level probe	8/11/2017	Aerotek
ICT 2	Installed rebuilt pump	9/19/2017	Aerotek
ICT 13D	Adjusted level probes	9/22/2017	Aerotek
ICT 14C	Cleaned level probes	10/11/2017	Bhate
ICT 13E	Clean and adjust level probes	10/24/2017	Bhate
ICT 12B	Adjust level probes	11/15/2017	Bhate
ICT 14D	Cleaned level probes	11/15/2017	Bhate
ICT 8	Clean and adjust level probes	11/28/2017	Bhate
ICT 2	Cleaned level probes	12/20/2017	Bhate
ICT 13C	Install new flow meter	1/30/2018	Bhate
ICT 14C	Cleaned level probes	1/30/2018	Bhate
ICT 13C	Cleaned & adjusted level probes	2/1/2018	Bhate
ICT 13B	Repair broken 1" union	2/1/2018	Bhate
ICT 14A	Repair 2 broken 1" elbows & lower high level probe	2/1/2018	Bhate
ICT 14B	Repair broken 1" tee & lower high level probe	2/1/2018	Bhate
ICT 14D	Install new flow meter	2/8/2018	Bhate
ICT 8	Replace broken 1" tee & clened level probes	2/8/2018	Bhate
ICT 14D	Cleaned level probes	2/28/2018	Bhate
ICT 14C	Replace low level probe	2/28/2018	Bhate
ICT 13B	Cleaned level probes	2/28/2018	Bhate
ICT 13A	Install new motor & replace leaking 1" union	3/14/2018	Bhate
ICT 13C	Cleaned & adjusted level probes	3/21/2018	Bhate
ICT 12B	Replace broken 1" elbow & install new flow meter	3/21/2018	Bhate
ICT 2	Install new pump	3/22/2018	Bhate
ICT 13B	Replaced level probes	3/30/2018	Bhate
ICT 14E	Lower high level probe	3/30/2018	Bhate
ICT 14C	Cleaned level probes	4/27/2018	Bhate
ICT 11	Install new breaker	4/27/2018	Bhate
ICT 14E	Cleaned level probes	6/7/2018	Bhate
ICT 12C	Cleaned level probes	6/7/2018	Bhate
EW 01	Cleaned level probes	6/7/2018	Bhate
ICT 14E	Replaced level probes	6/8/2018	Bhate
ICT 11	Install new electrical wire from breaker to well	6/14/2018	Bhate
ICT 12B	Replaced pump	6/25/2018	Bhate
ICT 14E	Cleaned level probes	6/26/2018	Bhate
ICT 8	Cleaned level probes	6/26/2018	Bhate
ICT 14C	Replaced pump	6/27/2018	Bhate

LHAAP-16

Well I.D.	Replaced Parts	Date	Contractor
EW08	New pump	2/28/2011	Shaw
EW01	Rebuild pump	8/25/2011	Shaw
EW06	Rebuild pump	8/25/2011	Shaw
EW02	Rebuild pump	2/12/2012	Shaw
EW03	Rebuild pump	2/12/2012	Shaw
EW08	Rebuild pump	11/8/2012	AECOM
EW01	Rebuild pump	11/8/2012	AECOM
EW04	Repair pump	11/13/2012	AECOM
EW07	Rebuild pump	11/13/2012	AECOM
EW04	Installed New Pump	11/28/2012	AECOM

Table B-1: Extraction Equipment Maintenance Since 2011

Well I.D.	Replaced Parts	Date	Contractor
EW06	Installed New Pump	11/28/2012	AECOM
EW02	Installed New Pump	12/4/2012	AECOM
EW03	Installed New Pump	12/4/2012	AECOM
EW01	Installed New Pump	12/17/2012	AECOM
EW01	Replaced Low level probe	1/17/2015	AECOM
EW01	Cleaned and adjusted level probes	10/21/2016	Aerotek

APPENDIX C
LABORATORY ANALYTICAL RESULTS FOR LHAAP-18/24
(PROVIDED ON CD ONLY)

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 19, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060188**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 8 sample(s) on Jun 05, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060188

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060188-01	MW5_060418	Groundwater		04-Jun-2018 08:05	05-Jun-2018 14:30	☐
HS18060188-02	18CPTMW08DW-060418	Groundwater		04-Jun-2018 09:00	05-Jun-2018 14:30	☐
HS18060188-03	18CPTMW08SW-060418	Groundwater		04-Jun-2018 09:50	05-Jun-2018 14:30	☐
HS18060188-04	18CPTMW23SW-060418	Groundwater		04-Jun-2018 10:55	05-Jun-2018 14:30	☐
HS18060188-05	18CPTMW23-060418	Groundwater		04-Jun-2018 11:50	05-Jun-2018 14:30	☐
HS18060188-06	18WW24_060418	Groundwater		04-Jun-2018 12:45	05-Jun-2018 14:30	☐
HS18060188-07	18WW25_060418	Groundwater		04-Jun-2018 13:40	05-Jun-2018 14:30	☐
HS18060188-08	Trip Blank	Water	ALS 051418-71	04-Jun-2018 00:00	05-Jun-2018 14:30	☐

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060188

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129171

Sample ID: 18CPTMW08DW-060418 (HS18060188-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 18CPTMW08SW-060418 (HS18060188-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 18CPTMW23-060418 (HS18060188-05)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 18WW25_060418 (HS18060188-07)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: HS18060281-01MS

- MS and MSD are for an unrelated sample

Sample ID: MW5_060418 (HS18060188-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

GCMS Volatiles by Method SW8260

Batch ID: R317691

Sample ID: HS18060281-01MS

- MS and MSD are for an unrelated sample

Batch ID: R317765

Sample ID: HS18060425-05MS

- MS and MSD are for an unrelated sample

Batch ID: R317857

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470

Batch ID: 129254

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129155

Sample ID: HS18060281-03MS

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060188

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 129155

- MS/MSD and DUPs are for an unrelated sample

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW5_060418
Collection Date: 04-Jun-2018 08:05

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,1-Dichloroethane	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 03:47
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 03:47
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 03:47
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 03:47
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 03:47
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 03:47
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW5_060418
Collection Date: 04-Jun-2018 08:05

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
cis-1,2-Dichloroethene	**8.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 03:47
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 03:47
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 03:47
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 03:47
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Trichloroethene	**27**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 03:47
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 03:47
Vinyl chloride	**1.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 03:47
Surr: 1,2-Dichloroethane-d4	*84.0*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 03:47*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 03:47*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 03:47*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 03:47*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.29**		**0.10**	**0.10**	**0.10**	**ug/L**	10	08-Jun-2018 13:30
Surr: 2-Fluorobiphenyl	*52.9*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 13:30*
Surr: 4-Terphenyl-d14	*66.6*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 13:30*
Surr: Nitrobenzene-d5	*70.3*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 13:30*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW08DW-060418
Collection Date: 04-Jun-2018 09:00

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 04:11
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 04:11
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 04:11
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 04:11
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 04:11
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24	WorkOrder:HS18060188	
Sample ID:	18CPTMW08DW-060418	Lab ID:HS18060188-02	
Collection Date:	04-Jun-2018 09:00	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 04:11
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 04:11
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:11
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:11
Surr: 1,2-Dichloroethane-d4	*83.5*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 04:11*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 04:11*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 04:11*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 04:11*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.15**		**0.10**	**0.10**	**0.10**	**ug/L**	10	08-Jun-2018 13:51
Surr: 2-Fluorobiphenyl	*95.2*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 13:51*
Surr: 4-Terphenyl-d14	*63.3*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 13:51*
Surr: Nitrobenzene-d5	*96.6*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 13:51*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW08SW-060418
Collection Date: 04-Jun-2018 09:50

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,1-Dichloroethane	**3.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 04:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 04:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 04:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 04:36
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 04:36
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 04:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW08SW-060418
Collection Date: 04-Jun-2018 09:50

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
cis-1,2-Dichloroethene	**11**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 04:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 04:36
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 04:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 04:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Trichloroethene	**43**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 04:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 04:36
Vinyl chloride	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 04:36
Surr: 1,2-Dichloroethane-d4	*84.3*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 04:36*
Surr: 4-Bromofluorobenzene	*99.1*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 04:36*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 04:36*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 04:36*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.38**		**0.10**	**0.10**	**0.10**	**ug/L**	10	08-Jun-2018 14:11
Surr: 2-Fluorobiphenyl	*64.2*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 14:11*
Surr: 4-Terphenyl-d14	*62.6*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 14:11*
Surr: Nitrobenzene-d5	*92.1*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 14:11*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW23SW-060418
Collection Date: 04-Jun-2018 10:55

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 05:00
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 05:00
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 05:00
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 05:00
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 05:00
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24	WorkOrder:HS18060188	
Sample ID:	18CPTMW23SW-060418	Lab ID:HS18060188-04	
Collection Date:	04-Jun-2018 10:55	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 05:00
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 05:00
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:00
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:00
Surr: 1,2-Dichloroethane-d4	*83.9*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 05:00*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 05:00*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 05:00*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 05:00*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	08-Jun-2018 16:15
Surr: 2-Fluorobiphenyl	*98.8*			**0**	*40-140*	*%REC*	*1*	*08-Jun-2018 16:15*
Surr: 4-Terphenyl-d14	*60.0*			**0**	*40-140*	*%REC*	*1*	*08-Jun-2018 16:15*
Surr: Nitrobenzene-d5	*89.2*			**0**	*40-140*	*%REC*	*1*	*08-Jun-2018 16:15*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW23-060418
Collection Date: 04-Jun-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,1,2-Trichloroethane	**0.93**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,1-Dichloroethene	**7.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,2-Dichloroethane	**250**		**5.0**	**12**	**25**	**ug/L**	25	11-Jun-2018 16:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 05:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 05:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 05:25
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 05:25
Benzene	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 05:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW23-060418
Collection Date: 04-Jun-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**4.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
cis-1,2-Dichloroethene	**180**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 05:25
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 05:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Tetrachloroethene	**0.96**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
trans-1,2-Dichloroethene	**3.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Trichloroethene	**3,400**		**5.0**	**12**	**25**	**ug/L**	25	11-Jun-2018 16:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:25
Vinyl chloride	**2.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 05:25
Surr: 1,2-Dichloroethane-d4	*84.5*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 05:25*
Surr: 1,2-Dichloroethane-d4	*86.3*			**0**	*81-118*	*%REC*	*25*	*11-Jun-2018 16:17*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 05:25*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*25*	*11-Jun-2018 16:17*
Surr: Dibromofluoromethane	*99.9*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 05:25*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*25*	*11-Jun-2018 16:17*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 05:25*
Surr: Toluene-d8	*110*			**0**	*89-112*	*%REC*	*25*	*11-Jun-2018 16:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18 24	WorkOrder:HS18060188
Sample ID:	18CPTMW23-060418	Lab ID:HS18060188-05
Collection Date:	04-Jun-2018 11:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**3.9**		**0.10**	**0.10**	**0.10**	**ug/L**	10	08-Jun-2018 14:52
Surr: 2-Fluorobiphenyl	*58.3*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 14:52*
Surr: 4-Terphenyl-d14	*64.0*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 14:52*
Surr: Nitrobenzene-d5	*59.6*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 14:52*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW24_060418
Collection Date: 04-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 05:49
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 05:49
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 05:49
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 05:49
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 05:49
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW24_060418
Collection Date: 04-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 05:49
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 05:49
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 05:49
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 13:07
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 05:49
Surr: 1,2-Dichloroethane-d4	*84.2*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 05:49*
Surr: 1,2-Dichloroethane-d4	*84.8*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 13:07*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 05:49*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 13:07*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 05:49*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 13:07*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 05:49*
Surr: Toluene-d8	*113*	*S*		**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 13:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW24_060418
Collection Date: 04-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Jun-2018		Analyst: JDE
Aluminum	**0.195**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	11-Jun-2018 12:53
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	08-Jun-2018 21:21
Arsenic	**0.000955**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:21
Barium	**0.0467**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	08-Jun-2018 21:21
Beryllium	**0.00131**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:21
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:21
Calcium	**44.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	08-Jun-2018 21:21
Chromium	**0.000925**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	08-Jun-2018 21:21
Cobalt	**0.0109**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:21
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	08-Jun-2018 21:21
Iron	**0.195**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:21
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	08-Jun-2018 21:21
Magnesium	**38.4**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:21
Manganese	**0.932**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:21
Nickel	**0.0508**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:21
Potassium	**0.604**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:21
Selenium	**0.00409**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	08-Jun-2018 21:21
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:21
Sodium	**699**		**0.140**	**1.00**	**2.00**	**mg/L**	10	11-Jun-2018 13:19
Thallium	**0.000463**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:21
Vanadium	**0.00156**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:21
Zinc	**0.0355**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	08-Jun-2018 21:21
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	11-Jun-2018 14:40
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW25_060418
Collection Date: 04-Jun-2018 13:40

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 06:14
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 06:14
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 06:14
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 06:14
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 06:14
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW25_060418
Collection Date: 04-Jun-2018 13:40

ANALYTICAL REPORT
WorkOrder:HS18060188
Lab ID:HS18060188-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 06:14
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 06:14
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:14
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 14:03
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:14
Surr: 1,2-Dichloroethane-d4	*84.6*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 06:14*
Surr: 1,2-Dichloroethane-d4	*85.7*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 14:03*
Surr: 4-Bromofluorobenzene	*99.4*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 06:14*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 14:03*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 06:14*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 14:03*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 06:14*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 14:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24	WorkOrder:HS18060188	
Sample ID:	18WW25_060418	Lab ID:HS18060188-07	
Collection Date:	04-Jun-2018 13:40	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.13**		**0.10**	**0.10**	**0.10**	**ug/L**	10	08-Jun-2018 15:13
Surr: 2-Fluorobiphenyl	*101*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 15:13*
Surr: 4-Terphenyl-d14	*79.2*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 15:13*
Surr: Nitrobenzene-d5	*100*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 15:13*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Jun-2018		Analyst: JDE
Aluminum	**0.110**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	11-Jun-2018 12:55
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	08-Jun-2018 21:23
Arsenic	**0.0166**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:23
Barium	**0.646**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	08-Jun-2018 21:23
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:23
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:23
Calcium	**27.0**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	08-Jun-2018 21:23
Chromium	**0.000504**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	08-Jun-2018 21:23
Cobalt	**0.00464**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:23
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	08-Jun-2018 21:23
Iron	**45.5**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:23
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	08-Jun-2018 21:23
Magnesium	**16.1**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:23
Manganese	**3.60**		**0.00700**	**0.0100**	**0.0500**	**mg/L**	10	11-Jun-2018 13:21
Nickel	**0.00157**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:23
Potassium	**1.36**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:23
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	08-Jun-2018 21:23
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:23
Sodium	**41.1**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:23
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:23
Vanadium	**0.000965**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:23
Zinc	**0.00422**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	08-Jun-2018 21:23
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	11-Jun-2018 14:42
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

Batch ID: 129155 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060188-06	1	10	10 (mL)	1
HS18060188-07	1	10	10 (mL)	1

Batch ID: 129171 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060188-01	1	1000	1 (mL)	0.001
HS18060188-02	1	1000	1 (mL)	0.001
HS18060188-03	1	1000	1 (mL)	0.001
HS18060188-04	1	1000	1 (mL)	0.001
HS18060188-05	1	1000	1 (mL)	0.001
HS18060188-07	1	1000	1 (mL)	0.001

Batch ID: 129254 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060188-06	1	10 (mL)	10 (mL)	1
HS18060188-07	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129155	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060188-06	18WW24_060418	04 Jun 2018 12:45		07 Jun 2018 09:10	11 Jun 2018 13:19	10
HS18060188-06	18WW24_060418	04 Jun 2018 12:45		07 Jun 2018 09:10	11 Jun 2018 12:53	1
HS18060188-06	18WW24_060418	04 Jun 2018 12:45		07 Jun 2018 09:10	08 Jun 2018 21:21	1
HS18060188-07	18WW25_060418	04 Jun 2018 13:40		07 Jun 2018 09:10	11 Jun 2018 13:21	10
HS18060188-07	18WW25_060418	04 Jun 2018 13:40		07 Jun 2018 09:10	11 Jun 2018 12:55	1
HS18060188-07	18WW25_060418	04 Jun 2018 13:40		07 Jun 2018 09:10	08 Jun 2018 21:23	1
Batch ID 129171	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060188-01	MW5_060418	04 Jun 2018 08:05		07 Jun 2018 12:44	08 Jun 2018 13:30	10
HS18060188-02	18CPTMW08DW-060418	04 Jun 2018 09:00		07 Jun 2018 12:44	08 Jun 2018 13:51	10
HS18060188-03	18CPTMW08SW-060418	04 Jun 2018 09:50		07 Jun 2018 12:44	08 Jun 2018 14:11	10
HS18060188-04	18CPTMW23SW-060418	04 Jun 2018 10:55		07 Jun 2018 12:44	08 Jun 2018 16:15	1
HS18060188-05	18CPTMW23-060418	04 Jun 2018 11:50		07 Jun 2018 12:44	08 Jun 2018 14:52	10
HS18060188-07	18WW25_060418	04 Jun 2018 13:40		07 Jun 2018 12:44	08 Jun 2018 15:13	10
Batch ID 129254	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060188-06	18WW24_060418	04 Jun 2018 12:45		11 Jun 2018 11:00	11 Jun 2018 14:40	1
HS18060188-07	18WW25_060418	04 Jun 2018 13:40		11 Jun 2018 11:00	11 Jun 2018 14:42	1
Batch ID R317691	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060188-01	MW5_060418	04 Jun 2018 08:05			11 Jun 2018 03:47	1
HS18060188-02	18CPTMW08DW-060418	04 Jun 2018 09:00			11 Jun 2018 04:11	1
HS18060188-03	18CPTMW08SW-060418	04 Jun 2018 09:50			11 Jun 2018 04:36	1
HS18060188-04	18CPTMW23SW-060418	04 Jun 2018 10:55			11 Jun 2018 05:00	1
HS18060188-05	18CPTMW23-060418	04 Jun 2018 11:50			11 Jun 2018 05:25	1
HS18060188-06	18WW24_060418	04 Jun 2018 12:45			11 Jun 2018 05:49	1
HS18060188-07	18WW25_060418	04 Jun 2018 13:40			11 Jun 2018 06:14	1
Batch ID R317765	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060188-05	18CPTMW23-060418	04 Jun 2018 11:50			11 Jun 2018 16:17	25
HS18060188-07	18WW25_060418	04 Jun 2018 13:40			11 Jun 2018 14:03	1
Batch ID R317857	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060188-06	18WW24_060418	04 Jun 2018 12:45			12 Jun 2018 13:07	1
Batch ID R318211	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060188-01	MW5_060418	04 Jun 2018 08:05			19 Jun 2018 10:45	1
HS18060188-02	18CPTMW08DW-060418	04 Jun 2018 09:00			19 Jun 2018 10:45	1
HS18060188-03	18CPTMW08SW-060418	04 Jun 2018 09:50			19 Jun 2018 10:45	1
HS18060188-04	18CPTMW23SW-060418	04 Jun 2018 10:55			19 Jun 2018 10:45	1
HS18060188-05	18CPTMW23-060418	04 Jun 2018 11:50			19 Jun 2018 10:45	1
HS18060188-06	18WW24_060418	04 Jun 2018 12:45			19 Jun 2018 10:45	1
HS18060188-07	18WW25_060418	04 Jun 2018 13:40			19 Jun 2018 10:45	1

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129155** Units: **mg/L** Analysis Date: **11-Jun-2018 12:49**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595218** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004578	0.0100								J

MBLK Sample ID: **MBLK-129155** Units: **mg/L** Analysis Date: **08-Jun-2018 21:17**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593680** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01518	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.100	0.200								U
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

LCS Sample ID: **LCS-129155** Units: **mg/L** Analysis Date: **11-Jun-2018 12:51**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595219** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09775	0.0100	0.1	0	97.7	80 - 120				
Thallium	0.04142	0.00200	0.05	0	82.8	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129155** Units: **mg/L** Analysis Date: **08-Jun-2018 21:19**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593681** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.046	0.00200	0.05	0	92.0	80 - 120				
Arsenic	0.04607	0.00200	0.05	0	92.1	80 - 120				
Barium	0.04551	0.00400	0.05	0	91.0	80 - 120				
Beryllium	0.04664	0.00200	0.05	0	93.3	80 - 120				
Cadmium	0.0456	0.00200	0.05	0	91.2	80 - 120				
Calcium	4.705	0.500	5	0	94.1	80 - 120				
Chromium	0.04669	0.00400	0.05	0	93.4	80 - 120				
Cobalt	0.04427	0.00500	0.05	0	88.5	80 - 120				
Copper	0.04711	0.00200	0.05	0	94.2	80 - 120				
Iron	4.694	0.200	5	0	93.9	80 - 120				
Lead	0.04962	0.00200	0.05	0	99.2	80 - 120				
Magnesium	4.93	0.200	5	0	98.6	80 - 120				
Manganese	0.04651	0.00500	0.05	0	93.0	80 - 120				
Nickel	0.04617	0.00200	0.05	0	92.3	80 - 120				
Potassium	4.716	0.200	5	0	94.3	80 - 120				
Selenium	0.04654	0.00200	0.05	0	93.1	80 - 120				
Silver	0.04457	0.00200	0.05	0	89.1	80 - 120				
Sodium	4.87	0.200	5	0	97.4	80 - 120				
Vanadium	0.04608	0.00500	0.05	0	92.2	80 - 120				
Zinc	0.04844	0.00400	0.05	0	96.9	80 - 120				

MS Sample ID: **HS18060281-03MS** Units: **mg/L** Analysis Date: **11-Jun-2018 13:03**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595225** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2325	0.0100	0.1	0.04056	192	80 - 120				S
Thallium	0.04129	0.00200	0.05	0.000036	82.5	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060281-03MS** Units: **mg/L** Analysis Date: **08-Jun-2018 21:31**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593687** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04565	0.00200	0.05	0.000186	90.9	80 - 120				
Arsenic	0.04721	0.00200	0.05	0.00054	93.3	80 - 120				
Barium	7.27	0.00400	0.05	7.07	399	80 - 120				SEO
Beryllium	0.05052	0.00200	0.05	0.00023	101	80 - 120				
Cadmium	0.04671	0.00200	0.05	0.000792	91.8	80 - 120				
Calcium	195.5	0.500	5	179.4	323	80 - 120				SEO
Chromium	0.6544	0.00400	0.05	0.5573	194	80 - 120				SO
Cobalt	0.1132	0.00500	0.05	0.06693	92.5	80 - 120				
Copper	0.08807	0.00200	0.05	0.04235	91.5	80 - 120				
Iron	8.953	0.200	5	4.119	96.7	80 - 120				
Lead	0.04489	0.00200	0.05	0.000446	88.9	80 - 120				
Magnesium	146.9	0.200	5	130.3	332	80 - 120				SO
Manganese	2.13	0.00500	0.05	1.964	332	80 - 120				SEO
Nickel	0.7973	0.00200	0.05	0.6833	228	80 - 120				SO
Potassium	6.884	0.200	5	2.083	96.0	80 - 120				
Selenium	0.05099	0.00200	0.05	0.00481	92.4	80 - 120				
Silver	0.04131	0.00200	0.05	0.000022	82.6	80 - 120				
Sodium	518.9	0.200	5	491.2	554	80 - 120				SEO
Vanadium	0.0504	0.00500	0.05	0.003032	94.7	80 - 120				
Zinc	0.06801	0.00400	0.05	0.02214	91.7	80 - 120				

MSD Sample ID: **HS18060281-03MSD** Units: **mg/L** Analysis Date: **11-Jun-2018 13:05**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595226** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.226	0.0100	0.1	0.04056	185	80 - 120	0.2325	2.84	20	S

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060281-03MSD** Units: **mg/L** Analysis Date: **08-Jun-2018 21:33**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593688** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04651	0.00200	0.05	0.000186	92.6	80 - 120	0.04565	1.87	20	
Arsenic	0.04703	0.00200	0.05	0.00054	93.0	80 - 120	0.04721	0.388	20	
Barium	6.987	0.00400	0.05	7.07	-167	80 - 120	7.27	3.97	20	SEO
Beryllium	0.05075	0.00200	0.05	0.00023	101	80 - 120	0.05052	0.444	20	
Cadmium	0.04543	0.00200	0.05	0.000792	89.3	80 - 120	0.04671	2.78	20	
Calcium	189	0.500	5	179.4	192	80 - 120	195.5	3.4	20	SEO
Chromium	0.6394	0.00400	0.05	0.5573	164	80 - 120	0.6544	2.33	20	SO
Cobalt	0.1104	0.00500	0.05	0.06693	87.0	80 - 120	0.1132	2.47	20	
Copper	0.08797	0.00200	0.05	0.04235	91.3	80 - 120	0.08807	0.114	20	
Iron	8.763	0.200	5	4.119	92.9	80 - 120	8.953	2.14	20	
Lead	0.04457	0.00200	0.05	0.000446	88.2	80 - 120	0.04489	0.731	20	
Magnesium	146.2	0.200	5	130.3	319	80 - 120	146.9	0.439	20	SO
Manganese	2.08	0.00500	0.05	1.964	231	80 - 120	2.13	2.38	20	SEO
Nickel	0.7793	0.00200	0.05	0.6833	192	80 - 120	0.7973	2.29	20	SO
Potassium	6.794	0.200	5	2.083	94.2	80 - 120	6.884	1.31	20	
Selenium	0.05045	0.00200	0.05	0.00481	91.3	80 - 120	0.05099	1.08	20	
Silver	0.04077	0.00200	0.05	0.000022	81.5	80 - 120	0.04131	1.34	20	
Sodium	511.9	0.200	5	491.2	414	80 - 120	518.9	1.35	20	SEO
Thallium	0.0415	0.00200	0.05	0.000045	82.9	80 - 120	0.03872	6.93	20	
Vanadium	0.0509	0.00500	0.05	0.003032	95.7	80 - 120	0.0504	0.991	20	
Zinc	0.06914	0.00400	0.05	0.02214	94.0	80 - 120	0.06801	1.64	20	

PDS Sample ID: **HS18060281-03PDS** Units: **mg/L** Analysis Date: **11-Jun-2018 13:07**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595227** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1354	0.0100	0.1	0.04056	94.8	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060281-03PDS** Units: **mg/L** Analysis Date: **08-Jun-2018 21:35**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593689** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.08595	0.00200	0.1	0.000186	85.8	75 - 125				
Arsenic	0.09197	0.00200	0.1	0.00054	91.4	75 - 125				
Beryllium	0.09942	0.00200	0.1	0.00023	99.2	75 - 125				
Cadmium	0.08757	0.00200	0.1	0.000792	86.8	75 - 125				
Chromium	0.6726	0.00400	0.1	0.5573	115	75 - 125				O
Cobalt	0.1505	0.00500	0.1	0.06693	83.5	75 - 125				
Copper	0.1278	0.00200	0.1	0.04235	85.5	75 - 125				
Iron	13.04	0.200	10	4.119	89.3	75 - 125				
Lead	0.08453	0.00200	0.1	0.000446	84.1	75 - 125				
Magnesium	140.8	0.200	10	130.3	105	75 - 125				O
Nickel	0.8243	0.00200	0.1	0.6833	141	75 - 125				SO
Potassium	11.26	0.200	10	2.083	91.8	75 - 125				
Selenium	0.09665	0.00200	0.1	0.00481	91.8	75 - 125				
Silver	0.08071	0.00200	0.1	0.000022	80.7	75 - 125				
Thallium	0.08287	0.00200	0.1	0.000045	82.8	75 - 125				
Vanadium	0.09426	0.00500	0.1	0.003032	91.2	75 - 125				
Zinc	0.1113	0.00400	0.1	0.02214	89.2	75 - 125				

PDS Sample ID: **HS18060281-03PDS** Units: **mg/L** Analysis Date: **11-Jun-2018 13:29**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595238** PrepDate: **07-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	6.535	0.0400	1	6.4	13.5	75 - 125				SO
Calcium	231.8	5.00	100	166.7	65.1	75 - 125				S
Manganese	2.484	0.0500	1	1.798	68.6	75 - 125				S
Sodium	496.6	2.00	100	453.1	43.6	75 - 125				SO

SD Sample ID: **HS18060281-03SD** Units: **mg/L** Analysis Date: **11-Jun-2018 13:01**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595224** PrepDate: **07-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.05743	0.0500					0.04056	0	10	
Zinc	0.02409	0.0200					0.02227	8.19	10	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060281-03SD** Units: **mg/L** Analysis Date: **08-Jun-2018 21:29**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593686** PrepDate: **07-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	0.00500	0.0100					0.000186	0	10	U
Arsenic	0.00500	0.0100					0.00054	0	10	U
Beryllium	0.00500	0.0100					0.00023	0	10	U
Cadmium	0.00500	0.0100					0.000792	0	10	U
Chromium	0.545	0.0200					0.5573	2.21	10	
Cobalt	0.06841	0.0250					0.06693	2.21	10	
Copper	0.04314	0.0100					0.04235	1.87	10	
Iron	4.234	1.00					4.119	2.81	10	
Lead	0.00500	0.0100					0.000446	0	10	U
Magnesium	141.8	1.00					130.3	8.83	10	
Nickel	0.7133	0.0100					0.6833	4.39	10	
Potassium	2.117	1.00					2.083	1.63	10	
Selenium	0.0100	0.0100					0.00481	0	10	U
Silver	0.00500	0.0100					0.000022	0	10	U
Thallium	0.00500	0.0100					0.000045	0	10	U
Vanadium	0.01194	0.0250					0.003032	0	10	J

SD Sample ID: **HS18060281-03SD** Units: **mg/L** Analysis Date: **11-Jun-2018 13:27**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595237** PrepDate: **07-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	5.956	0.200					6.4	6.94	10	
Calcium	167.9	25.0					166.7	0.729	10	
Manganese	1.826	0.250					1.798	1.58	10	
Sodium	456.3	10.0					453.1	0.717	10	

The following samples were analyzed in this batch: HS18060188-06 HS18060188-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129254 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129254** Units: **mg/L** Analysis Date: **11-Jun-2018 13:59**
Client ID: Run ID: **HG03_317727** SeqNo: **4595817** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129254** Units: **mg/L** Analysis Date: **11-Jun-2018 14:01**
Client ID: Run ID: **HG03_317727** SeqNo: **4595818** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00504	0.000200	0.005	0	101	80 - 120				

MS Sample ID: **HS18060248-01MS** Units: **mg/L** Analysis Date: **11-Jun-2018 14:04**
Client ID: Run ID: **HG03_317727** SeqNo: **4595820** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.000200	0.005	0.000009	100	75 - 125				

MSD Sample ID: **HS18060248-01MSD** Units: **mg/L** Analysis Date: **11-Jun-2018 14:35**
Client ID: Run ID: **HG03_317727** SeqNo: **4595825** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00519	0.000200	0.005	0.000009	104	75 - 125	0.00502	3.33	20	

The following samples were analyzed in this batch: HS18060188-06 HS18060188-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: 129171 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129171** Units: **ug/L** Analysis Date: **08-Jun-2018 10:40**
Client ID: Run ID: **SV-5_317881** SeqNo: **4598739** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.08314*	*0*	*0.08*	*0*	*104*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.05047*	*0*	*0.08*	*0*	*63.1*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07082*	*0*	*0.08*	*0*	*88.5*	*40 - 140*				

LCS Sample ID: **LCS-129171** Units: **ug/L** Analysis Date: **08-Jun-2018 11:01**
Client ID: Run ID: **SV-5_317881** SeqNo: **4598740** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.0598	0.010	0.08	0	74.7	40 - 140				
Surr: 2-Fluorobiphenyl	*0.09162*	*0*	*0.08*	*0*	*115*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.04763*	*0*	*0.08*	*0*	*59.5*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05496*	*0*	*0.08*	*0*	*68.7*	*40 - 140*				

MS Sample ID: **HS18060281-01MS** Units: **ug/L** Analysis Date: **13-Jun-2018 13:33**
Client ID: Run ID: **SV-5_317881** SeqNo: **4607562** PrepDate: **07-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	3.079	0.10	0.08	2.161	1150	40 - 140				SO
Surr: 2-Fluorobiphenyl	*0.1012*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.07564*	*0*	*0.08*	*0*	*94.6*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05855*	*0*	*0.08*	*0*	*73.2*	*40 - 140*				

MSD Sample ID: **HS18060281-01MSD** Units: **ug/L** Analysis Date: **13-Jun-2018 13:54**
Client ID: Run ID: **SV-5_317881** SeqNo: **4607563** PrepDate: **07-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	3.247	0.10	0.08	2.161	1360	40 - 140	3.079	5.32	20	SO
Surr: 2-Fluorobiphenyl	*0.09627*	*0*	*0.08*	*0*	*120*	*40 - 140*	*0.1012*	*4.98*	*20*	
Surr: 4-Terphenyl-d14	*0.06874*	*0*	*0.08*	*0*	*85.9*	*40 - 140*	*0.07564*	*9.56*	*20*	
Surr: Nitrobenzene-d5	*0.05346*	*0*	*0.08*	*0*	*66.8*	*40 - 140*	*0.05855*	*9.09*	*20*	

The following samples were analyzed in this batch: HS18060188-01 HS18060188-02 HS18060188-03 HS18060188-04 HS18060188-05 HS18060188-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 22:47**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594473** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 22:47**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594473** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.9*	*1.0*	*50*	*0*	*83.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.7*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*50.54*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*55.75*	*1.0*	*50*	*0*	*111*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 21:58**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594472** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.07	1.0	50	0	90.1	78 - 124				
1,1,1-Trichloroethane	44.45	1.0	50	0	88.9	74 - 131				
1,1,2,2-Tetrachloroethane	39.57	1.0	50	0	79.1	71 - 121				
1,1,2-Trichloroethane	44.12	1.0	50	0	88.2	80 - 119				
1,1-Dichloroethane	44.31	1.0	50	0	88.6	77 - 125				
1,1-Dichloroethene	45.3	1.0	50	0	90.6	71 - 131				
1,1-Dichloropropene	41.53	1.0	50	0	83.1	78 - 125				
1,2,3-Trichlorobenzene	43.54	1.0	50	0	87.1	69 - 129				
1,2,3-Trichloropropane	41.46	1.0	50	0	82.9	73 - 122				
1,2,4-Trichlorobenzene	43.17	1.0	50	0	86.3	69 - 130				
1,2,4-Trimethylbenzene	39.03	1.0	50	0	78.1	76 - 124				
1,2-Dibromo-3-chloropropane	43.93	1.0	50	0	87.9	62 - 128				
1,2-Dibromoethane	46.73	1.0	50	0	93.5	77 - 121				
1,2-Dichlorobenzene	41.65	1.0	50	0	83.3	80 - 119				
1,2-Dichloroethane	47.64	1.0	50	0	95.3	73 - 128				
1,2-Dichloropropane	44.29	1.0	50	0	88.6	78 - 122				
1,3,5-Trimethylbenzene	46.4	1.0	50	0	92.8	75 - 124				
1,3-Dichlorobenzene	41.11	1.0	50	0	82.2	80 - 119				
1,3-Dichloropropane	44.58	1.0	50	0	89.2	80 - 119				
1,4-Dichlorobenzene	41.76	1.0	50	0	83.5	79 - 118				
2,2-Dichloropropane	38.86	1.0	50	0	77.7	60 - 139				
2-Butanone	93.55	2.0	100	0	93.5	56 - 143				
2-Chlorotoluene	46.25	1.0	50	0	92.5	79 - 122				
2-Hexanone	92.12	2.0	100	0	92.1	57 - 139				
4-Chlorotoluene	46.53	1.0	50	0	93.1	78 - 122				
4-Isopropyltoluene	39.96	1.0	50	0	79.9	77 - 127				
4-Methyl-2-pentanone	89.14	2.0	100	0	89.1	67 - 130				
Acetone	95.88	2.0	100	0	95.9	39 - 160				
Benzene	43.36	1.0	50	0	86.7	79 - 120				
Bromobenzene	40.21	1.0	50	0	80.4	80 - 120				
Bromochloromethane	47.64	1.0	50	0	95.3	78 - 123				
Bromodichloromethane	45.41	1.0	50	0	90.8	79 - 125				
Bromoform	47.2	1.0	50	0	94.4	66 - 130				
Bromomethane	48.17	1.0	50	0	96.3	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 21:58**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594472** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	87.89	2.0	100	0	87.9	64 - 133				
Carbon tetrachloride	48.21	1.0	50	0	96.4	72 - 136				
Chlorobenzene	43.48	1.0	50	0	87.0	82 - 118				
Chloroethane	47.37	1.0	50	0	94.7	60 - 138				
Chloroform	43.61	1.0	50	0	87.2	79 - 124				
Chloromethane	43.19	1.0	50	0	86.4	50 - 139				
cis-1,2-Dichloroethene	45.2	1.0	50	0	90.4	78 - 123				
cis-1,3-Dichloropropene	47.26	1.0	50	0	94.5	75 - 124				
Dibromochloromethane	46.08	1.0	50	0	92.2	74 - 126				
Dibromomethane	49.19	1.0	50	0	98.4	79 - 123				
Dichlorodifluoromethane	46.64	1.0	50	0	93.3	32 - 152				
Ethylbenzene	42.33	1.0	50	0	84.7	79 - 121				
Hexachlorobutadiene	41.25	1.0	50	0	82.5	66 - 134				
Isopropylbenzene	43.14	1.0	50	0	86.3	72 - 131				
m,p-Xylene	83.77	2.0	100	0	83.8	80 - 121				
Methylene chloride	42.94	2.0	50	0	85.9	74 - 124				
Naphthalene	46.08	1.0	50	0	92.2	61 - 128				
n-Butylbenzene	42.46	1.0	50	0	84.9	75 - 128				
n-Propylbenzene	46.02	1.0	50	0	92.0	76 - 126				
o-Xylene	42.96	1.0	50	0	85.9	78 - 122				
sec-Butylbenzene	39.81	1.0	50	0	79.6	77 - 126				
Styrene	45.2	1.0	50	0	90.4	78 - 123				
tert-Butylbenzene	45.73	1.0	50	0	91.5	78 - 124				
Tetrachloroethene	41.78	1.0	50	0	83.6	74 - 129				
Toluene	41.99	1.0	50	0	84.0	80 - 121				
trans-1,2-Dichloroethene	45.17	1.0	50	0	90.3	75 - 124				
trans-1,3-Dichloropropene	49.76	1.0	50	0	99.5	73 - 127				
Trichloroethene	45.5	1.0	50	0	91.0	79 - 123				
Trichlorofluoromethane	44.91	1.0	50	0	89.8	65 - 141				
Vinyl chloride	44.07	1.0	50	0	88.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.44*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.44*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.11*	*1.0*	*50*	*0*	*96.2*	*80 - 119*				
Surr: Toluene-d8	*53.41*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060281-01MS** Units: **ug/L** Analysis Date: **11-Jun-2018 00:25**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.69	1.0	50	0	87.4	78 - 124				
1,1,1-Trichloroethane	44.39	1.0	50	0	88.8	74 - 131				
1,1,2,2-Tetrachloroethane	37.75	1.0	50	0	75.5	71 - 121				
1,1,2-Trichloroethane	42.46	1.0	50	0	84.9	80 - 119				
1,1-Dichloroethane	43.83	1.0	50	0	87.7	77 - 125				
1,1-Dichloroethene	44.78	1.0	50	0	89.6	71 - 131				
1,1-Dichloropropene	40.6	1.0	50	0	81.2	78 - 125				
1,2,3-Trichlorobenzene	39.1	1.0	50	0	78.2	69 - 129				
1,2,3-Trichloropropane	37.97	1.0	50	0	75.9	73 - 122				
1,2,4-Trichlorobenzene	37.73	1.0	50	0	75.5	69 - 130				
1,2,4-Trimethylbenzene	38.2	1.0	50	0	76.4	76 - 124				
1,2-Dibromo-3-chloropropane	41.13	1.0	50	0	82.3	62 - 128				
1,2-Dibromoethane	43.77	1.0	50	0	87.5	77 - 121				
1,2-Dichlorobenzene	39.63	1.0	50	0	79.3	80 - 119				S
1,2-Dichloroethane	48.89	1.0	50	3.774	90.2	73 - 128				
1,2-Dichloropropane	42.25	1.0	50	0	84.5	78 - 122				
1,3,5-Trimethylbenzene	46.31	1.0	50	0	92.6	75 - 124				
1,3-Dichlorobenzene	39.64	1.0	50	0	79.3	80 - 119				S
1,3-Dichloropropane	42.66	1.0	50	0	85.3	80 - 119				
1,4-Dichlorobenzene	39.46	1.0	50	0	78.9	79 - 118				S
2,2-Dichloropropane	34.3	1.0	50	0	68.6	60 - 139				
2-Butanone	88.8	2.0	100	0	88.8	56 - 143				
2-Chlorotoluene	45.35	1.0	50	0	90.7	79 - 122				
2-Hexanone	81.92	2.0	100	0	81.9	57 - 139				
4-Chlorotoluene	45.51	1.0	50	0	91.0	78 - 122				
4-Isopropyltoluene	38.63	1.0	50	0	77.3	77 - 127				
4-Methyl-2-pentanone	85.95	2.0	100	0	85.9	67 - 130				
Acetone	85.53	2.0	100	0	85.5	39 - 160				
Benzene	42.75	1.0	50	0.4514	84.6	79 - 120				
Bromobenzene	39.17	1.0	50	0	78.3	80 - 120				S
Bromochloromethane	46.26	1.0	50	0	92.5	78 - 123				
Bromodichloromethane	44.33	1.0	50	0	88.7	79 - 125				
Bromoform	44.2	1.0	50	0	88.4	66 - 130				
Bromomethane	48.54	1.0	50	0	97.1	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060281-01MS** Units: **ug/L** Analysis Date: **11-Jun-2018 00:25**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	88.3	2.0	100	0	88.3	64 - 133				
Carbon tetrachloride	47.37	1.0	50	0	94.7	72 - 136				
Chlorobenzene	42.03	1.0	50	0	84.1	82 - 118				
Chloroethane	47.85	1.0	50	0	95.7	60 - 138				
Chloroform	43.39	1.0	50	0	86.8	79 - 124				
Chloromethane	37.75	1.0	50	0	75.5	50 - 139				
cis-1,2-Dichloroethene	50.72	1.0	50	6.82	87.8	78 - 123				
cis-1,3-Dichloropropene	43.67	1.0	50	0	87.3	75 - 124				
Dibromochloromethane	43.81	1.0	50	0	87.6	74 - 126				
Dibromomethane	46.73	1.0	50	0	93.5	79 - 123				
Dichlorodifluoromethane	34.23	1.0	50	0	68.5	32 - 152				
Ethylbenzene	42.15	1.0	50	0	84.3	79 - 121				
Hexachlorobutadiene	36.48	1.0	50	0	73.0	66 - 134				
Isopropylbenzene	43.03	1.0	50	0	86.1	72 - 131				
m,p-Xylene	81.94	2.0	100	0	81.9	80 - 121				
Methylene chloride	41.4	2.0	50	0	82.8	74 - 124				
Naphthalene	40.39	1.0	50	0	80.8	61 - 128				
n-Butylbenzene	40.33	1.0	50	0	80.7	75 - 128				
n-Propylbenzene	46.3	1.0	50	0	92.6	76 - 126				
o-Xylene	41.96	1.0	50	0	83.9	78 - 122				
sec-Butylbenzene	38.86	1.0	50	0	77.7	77 - 126				
Styrene	43.15	1.0	50	0	86.3	78 - 123				
tert-Butylbenzene	45.24	1.0	50	0	90.5	78 - 124				
Tetrachloroethene	40.97	1.0	50	0	81.9	74 - 129				
Toluene	41.14	1.0	50	0	82.3	80 - 121				
trans-1,2-Dichloroethene	44.55	1.0	50	0	89.1	75 - 124				
trans-1,3-Dichloropropene	44.67	1.0	50	0	89.3	73 - 127				
Trichloroethene	239.2	1.0	50	192.6	93.2	79 - 123				E
Trichlorofluoromethane	43.57	1.0	50	0	87.1	65 - 141				
Vinyl chloride	43.05	1.0	50	0	86.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.16*	*1.0*	*50*	*0*	*86.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.82*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.37*	*1.0*	*50*	*0*	*96.7*	*80 - 119*				
Surr: Toluene-d8	*53.27*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060281-01MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 00:50**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594478** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.65	1.0	50	0	87.3	78 - 124	43.69	0.0794	20	
1,1,1-Trichloroethane	44.04	1.0	50	0	88.1	74 - 131	44.39	0.783	20	
1,1,2,2-Tetrachloroethane	38.48	1.0	50	0	77.0	71 - 121	37.75	1.93	20	
1,1,2-Trichloroethane	42.99	1.0	50	0	86.0	80 - 119	42.46	1.23	20	
1,1-Dichloroethane	44.01	1.0	50	0	88.0	77 - 125	43.83	0.416	20	
1,1-Dichloroethene	43.94	1.0	50	0	87.9	71 - 131	44.78	1.88	20	
1,1-Dichloropropene	40.87	1.0	50	0	81.7	78 - 125	40.6	0.659	20	
1,2,3-Trichlorobenzene	39.33	1.0	50	0	78.7	69 - 129	39.1	0.598	20	
1,2,3-Trichloropropane	38.88	1.0	50	0	77.8	73 - 122	37.97	2.38	20	
1,2,4-Trichlorobenzene	39.73	1.0	50	0	79.5	69 - 130	37.73	5.15	20	
1,2,4-Trimethylbenzene	38.85	1.0	50	0	77.7	76 - 124	38.2	1.69	20	
1,2-Dibromo-3-chloropropane	41.14	1.0	50	0	82.3	62 - 128	41.13	0.0304	20	
1,2-Dibromoethane	44.01	1.0	50	0	88.0	77 - 121	43.77	0.545	20	
1,2-Dichlorobenzene	40.18	1.0	50	0	80.4	80 - 119	39.63	1.37	20	
1,2-Dichloroethane	49.44	1.0	50	3.774	91.3	73 - 128	48.89	1.14	20	
1,2-Dichloropropane	42.48	1.0	50	0	85.0	78 - 122	42.25	0.55	20	
1,3,5-Trimethylbenzene	46.33	1.0	50	0	92.7	75 - 124	46.31	0.0288	20	
1,3-Dichlorobenzene	40.08	1.0	50	0	80.2	80 - 119	39.64	1.09	20	
1,3-Dichloropropane	42.95	1.0	50	0	85.9	80 - 119	42.66	0.683	20	
1,4-Dichlorobenzene	40.22	1.0	50	0	80.4	79 - 118	39.46	1.9	20	
2,2-Dichloropropane	34.21	1.0	50	0	68.4	60 - 139	34.3	0.272	20	
2-Butanone	91.02	2.0	100	0	91.0	56 - 143	88.8	2.47	20	
2-Chlorotoluene	45.65	1.0	50	0	91.3	79 - 122	45.35	0.675	20	
2-Hexanone	84.62	2.0	100	0	84.6	57 - 139	81.92	3.24	20	
4-Chlorotoluene	45.63	1.0	50	0	91.3	78 - 122	45.51	0.256	20	
4-Isopropyltoluene	38.98	1.0	50	0	78.0	77 - 127	38.63	0.908	20	
4-Methyl-2-pentanone	87.29	2.0	100	0	87.3	67 - 130	85.95	1.54	20	
Acetone	90.76	2.0	100	0	90.8	39 - 160	85.53	5.93	20	
Benzene	43.02	1.0	50	0.4514	85.1	79 - 120	42.75	0.623	20	
Bromobenzene	39.41	1.0	50	0	78.8	80 - 120	39.17	0.607	20	S
Bromochloromethane	46.64	1.0	50	0	93.3	78 - 123	46.26	0.819	20	
Bromodichloromethane	44.98	1.0	50	0	90.0	79 - 125	44.33	1.46	20	
Bromoform	44.13	1.0	50	0	88.3	66 - 130	44.2	0.153	20	
Bromomethane	48.13	1.0	50	0	96.3	53 - 141	48.54	0.848	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060281-01MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 00:50**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594478** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	89.22	2.0	100	0	89.2	64 - 133	88.3	1.03	20	
Carbon tetrachloride	46.96	1.0	50	0	93.9	72 - 136	47.37	0.871	20	
Chlorobenzene	42	1.0	50	0	84.0	82 - 118	42.03	0.063	20	
Chloroethane	47.15	1.0	50	0	94.3	60 - 138	47.85	1.48	20	
Chloroform	43.27	1.0	50	0	86.5	79 - 124	43.39	0.27	20	
Chloromethane	38.82	1.0	50	0	77.6	50 - 139	37.75	2.79	20	
cis-1,2-Dichloroethene	51.13	1.0	50	6.82	88.6	78 - 123	50.72	0.817	20	
cis-1,3-Dichloropropene	44.08	1.0	50	0	88.2	75 - 124	43.67	0.935	20	
Dibromochloromethane	44.45	1.0	50	0	88.9	74 - 126	43.81	1.47	20	
Dibromomethane	46.65	1.0	50	0	93.3	79 - 123	46.73	0.181	20	
Dichlorodifluoromethane	34.33	1.0	50	0	68.7	32 - 152	34.23	0.29	20	
Ethylbenzene	42.51	1.0	50	0	85.0	79 - 121	42.15	0.848	20	
Hexachlorobutadiene	38.22	1.0	50	0	76.4	66 - 134	36.48	4.65	20	
Isopropylbenzene	42.84	1.0	50	0	85.7	72 - 131	43.03	0.454	20	
m,p-Xylene	82.4	2.0	100	0	82.4	80 - 121	81.94	0.552	20	
Methylene chloride	41.12	2.0	50	0	82.2	74 - 124	41.4	0.685	20	
Naphthalene	41.88	1.0	50	0	83.8	61 - 128	40.39	3.64	20	
n-Butylbenzene	40.61	1.0	50	0	81.2	75 - 128	40.33	0.697	20	
n-Propylbenzene	46.41	1.0	50	0	92.8	76 - 126	46.3	0.223	20	
o-Xylene	42.05	1.0	50	0	84.1	78 - 122	41.96	0.233	20	
sec-Butylbenzene	38.98	1.0	50	0	78.0	77 - 126	38.86	0.29	20	
Styrene	43.42	1.0	50	0	86.8	78 - 123	43.15	0.632	20	
tert-Butylbenzene	45.43	1.0	50	0	90.9	78 - 124	45.24	0.421	20	
Tetrachloroethene	41.03	1.0	50	0	82.1	74 - 129	40.97	0.158	20	
Toluene	41.34	1.0	50	0	82.7	80 - 121	41.14	0.483	20	
trans-1,2-Dichloroethene	45.13	1.0	50	0	90.3	75 - 124	44.55	1.29	20	
trans-1,3-Dichloropropene	45.76	1.0	50	0	91.5	73 - 127	44.67	2.42	20	
Trichloroethene	239.9	1.0	50	192.6	94.5	79 - 123	239.2	0.268	20	E
Trichlorofluoromethane	42.68	1.0	50	0	85.4	65 - 141	43.57	2.07	20	
Vinyl chloride	42.69	1.0	50	0	85.4	58 - 137	43.05	0.847	20	
Surr: 1,2-Dichloroethane-d4	*43.9*	*1.0*	*50*	*0*	*87.8*	*81 - 118*	*43.16*	*1.69*	*20*	
Surr: 4-Bromofluorobenzene	*52.21*	*1.0*	*50*	*0*	*104*	*85 - 114*	*51.82*	*0.755*	*20*	
Surr: Dibromofluoromethane	*48.31*	*1.0*	*50*	*0*	*96.6*	*80 - 119*	*48.37*	*0.125*	*20*	
Surr: Toluene-d8	*53.31*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.27*	*0.0892*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060188-01	HS18060188-02	HS18060188-03	HS18060188-04
HS18060188-05	HS18060188-06	HS18060188-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **MBLK-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 11:56**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.95*	*1.0*	*50*	*0*	*83.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.08*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*55.89*	*1.0*	*50*	*0*	*112*	*89 - 112*				

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 10:41**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	46.23	1.0	50	0	92.5	73 - 128				
Trichloroethene	45.4	1.0	50	0	90.8	79 - 123				
Surr: 1,2-Dichloroethane-d4	*42.53*	*1.0*	*50*	*0*	*85.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.24*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.05*	*1.0*	*50*	*0*	*96.1*	*80 - 119*				
Surr: Toluene-d8	*53.64*	*1.0*	*50*	*0*	*107*	*89 - 112*				

MS Sample ID: **HS18060425-05MS** Units: **ug/L** Analysis Date: **11-Jun-2018 15:24**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	48.69	1.0	50	4.653	88.1	73 - 128				
Trichloroethene	290.4	1.0	50	248.7	83.4	79 - 123				EO
Surr: 1,2-Dichloroethane-d4	*43.24*	*1.0*	*50*	*0*	*86.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.38*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*47.69*	*1.0*	*50*	*0*	*95.4*	*80 - 119*				
Surr: Toluene-d8	*53.41*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060425-05MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 15:50**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	49.11	1.0	50	4.653	88.9	73 - 128	48.69	0.862	20	
Trichloroethene	283.8	1.0	50	248.7	70.0	79 - 123	290.4	2.33	20	SEO
Surr: 1,2-Dichloroethane-d4	*43.76*	*1.0*	*50*	*0*	*87.5*	*81 - 118*	*43.24*	*1.18*	*20*	
Surr: 4-Bromofluorobenzene	*52.22*	*1.0*	*50*	*0*	*104*	*85 - 114*	*52.38*	*0.307*	*20*	
Surr: Dibromofluoromethane	*47.91*	*1.0*	*50*	*0*	*95.8*	*80 - 119*	*47.69*	*0.453*	*20*	
Surr: Toluene-d8	*53.6*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.41*	*0.351*	*20*	

The following samples were analyzed in this batch: HS18060188-05 HS18060188-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:49**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598292** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.54*	*1.0*	*50*	*0*	*85.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.85*	*1.0*	*50*	*0*	*99.7*	*85 - 114*				
Surr: Dibromofluoromethane	*50.93*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*52.91*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:00**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598291** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	45.92	1.0	50	0	91.8	79 - 123				
Surr: 1,2-Dichloroethane-d4	*43.77*	*1.0*	*50*	*0*	*87.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.36*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.26*	*1.0*	*50*	*0*	*96.5*	*80 - 119*				
Surr: Toluene-d8	*53.83*	*1.0*	*50*	*0*	*108*	*89 - 112*				

MS Sample ID: **HS18060400-04MS** Units: **ug/L** Analysis Date: **12-Jun-2018 13:58**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	44.31	1.0	50	0	88.6	79 - 123				
Surr: 1,2-Dichloroethane-d4	*43.62*	*1.0*	*50*	*0*	*87.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.02*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.97*	*1.0*	*50*	*0*	*95.9*	*80 - 119*				
Surr: Toluene-d8	*53.69*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060188

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060400-04MSD** Units: **ug/L** Analysis Date: **12-Jun-2018 14:24**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	43.8	1.0	50	0	87.6	79 - 123	44.31	1.17	20	
Surr: 1,2-Dichloroethane-d4	*44.76*	*1.0*	*50*	*0*	*89.5*	*81 - 118*	*43.62*	*2.58*	*20*	
Surr: 4-Bromofluorobenzene	*52.44*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.02*	*0.802*	*20*	
Surr: Dibromofluoromethane	*47.19*	*1.0*	*50*	*0*	*94.4*	*80 - 119*	*47.97*	*1.63*	*20*	
Surr: Toluene-d8	*53.68*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.69*	*0.0217*	*20*	

The following samples were analyzed in this batch: HS18060188-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060188**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 19-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 19-Jun-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**05-Jun-2018 14:30**
Work Order:	HS18060188	Received by:	**JRM**

Checklist completed by:	*Jared R. Makan* eSignature	5-Jun-2018 Date	Reviewed by: *RJ Modashia* eSignature	6-Jun-2018 Date

Matrices: **Water** Carrier name: **UPS**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	3.7c/3.3c UC/C		IR30
Cooler(s)/Kit(s):	43944		
Date/Time sample(s) sent to storage:	06/05/2018 17:00		
Water - VOA vials have zero headspace?	☐	☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate ENVIRONMENTAL CONSTRUCTION SERVICES

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NW01312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane						Ambient Blank Lot Control Number	Equipment Blank Lot Control	Trip Blank Lot Control	Cooler ID
								Sample Analysis Requested (5)										Quality Assurance Samples (6)			
MW5_060418		6/4/18	0805	-	N		WG	5	X	X		X									
18CPTMW08DW_060418		6/4/18	0900	-	N		WG	5	X	X		X									
18CPTMW08SW_060418		6/4/18	0950	-	N		WG	5	X	X		X									
18CPTMW23SW_060418		6/4/18	1055		N		WG	5	X	X		X									
18CPTMW23_060418		6/4/18	1150		N		WG	5	X	X		X									
18MW24_060418		6/4/18	1245	-	N		WG	5	X	X	X										
18MW25_060418		6/4/18	1340	-	N		WG	6	X	X	X	X									
TRIP BLANK		6/4/18		-	TB			2	X												
				-																	
				-																	
				-																	

HS18060188
Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/4/18	1530	1. Jm	6/5/18	14:30
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

Method of Shipment: _____

Fed Ex _____ Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Cooler – 43944 IR 30
Temp 3.7 CF -0.4

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5837

CU
Date: 6/4/18
Name:
Company:

STODY SEAL
Time: 1520
Seal Broken By: JM
Date: 6/5/18

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DELIVERY TO
TELEPHONE

UPS Next Day Air® 1

J461 687 978 8

TRACKING NUMBER
DATE OF SHIPMENT

010191120 6/14 RRD
United Parcel Service, Louisville, KY

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1815740; 1815988; 1815991; 1815992; 1815993; 1816534

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2101 (216711)

General Set Information: There were fourteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 1815740001/1815988001-05/1815992001 - 1:1,000. 1815740002/05 – 1:100. 1815740003 – 10,000. Samples 1815991001/1815993001/1816534001 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605275) was less than 1/2 the CRDL. The recovery for the LCS (605276) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on samples 1815988004/05 (Client ID: MW8-060518). The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L. The Matrix Spike and duplicate (MS/MSD) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected. The MS/MSD relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 14JUND18/19/21-23/33/35/36 and 15JUND03/05.

Thomas Bosch June 18, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 18, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1815740**
Project ID: HS18060188 060418
Purchase Order: HS18060188
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
MW5_060418	1815740001	06/04/18	06/06/18	
18CPTMW08DW-060418	1815740002	06/04/18	06/06/18	
18CPTMW08SW-060418	1815740003	06/04/18	06/06/18	
18CPTMW23SW-060418	1815740004	06/04/18	06/06/18	
18CPTMW23-060418	1815740005	06/04/18	06/06/18	
18WW24_060418	1815740006	06/04/18	06/06/18	
18WW25_060418	1815740007	06/04/18	06/06/18	

ANALYTICAL REPORT

Workorder: 34-1815740
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW5_060418** | Sampling Site: NA | Collected: 06/04/2018
Lab ID: 1815740001 | Media: 125 mL Nalgene | Received: 06/06/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2101 (HBN: 216711)
Analyzed: 06/14/2018 12:56
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**41000**	1000	2000	4000	1000	

Sample ID: **18CPTMW08DW-060418** | Sampling Site: NA | Collected: 06/04/2018
Lab ID: 1815740002 | Media: 125 mL Nalgene | Received: 06/06/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2101 (HBN: 216711)
Analyzed: 06/14/2018 19:50
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**1000**	100	200	400	100	

Sample ID: **18CPTMW08SW-060418** | Sampling Site: NA | Collected: 06/04/2018
Lab ID: 1815740003 | Media: 125 mL Nalgene | Received: 06/06/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2101 (HBN: 216711)
Analyzed: 06/14/2018 20:05
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**61000**	10000	20000	40000	10000	

Sample ID: **18CPTMW23SW-060418** | Sampling Site: NA | Collected: 06/04/2018
Lab ID: 1815740004 | Media: 125 mL Nalgene | Received: 06/06/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2101 (HBN: 216711)
Analyzed: 06/14/2018 13:56
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1815740
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **18CPTMW23-060418** | Sampling Site: NA | Collected: 06/04/2018
Lab ID: 1815740005 | Media: 125 mL Nalgene | Received: 06/06/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2101 (HBN: 216711) | **Percent Solid:** NA
Analyzed: 06/14/2018 20:19 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**5700**	100	200	400	100	

Sample ID: **18WW24_060418** | Sampling Site: NA | Collected: 06/04/2018
Lab ID: 1815740006 | Media: 125 mL Nalgene | Received: 06/06/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2101 (HBN: 216711) | **Percent Solid:** NA
Analyzed: 06/14/2018 14:39 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18WW25_060418** | Sampling Site: NA | Collected: 06/04/2018
Lab ID: 1815740007 | Media: 125 mL Nalgene | Received: 06/06/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2101 (HBN: 216711) | **Percent Solid:** NA
Analyzed: 06/14/2018 14:53 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Workorder: 1815740

The following samples were analyzed and reported at various dilutions.

1815740001 - 1:1,000. 1815740002/05 – 1:100. 1815740003 – 10,000. The reporting limits have been adjusted accordingly.

Quality Control: EPA 6850, DoD QSM - (HBN: 216711)

The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

ANALYTICAL REPORT

Workorder: 34-1815740
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/17/2018 13:08	/S/ Stephen Brose 06/18/2018 15:12

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1815740
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1815740

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2101 (HBN: 216711)
Analyzed By: Thomas Bosch

Blank

LMB: 605275
Analyzed: 06/14/2018 12:28
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605276
Analyzed: 06/14/2018 12:42
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.26	5.00	105	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1815988001
Analyzed: 06/14/2018 17:13
Dilution: 1000
Units: ug/L

MS: 1815988004
Analyzed: 06/14/2018 18:25
Dilution: 1000
Units: ug/L

MSD: 1815988005
Analyzed: 06/14/2018 18:39
Dilution: 1000
Units: ug/L

Analyte	Result	Result	Target	% Rec		QC Limits		Result	% Rec		RPD	QC Limits	
Perchlorate	8800	16400	5000	#	152	78.8	123.8	16400	#	152	0.018	0.0	20.0

Continuing Calibration Verification

CCV: 605272
Analyzed: 06/14/2018 11:45
Units: ug/L
Criteria: ± 15%

CCV: 605277
Analyzed: 06/14/2018 17:27
Units: ug/L
Criteria: ± 15%

CCV: 605342
Analyzed: 06/14/2018 20:33
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.7	25.0	103	28.0	25.0	112	27.9	25.0	112

CCV: 605457
Analyzed: 06/15/2018 10:37
Units: ug/L
Criteria: ± 15%

CCV: 605459
Analyzed: 06/15/2018 12:03
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	27.6	25.0	110	27.9	25.0	112

Interference Check Sample

ICSA: 605274
Analyzed: 06/14/2018 13:13
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.09	1.00	109

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1815740

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2101 (HBN: 216711)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

LODV: 605273 **Analyzed:** 06/14/2018 11:59 **Units:** ug/L **Criteria:** ± 50%				**LODV:** 605278 **Analyzed:** 06/14/2018 17:56 **Units:** ug/L **Criteria:** ± 50%			**LODV:** 605343 **Analyzed:** 06/14/2018 20:48 **Units:** ug/L **Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.03	1.00	103	1.18	1.00	118	1.20	1.00	120

LODV: 605458 **Analyzed:** 06/15/2018 10:51 **Units:** ug/L **Criteria:** ± 50%				**LODV:** 605460 **Analyzed:** 06/15/2018 12:17 **Units:** ug/L **Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.895	1.00	89.5	0.868	1.00	86.8

Comments

The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch 06/17/2018 13:08	/S/ Stephen Brose 06/18/2018 15:12

Symbols and Definitions

- ✱ - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

W 1815740

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9220

1815740

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18060188
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060188-01**	**MW5_060418**	**Groundwater**	**04 Jun 2018 08:05**
	SUB_Perch-6850			13 Jun 2018
2.	**HS18060188-02**	**18CPTMW08DW-060418**	**Groundwater**	**04 Jun 2018 09:00**
	SUB_Perch-6850			13 Jun 2018
3.	**HS18060188-03**	**18CPTMW08SW-060418**	**Groundwater**	**04 Jun 2018 09:50**
	SUB_Perch-6850			13 Jun 2018
4.	**HS18060188-04**	**18CPTMW23SW-060418**	**Groundwater**	**04 Jun 2018 10:55**
	SUB_Perch-6850			13 Jun 2018
5.	**HS18060188-05**	**18CPTMW23-060418**	**Groundwater**	**04 Jun 2018 11:50**
	SUB_Perch-6850			13 Jun 2018
6.	**HS18060188-06**	**18WW24_060418**	**Groundwater**	**04 Jun 2018 12:45**
	SUB_Perch-6850			13 Jun 2018
7.	**HS18060188-07**	**18WW25_060418**	**Groundwater**	**04 Jun 2018 13:40**
	SUB_Perch-6850			13 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

COC ID: 9220

QC Level: DOD IV (DoD Data Package)

Relinquished By:	J. MAKRAN	Date/Time:	6/5/18 18:00
Received By:	[illegible]	Date/Time:	06-06-18 10:07
Cooler ID(s):		Temperature(s):	

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1815740

Date/Time of Receipt: 06-06-18 10:07

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:						
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8584	3 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tamirai Tassell (Signature) Tamirai Tassell (Printed Name) 06-06-18 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-434 RIT2 EXP 03/19

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 05JUN18
ACTWGT: 18.95 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

546C1/4BE5/53C1

TO PAUL POPE
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060188 RJ

FedEx Express

E

J171016102001uv

WED - 06 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9529 7698

84123
UT-US SLC

AX BTFA

S
ancliff

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060188	Split:	Workorder ID: 1815740	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/04/2018 08:05	MW5_060418	1815740001		Water	A	1	A
2	06/04/2018 09:00	18CPTMW08DW-060418	1815740002		Water	A	1	A
3	06/04/2018 09:50	18CPTMW08SW-060418	1815740003		Water	A	1	A
4	06/04/2018 10:55	18CPTMW23SW-060418	1815740004		Water	A	1	A
5	06/04/2018 11:50	18CPTMW23-060418	1815740005		Water	A	1	A
6	06/04/2018 12:45	18WW24_060418	1815740006		Water	A	1	A
7	06/04/2018 13:40	18WW25_060418	1815740007		Water	A	1	A
8								
9								
10								

COOL

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Walath, Julie	06/06/2018 10:07	ALS Sample Receiving	Sample Login
Julie Walath	6/6/18 1330	LB	Storage
R.33.1	6.4.18 / 08:00	T. Bond	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

Batch Worklist

Batch: ELMS/ 2101
Rule: EPA 6850, DoD QSM Water

Created: 6/14/2018 08:55
Analyst: T. Bosch

Instrument: LCMS04
Status: WP

HBN: 216711

Workorder: 1815740 [ENV_LVL4]
Workorder: 1815988 [ENV_LVL4]
Workorder: 1815991 [ENV_LVL4]
Workorder: 1815992 [ENV_LVL4]
Workorder: 1815993 [ENV_LVL4]
Workorder: 1816534 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	605272	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
2	605273	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
3	605275	LMB for HBN 216711 [ELMS/2101]				LMB	3		E6850Q413Q	5311		6/19/2018	6/14/2018
4	605276	LCS for HBN 216711 [ELMS/2101]				LCS	3		E6850Q413Q	5311		6/19/2018	6/14/2018
5	1815740001	MW5_060418				SAMPLE	3	1815740001-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
6	605274	ICS for HBN 216711 [ELMS/2101]				ICS	3		E6850..D3Q	5311		6/19/2018	6/14/2018
7	1815740004	18CPTMW23SW-060418				SAMPLE	3	1815740004-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
8	1815740006	18WW24_060418				SAMPLE	3	1815740006-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
9	1815740007	18WW25_060418				SAMPLE	3	1815740007-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
10	1815988002	MW21_060518				SAMPLE	3	1815988002-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
11	1815988003	MW21_060518-a				SAMPLE	3	1815988003-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
12	1815988001	MW8_060518				SAMPLE	3	1815988001-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
13	605277	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
14	605278	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
15	1815988004	MW8_060518MS				MS	3	1815988004-A	E6850Q413Q	5480		6/19/2018	6/14/2018
16	1815988005	MW8_060518MSD				MSD	3	1815988005-A	E6850Q413Q	5480		6/19/2018	6/14/2018
17	1815992001	LH18/24-SP140_060618				SAMPLE	3	1815992001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/14/2018
18	1815740002	18CPTMW08DW-060418				SAMPLE	3	1815740002-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
19	1815740003	18CPTMW08SW-060418				SAMPLE	3	1815740003-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
20	1815740005	18CPTMW23-060418				SAMPLE	3	1815740005-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
21	605342	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
22	605343	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
23	605457	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/15/2018
24	605458	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/15/2018

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
25	1815991001	LH18/24-SP650_060618				SAMPLE	3	1815991001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/15/2018
26	1815993001	LH18/24-SP650_060618				SAMPLE	3	1815993001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/15/2018
27	1816534001	LH18/24-SP650_061218				SAMPLE	3	1816534001-A	E6850Q41.3	5480	7/10/2018	6/15/2018	6/15/2018
28	605459	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/15/2018
29	605460	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/15/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1815740 (001-07); 1815988 (001-05); 1815991 (001); 1815992 (001); 1815993 (001); 1816534 (001) ELMS Batch/HBN ID: 2101 (216711)
Prep Date: 06/14/2018 Analysis Date: 06/14,15/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\14JUN18D.s & 15JUN18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/14/2018, sequence 14JU18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605276; Target = 5.0µg/L. ASTM type II water was used for LMB 605275.

MS/MSD: MS/MSD was performed on samples 1815988004/05 (Client ID: MW8_060518). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815740001/1815988001-05/1815992001 - 1:1,000. 1815740002/05 – 1:100. 1815740003 – 10,000. Samples 1815991001/1815993001/1816534001 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 14JUND18/19/21-23/33/35/36 and 15JUND03/05.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216711-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733	Created By: Thomas Bosch	Amount: 100 mL
MFG: AccuStandard	Create Date: 05/10/2017 11:05AM	Expires: 10/04/2018
MFG Lot: 216095148		Usable: Yes
Part ID: IC-PER-10X-1		Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 41828	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 10/04/2018
MFG Lot: TNB: 05/09/2018		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)		Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM		Expires: 11/07/2025
MFG Lot: Not Provided			Usable: Yes
Part ID: Not Provided			Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	Verified By: Thomas Bosch	Usable: Yes
Pipette ID: Not Provided	Verify Date:	Lab Lot: CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK	Description - 6850 QC WKG STD 100ug/L

Standard:	41831	**Created By:**	Thomas Bosch	**Amount:**	10 mL
MFG:	ALS/SLC	**Create Date:**	05/09/2018 10:05AM	**Expires:**	05/09/2019
MFG Lot:	TNB: 05/09/2018			**Usable:**	Yes
Pipette ID:	Not Provided			**Lab Lot:**	CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 41830	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018		Usable: Yes
Pipette ID: Not Provided		Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109		Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House		Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided			Usable: Yes
Part ID: Not Provided			Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

50 Frontage Road, Andover, MA 01810-5413, USA • 1.800.322.1174 (North America) • 1.978.749.8000 (International) • isotope.com

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T: +1 281 530 5656
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June 19, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060281**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 4 sample(s) on Jun 06, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060281

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060281-01	MW8_060518	Groundwater		05-Jun-2018 12:05	06-Jun-2018 08:48	☐
HS18060281-02	MW21-060518	Groundwater		05-Jun-2018 13:10	06-Jun-2018 08:48	☐
HS18060281-03	MW21-060518-a	Groundwater		05-Jun-2018 13:10	06-Jun-2018 08:48	☐
HS18060281-04	Trip Blank	Water	ALS 051618-64	05-Jun-2018 00:00	06-Jun-2018 08:48	☐

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060281

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129171

Sample ID: MW21-060518 (HS18060281-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: MW21-060518-a (HS18060281-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: MW8_060518 (HS18060281-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: MW8_060518 (HS18060281-01MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.
- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: MW8_060518 (HS18060281-01MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.
- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

GCMS Volatiles by Method SW8260

Batch ID: R317691

Sample ID: MW8_060518 (HS18060281-01MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: MW8_060518 (HS18060281-01MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Batch ID: R317765

Sample ID: HS18060425-05MS

- MS and MSD are for an unrelated sample

Metals by Method SW7470

Batch ID: 129254

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060281

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 129155

Sample ID: MW21-060518-a (HS18060281-03MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Barium, Calcium, Chromium, Magnesium, Manganese, Nickel, and Sodium.
- Aluminum failed in the MS/MSD but passed in the PDS.

Sample ID: MW21-060518-a (HS18060281-03PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Nickel.
- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Barium and Sodium.
- The PDS recovery was outside method control limits for Calcium and Manganese.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW8_060518
Collection Date: 05-Jun-2018 12:05

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,2-Dichloroethane	**3.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	10-Jun-2018 23:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2018 23:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	10-Jun-2018 23:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	10-Jun-2018 23:36
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2018 23:36
Benzene	**0.45**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	10-Jun-2018 23:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	10-Jun-2018 23:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW8_060518
Collection Date: 05-Jun-2018 12:05

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
cis-1,2-Dichloroethene	**6.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	10-Jun-2018 23:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2018 23:36
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2018 23:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	10-Jun-2018 23:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Trichloroethene	**190**		**0.20**	**0.50**	**1.0**	**ug/L**	1	10-Jun-2018 23:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	10-Jun-2018 23:36
Surr: 1,2-Dichloroethane-d4	*83.7*			**0**	*81-118*	*%REC*	*1*	*10-Jun-2018 23:36*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*85-114*	*%REC*	*1*	*10-Jun-2018 23:36*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*10-Jun-2018 23:36*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*10-Jun-2018 23:36*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**2.2**		**0.10**	**0.10**	**0.10**	**ug/L**	10	13-Jun-2018 14:50
Surr: 2-Fluorobiphenyl	*123*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 14:50*
Surr: 4-Terphenyl-d14	*87.3*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 14:50*
Surr: Nitrobenzene-d5	*49.3*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 14:50*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW21-060518
Collection Date: 05-Jun-2018 13:10

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,1,2-Trichloroethane	**9.9**		**0.30**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
1,1-Dichloroethane	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,2-Dichloroethane	**27**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 06:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 06:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 06:38
Acetone	**47**		**0.40**	**1.0**	**2.0**	**ug/L**	1	11-Jun-2018 06:38
Benzene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 06:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW21-060518
Collection Date: 05-Jun-2018 13:10

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**9.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
cis-1,2-Dichloroethene	**110**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 06:38
Methylene chloride	**1.5**	J	**0.40**	**1.0**	**2.0**	**ug/L**	1	11-Jun-2018 06:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 06:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
trans-1,2-Dichloroethene	**4.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Trichloroethene	**4,800**		**10**	**25**	**50**	**ug/L**	50	11-Jun-2018 14:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 06:38
Vinyl chloride	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 06:38
Surr: 1,2-Dichloroethane-d4	*86.5*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 06:38*
Surr: 1,2-Dichloroethane-d4	*86.9*			**0**	*81-118*	*%REC*	*50*	*11-Jun-2018 14:31*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 06:38*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*50*	*11-Jun-2018 14:31*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 06:38*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*50*	*11-Jun-2018 14:31*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 06:38*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*50*	*11-Jun-2018 14:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW21-060518
Collection Date: 05-Jun-2018 13:10

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.77**		**0.10**	**0.10**	**0.10**	**ug/L**	10	08-Jun-2018 12:29
Surr: 2-Fluorobiphenyl	*110*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 12:29*
Surr: 4-Terphenyl-d14	*66.3*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 12:29*
Surr: Nitrobenzene-d5	*64.0*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 12:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Jun-2018		Analyst: JDE
Aluminum	**0.0426**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	11-Jun-2018 12:57
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	08-Jun-2018 21:25
Arsenic	**0.000547**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:25
Barium	**6.46**		**0.0190**	**0.0250**	**0.0400**	**mg/L**	10	11-Jun-2018 13:23
Beryllium	**0.000227**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:25
Cadmium	**0.000789**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:25
Calcium	**168**		**0.340**	**1.00**	**5.00**	**mg/L**	10	11-Jun-2018 13:23
Chromium	**0.602**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	08-Jun-2018 21:25
Cobalt	**0.0699**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:25
Copper	**0.0444**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	08-Jun-2018 21:25
Iron	**4.45**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:25
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	08-Jun-2018 21:25
Magnesium	**138**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:25
Manganese	**1.81**		**0.00700**	**0.0100**	**0.0500**	**mg/L**	10	11-Jun-2018 13:23
Nickel	**0.736**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:25
Potassium	**2.13**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:25
Selenium	**0.00489**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	08-Jun-2018 21:25
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:25
Sodium	**452**		**0.140**	**1.00**	**2.00**	**mg/L**	10	11-Jun-2018 13:23
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:25
Vanadium	**0.00271**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:25
Zinc	**0.0238**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	08-Jun-2018 21:25
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	11-Jun-2018 15:09
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW21-060518-a
Collection Date: 05-Jun-2018 13:10

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,1,2-Trichloroethane	**9.9**		**0.30**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,1-Dichloroethene	**10**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,2-Dichloroethane	**26**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 07:03
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 07:03
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 07:03
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 07:03
Benzene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 07:03
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW21-060518-a
Collection Date: 05-Jun-2018 13:10

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**9.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
cis-1,2-Dichloroethene	**110**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Dichlorodifluoromethane	**4.8**		**0.30**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 07:03
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 07:03
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 07:03
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
trans-1,2-Dichloroethene	**4.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Trichloroethene	**4,700**		**10**	**25**	**50**	**ug/L**	50	11-Jun-2018 14:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 07:03
Vinyl chloride	**14**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 07:03
Surr: 1,2-Dichloroethane-d4	*85.2*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 07:03*
Surr: 1,2-Dichloroethane-d4	*84.7*			**0**	*81-118*	*%REC*	*50*	*11-Jun-2018 14:58*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 07:03*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*50*	*11-Jun-2018 14:58*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 07:03*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*50*	*11-Jun-2018 14:58*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 07:03*
Surr: Toluene-d8	*110*			**0**	*89-112*	*%REC*	*50*	*11-Jun-2018 14:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW21-060518-a
Collection Date: 05-Jun-2018 13:10

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.57**		**0.10**	**0.10**	**0.10**	**ug/L**	10	08-Jun-2018 12:49
Surr: 2-Fluorobiphenyl	*108*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 12:49*
Surr: 4-Terphenyl-d14	*65.9*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 12:49*
Surr: Nitrobenzene-d5	*56.8*			**0**	*40-140*	*%REC*	*10*	*08-Jun-2018 12:49*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Jun-2018		Analyst: JDE
Aluminum	**0.0406**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	11-Jun-2018 12:59
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	08-Jun-2018 21:27
Arsenic	**0.000540**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:27
Barium	**6.40**		**0.0190**	**0.0250**	**0.0400**	**mg/L**	10	11-Jun-2018 13:25
Beryllium	**0.000230**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:27
Cadmium	**0.000792**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:27
Calcium	**167**		**0.340**	**1.00**	**5.00**	**mg/L**	10	11-Jun-2018 13:25
Chromium	**0.557**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	08-Jun-2018 21:27
Cobalt	**0.0669**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:27
Copper	**0.0423**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	08-Jun-2018 21:27
Iron	**4.12**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:27
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	08-Jun-2018 21:27
Magnesium	**130**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:27
Manganese	**1.80**		**0.00700**	**0.0100**	**0.0500**	**mg/L**	10	11-Jun-2018 13:25
Nickel	**0.683**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	08-Jun-2018 21:27
Potassium	**2.08**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	08-Jun-2018 21:27
Selenium	**0.00481**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	08-Jun-2018 21:27
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:27
Sodium	**453**		**0.140**	**1.00**	**2.00**	**mg/L**	10	11-Jun-2018 13:25
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	08-Jun-2018 21:27
Vanadium	**0.00303**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	08-Jun-2018 21:27
Zinc	**0.0221**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	08-Jun-2018 21:27
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	11-Jun-2018 15:10
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Jun-2018 10:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 05-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 12:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 12:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 12:23
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 12:23
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 12:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 05-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060281
Lab ID:HS18060281-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 12:23
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 12:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:23
Surr: 1,2-Dichloroethane-d4	*84.7*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 12:23*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 12:23*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 12:23*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 12:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 19-Jun-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

Batch ID: 129155 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060281-02	1	10	10 (mL)	1
HS18060281-03	1	10	10 (mL)	1

Batch ID: 129171 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060281-01	1	1000	1 (mL)	0.001
HS18060281-02	1	1000	1 (mL)	0.001
HS18060281-03	1	1000	1 (mL)	0.001

Batch ID: 129254 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060281-02	1	10 (mL)	10 (mL)	1
HS18060281-03	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129155	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060281-02	MW21-060518	05 Jun 2018 13:10		07 Jun 2018 09:10	11 Jun 2018 13:23	10
HS18060281-02	MW21-060518	05 Jun 2018 13:10		07 Jun 2018 09:10	11 Jun 2018 12:57	1
HS18060281-02	MW21-060518	05 Jun 2018 13:10		07 Jun 2018 09:10	08 Jun 2018 21:25	1
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10		07 Jun 2018 09:10	11 Jun 2018 13:25	10
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10		07 Jun 2018 09:10	11 Jun 2018 12:59	1
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10		07 Jun 2018 09:10	08 Jun 2018 21:27	1
Batch ID 129171	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060281-01	MW8_060518	05 Jun 2018 12:05		07 Jun 2018 12:44	13 Jun 2018 14:50	10
HS18060281-02	MW21-060518	05 Jun 2018 13:10		07 Jun 2018 12:44	08 Jun 2018 12:29	10
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10		07 Jun 2018 12:44	08 Jun 2018 12:49	10
Batch ID 129254	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060281-02	MW21-060518	05 Jun 2018 13:10		11 Jun 2018 11:00	11 Jun 2018 15:09	1
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10		11 Jun 2018 11:00	11 Jun 2018 15:10	1
Batch ID R317691	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060281-01	MW8_060518	05 Jun 2018 12:05			10 Jun 2018 23:36	1
HS18060281-02	MW21-060518	05 Jun 2018 13:10			11 Jun 2018 06:38	1
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10			11 Jun 2018 07:03	1
Batch ID R317765	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060281-04	Trip Blank	05 Jun 2018 00:00			11 Jun 2018 12:23	1
Batch ID R317765	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060281-02	MW21-060518	05 Jun 2018 13:10			11 Jun 2018 14:31	50
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10			11 Jun 2018 14:58	50
Batch ID R318211	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060281-01	MW8_060518	05 Jun 2018 12:05			19 Jun 2018 10:45	1
HS18060281-02	MW21-060518	05 Jun 2018 13:10			19 Jun 2018 10:45	1
HS18060281-03	MW21-060518-a	05 Jun 2018 13:10			19 Jun 2018 10:45	1

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129155** Units: **mg/L** Analysis Date: **11-Jun-2018 12:49**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595218** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004578	0.0100								J

MBLK Sample ID: **MBLK-129155** Units: **mg/L** Analysis Date: **08-Jun-2018 21:17**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593680** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01518	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.100	0.200								U
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

LCS Sample ID: **LCS-129155** Units: **mg/L** Analysis Date: **11-Jun-2018 12:51**
Client ID: Run ID: **ICPMS05_317709** SeqNo: **4595219** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09775	0.0100	0.1	0	97.7	80 - 120				
Thallium	0.04142	0.00200	0.05	0	82.8	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129155** Units: **mg/L** Analysis Date: **08-Jun-2018 21:19**
Client ID: Run ID: **ICPMS05_317649** SeqNo: **4593681** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.046	0.00200	0.05	0	92.0	80 - 120				
Arsenic	0.04607	0.00200	0.05	0	92.1	80 - 120				
Barium	0.04551	0.00400	0.05	0	91.0	80 - 120				
Beryllium	0.04664	0.00200	0.05	0	93.3	80 - 120				
Cadmium	0.0456	0.00200	0.05	0	91.2	80 - 120				
Calcium	4.705	0.500	5	0	94.1	80 - 120				
Chromium	0.04669	0.00400	0.05	0	93.4	80 - 120				
Cobalt	0.04427	0.00500	0.05	0	88.5	80 - 120				
Copper	0.04711	0.00200	0.05	0	94.2	80 - 120				
Iron	4.694	0.200	5	0	93.9	80 - 120				
Lead	0.04962	0.00200	0.05	0	99.2	80 - 120				
Magnesium	4.93	0.200	5	0	98.6	80 - 120				
Manganese	0.04651	0.00500	0.05	0	93.0	80 - 120				
Nickel	0.04617	0.00200	0.05	0	92.3	80 - 120				
Potassium	4.716	0.200	5	0	94.3	80 - 120				
Selenium	0.04654	0.00200	0.05	0	93.1	80 - 120				
Silver	0.04457	0.00200	0.05	0	89.1	80 - 120				
Sodium	4.87	0.200	5	0	97.4	80 - 120				
Vanadium	0.04608	0.00500	0.05	0	92.2	80 - 120				
Zinc	0.04844	0.00400	0.05	0	96.9	80 - 120				

MS Sample ID: **HS18060281-03MS** Units: **mg/L** Analysis Date: **11-Jun-2018 13:03**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317709** SeqNo: **4595225** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2325	0.0100	0.1	0.04056	192	80 - 120				S
Thallium	0.04129	0.00200	0.05	0.000036	82.5	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060281-03MS** Units: **mg/L** Analysis Date: **08-Jun-2018 21:31**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317649** SeqNo: **4593687** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04565	0.00200	0.05	0.000186	90.9	80 - 120				
Arsenic	0.04721	0.00200	0.05	0.00054	93.3	80 - 120				
Barium	7.27	0.00400	0.05	7.07	399	80 - 120				SEO
Beryllium	0.05052	0.00200	0.05	0.00023	101	80 - 120				
Cadmium	0.04671	0.00200	0.05	0.000792	91.8	80 - 120				
Calcium	195.5	0.500	5	179.4	323	80 - 120				SEO
Chromium	0.6544	0.00400	0.05	0.5573	194	80 - 120				SO
Cobalt	0.1132	0.00500	0.05	0.06693	92.5	80 - 120				
Copper	0.08807	0.00200	0.05	0.04235	91.5	80 - 120				
Iron	8.953	0.200	5	4.119	96.7	80 - 120				
Lead	0.04489	0.00200	0.05	0.000446	88.9	80 - 120				
Magnesium	146.9	0.200	5	130.3	332	80 - 120				SO
Manganese	2.13	0.00500	0.05	1.964	332	80 - 120				SEO
Nickel	0.7973	0.00200	0.05	0.6833	228	80 - 120				SO
Potassium	6.884	0.200	5	2.083	96.0	80 - 120				
Selenium	0.05099	0.00200	0.05	0.00481	92.4	80 - 120				
Silver	0.04131	0.00200	0.05	0.000022	82.6	80 - 120				
Sodium	518.9	0.200	5	491.2	554	80 - 120				SEO
Vanadium	0.0504	0.00500	0.05	0.003032	94.7	80 - 120				
Zinc	0.06801	0.00400	0.05	0.02214	91.7	80 - 120				

MSD Sample ID: **HS18060281-03MSD** Units: **mg/L** Analysis Date: **11-Jun-2018 13:05**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317709** SeqNo: **4595226** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.226	0.0100	0.1	0.04056	185	80 - 120	0.2325	2.84	20	S

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060281-03MSD** Units: **mg/L** Analysis Date: **08-Jun-2018 21:33**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317649** SeqNo: **4593688** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04651	0.00200	0.05	0.000186	92.6	80 - 120	0.04565	1.87	20	
Arsenic	0.04703	0.00200	0.05	0.00054	93.0	80 - 120	0.04721	0.388	20	
Barium	6.987	0.00400	0.05	7.07	-167	80 - 120	7.27	3.97	20	SEO
Beryllium	0.05075	0.00200	0.05	0.00023	101	80 - 120	0.05052	0.444	20	
Cadmium	0.04543	0.00200	0.05	0.000792	89.3	80 - 120	0.04671	2.78	20	
Calcium	189	0.500	5	179.4	192	80 - 120	195.5	3.4	20	SEO
Chromium	0.6394	0.00400	0.05	0.5573	164	80 - 120	0.6544	2.33	20	SO
Cobalt	0.1104	0.00500	0.05	0.06693	87.0	80 - 120	0.1132	2.47	20	
Copper	0.08797	0.00200	0.05	0.04235	91.3	80 - 120	0.08807	0.114	20	
Iron	8.763	0.200	5	4.119	92.9	80 - 120	8.953	2.14	20	
Lead	0.04457	0.00200	0.05	0.000446	88.2	80 - 120	0.04489	0.731	20	
Magnesium	146.2	0.200	5	130.3	319	80 - 120	146.9	0.439	20	SO
Manganese	2.08	0.00500	0.05	1.964	231	80 - 120	2.13	2.38	20	SEO
Nickel	0.7793	0.00200	0.05	0.6833	192	80 - 120	0.7973	2.29	20	SO
Potassium	6.794	0.200	5	2.083	94.2	80 - 120	6.884	1.31	20	
Selenium	0.05045	0.00200	0.05	0.00481	91.3	80 - 120	0.05099	1.08	20	
Silver	0.04077	0.00200	0.05	0.000022	81.5	80 - 120	0.04131	1.34	20	
Sodium	511.9	0.200	5	491.2	414	80 - 120	518.9	1.35	20	SEO
Thallium	0.0415	0.00200	0.05	0.000045	82.9	80 - 120	0.03872	6.93	20	
Vanadium	0.0509	0.00500	0.05	0.003032	95.7	80 - 120	0.0504	0.991	20	
Zinc	0.06914	0.00400	0.05	0.02214	94.0	80 - 120	0.06801	1.64	20	

PDS Sample ID: **HS18060281-03PDS** Units: **mg/L** Analysis Date: **11-Jun-2018 13:07**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317709** SeqNo: **4595227** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1354	0.0100	0.1	0.04056	94.8	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060281-03PDS** Units: **mg/L** Analysis Date: **08-Jun-2018 21:35**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317649** SeqNo: **4593689** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.08595	0.00200	0.1	0.000186	85.8	75 - 125				
Arsenic	0.09197	0.00200	0.1	0.00054	91.4	75 - 125				
Beryllium	0.09942	0.00200	0.1	0.00023	99.2	75 - 125				
Cadmium	0.08757	0.00200	0.1	0.000792	86.8	75 - 125				
Chromium	0.6726	0.00400	0.1	0.5573	115	75 - 125				O
Cobalt	0.1505	0.00500	0.1	0.06693	83.5	75 - 125				
Copper	0.1278	0.00200	0.1	0.04235	85.5	75 - 125				
Iron	13.04	0.200	10	4.119	89.3	75 - 125				
Lead	0.08453	0.00200	0.1	0.000446	84.1	75 - 125				
Magnesium	140.8	0.200	10	130.3	105	75 - 125				O
Nickel	0.8243	0.00200	0.1	0.6833	141	75 - 125				SO
Potassium	11.26	0.200	10	2.083	91.8	75 - 125				
Selenium	0.09665	0.00200	0.1	0.00481	91.8	75 - 125				
Silver	0.08071	0.00200	0.1	0.000022	80.7	75 - 125				
Thallium	0.08287	0.00200	0.1	0.000045	82.8	75 - 125				
Vanadium	0.09426	0.00500	0.1	0.003032	91.2	75 - 125				
Zinc	0.1113	0.00400	0.1	0.02214	89.2	75 - 125				

PDS Sample ID: **HS18060281-03PDS** Units: **mg/L** Analysis Date: **11-Jun-2018 13:29**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317709** SeqNo: **4595238** PrepDate: **07-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	6.535	0.0400	1	6.4	13.5	75 - 125				SO
Calcium	231.8	5.00	100	166.7	65.1	75 - 125				S
Manganese	2.484	0.0500	1	1.798	68.6	75 - 125				S
Sodium	496.6	2.00	100	453.1	43.6	75 - 125				SO

SD Sample ID: **HS18060281-03SD** Units: **mg/L** Analysis Date: **11-Jun-2018 13:01**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317709** SeqNo: **4595224** PrepDate: **07-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.05743	0.0500					0.04056	0	10	
Zinc	0.02409	0.0200					0.02227	8.19	10	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129155 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060281-03SD** Units: **mg/L** Analysis Date: **08-Jun-2018 21:29**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317649** SeqNo: **4593686** PrepDate: **07-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	0.00500	0.0100					0.000186	0	10	U
Arsenic	0.00500	0.0100					0.00054	0	10	U
Beryllium	0.00500	0.0100					0.00023	0	10	U
Cadmium	0.00500	0.0100					0.000792	0	10	U
Chromium	0.545	0.0200					0.5573	2.21	10	
Cobalt	0.06841	0.0250					0.06693	2.21	10	
Copper	0.04314	0.0100					0.04235	1.87	10	
Iron	4.234	1.00					4.119	2.81	10	
Lead	0.00500	0.0100					0.000446	0	10	U
Magnesium	141.8	1.00					130.3	8.83	10	
Nickel	0.7133	0.0100					0.6833	4.39	10	
Potassium	2.117	1.00					2.083	1.63	10	
Selenium	0.0100	0.0100					0.00481	0	10	U
Silver	0.00500	0.0100					0.000022	0	10	U
Thallium	0.00500	0.0100					0.000045	0	10	U
Vanadium	0.01194	0.0250					0.003032	0	10	J

SD Sample ID: **HS18060281-03SD** Units: **mg/L** Analysis Date: **11-Jun-2018 13:27**
Client ID: **MW21-060518-a** Run ID: **ICPMS05_317709** SeqNo: **4595237** PrepDate: **07-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	5.956	0.200					6.4	6.94	10	
Calcium	167.9	25.0					166.7	0.729	10	
Manganese	1.826	0.250					1.798	1.58	10	
Sodium	456.3	10.0					453.1	0.717	10	

The following samples were analyzed in this batch: HS18060281-02 HS18060281-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129254 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129254** Units: **mg/L** Analysis Date: **11-Jun-2018 13:59**
Client ID: Run ID: **HG03_317727** SeqNo: **4595817** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129254** Units: **mg/L** Analysis Date: **11-Jun-2018 14:01**
Client ID: Run ID: **HG03_317727** SeqNo: **4595818** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00504	0.000200	0.005	0	101	80 - 120				

MS Sample ID: **HS18060248-01MS** Units: **mg/L** Analysis Date: **11-Jun-2018 14:04**
Client ID: Run ID: **HG03_317727** SeqNo: **4595820** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.000200	0.005	0.000009	100	75 - 125				

MSD Sample ID: **HS18060248-01MSD** Units: **mg/L** Analysis Date: **11-Jun-2018 14:35**
Client ID: Run ID: **HG03_317727** SeqNo: **4595825** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00519	0.000200	0.005	0.000009	104	75 - 125	0.00502	3.33	20	

The following samples were analyzed in this batch: HS18060281-02 HS18060281-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: 129171 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129171** Units: **ug/L** Analysis Date: **08-Jun-2018 10:40**
Client ID: Run ID: **SV-5_317881** SeqNo: **4598739** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.08314*	*0*	*0.08*	*0*	*104*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.05047*	*0*	*0.08*	*0*	*63.1*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07082*	*0*	*0.08*	*0*	*88.5*	*40 - 140*				

LCS Sample ID: **LCS-129171** Units: **ug/L** Analysis Date: **08-Jun-2018 11:01**
Client ID: Run ID: **SV-5_317881** SeqNo: **4598740** PrepDate: **07-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.0598	0.010	0.08	0	74.7	40 - 140				
Surr: 2-Fluorobiphenyl	*0.09162*	*0*	*0.08*	*0*	*115*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.04763*	*0*	*0.08*	*0*	*59.5*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05496*	*0*	*0.08*	*0*	*68.7*	*40 - 140*				

MS Sample ID: **HS18060281-01MS** Units: **ug/L** Analysis Date: **13-Jun-2018 13:33**
Client ID: **MW8_060518** Run ID: **SV-5_317881** SeqNo: **4607562** PrepDate: **07-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	3.079	0.10	0.08	2.161	1150	40 - 140				SO
Surr: 2-Fluorobiphenyl	*0.1012*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.07564*	*0*	*0.08*	*0*	*94.6*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05855*	*0*	*0.08*	*0*	*73.2*	*40 - 140*				

MSD Sample ID: **HS18060281-01MSD** Units: **ug/L** Analysis Date: **13-Jun-2018 13:54**
Client ID: **MW8_060518** Run ID: **SV-5_317881** SeqNo: **4607563** PrepDate: **07-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	3.247	0.10	0.08	2.161	1360	40 - 140	3.079	5.32	20	SO
Surr: 2-Fluorobiphenyl	*0.09627*	*0*	*0.08*	*0*	*120*	*40 - 140*	*0.1012*	*4.98*	*20*	
Surr: 4-Terphenyl-d14	*0.06874*	*0*	*0.08*	*0*	*85.9*	*40 - 140*	*0.07564*	*9.56*	*20*	
Surr: Nitrobenzene-d5	*0.05346*	*0*	*0.08*	*0*	*66.8*	*40 - 140*	*0.05855*	*9.09*	*20*	

The following samples were analyzed in this batch: HS18060281-01 HS18060281-02 HS18060281-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: **R317691** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 22:47**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594473** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 22:47**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594473** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.9*	*1.0*	*50*	*0*	*83.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.7*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*50.54*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*55.75*	*1.0*	*50*	*0*	*111*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 21:58**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594472** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.07	1.0	50	0	90.1	78 - 124				
1,1,1-Trichloroethane	44.45	1.0	50	0	88.9	74 - 131				
1,1,2,2-Tetrachloroethane	39.57	1.0	50	0	79.1	71 - 121				
1,1,2-Trichloroethane	44.12	1.0	50	0	88.2	80 - 119				
1,1-Dichloroethane	44.31	1.0	50	0	88.6	77 - 125				
1,1-Dichloroethene	45.3	1.0	50	0	90.6	71 - 131				
1,1-Dichloropropene	41.53	1.0	50	0	83.1	78 - 125				
1,2,3-Trichlorobenzene	43.54	1.0	50	0	87.1	69 - 129				
1,2,3-Trichloropropane	41.46	1.0	50	0	82.9	73 - 122				
1,2,4-Trichlorobenzene	43.17	1.0	50	0	86.3	69 - 130				
1,2,4-Trimethylbenzene	39.03	1.0	50	0	78.1	76 - 124				
1,2-Dibromo-3-chloropropane	43.93	1.0	50	0	87.9	62 - 128				
1,2-Dibromoethane	46.73	1.0	50	0	93.5	77 - 121				
1,2-Dichlorobenzene	41.65	1.0	50	0	83.3	80 - 119				
1,2-Dichloroethane	47.64	1.0	50	0	95.3	73 - 128				
1,2-Dichloropropane	44.29	1.0	50	0	88.6	78 - 122				
1,3,5-Trimethylbenzene	46.4	1.0	50	0	92.8	75 - 124				
1,3-Dichlorobenzene	41.11	1.0	50	0	82.2	80 - 119				
1,3-Dichloropropane	44.58	1.0	50	0	89.2	80 - 119				
1,4-Dichlorobenzene	41.76	1.0	50	0	83.5	79 - 118				
2,2-Dichloropropane	38.86	1.0	50	0	77.7	60 - 139				
2-Butanone	93.55	2.0	100	0	93.5	56 - 143				
2-Chlorotoluene	46.25	1.0	50	0	92.5	79 - 122				
2-Hexanone	92.12	2.0	100	0	92.1	57 - 139				
4-Chlorotoluene	46.53	1.0	50	0	93.1	78 - 122				
4-Isopropyltoluene	39.96	1.0	50	0	79.9	77 - 127				
4-Methyl-2-pentanone	89.14	2.0	100	0	89.1	67 - 130				
Acetone	95.88	2.0	100	0	95.9	39 - 160				
Benzene	43.36	1.0	50	0	86.7	79 - 120				
Bromobenzene	40.21	1.0	50	0	80.4	80 - 120				
Bromochloromethane	47.64	1.0	50	0	95.3	78 - 123				
Bromodichloromethane	45.41	1.0	50	0	90.8	79 - 125				
Bromoform	47.2	1.0	50	0	94.4	66 - 130				
Bromomethane	48.17	1.0	50	0	96.3	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180610** Units: **ug/L** Analysis Date: **10-Jun-2018 21:58**
Client ID: Run ID: **VOA2_317691** SeqNo: **4594472** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	87.89	2.0	100	0	87.9	64 - 133				
Carbon tetrachloride	48.21	1.0	50	0	96.4	72 - 136				
Chlorobenzene	43.48	1.0	50	0	87.0	82 - 118				
Chloroethane	47.37	1.0	50	0	94.7	60 - 138				
Chloroform	43.61	1.0	50	0	87.2	79 - 124				
Chloromethane	43.19	1.0	50	0	86.4	50 - 139				
cis-1,2-Dichloroethene	45.2	1.0	50	0	90.4	78 - 123				
cis-1,3-Dichloropropene	47.26	1.0	50	0	94.5	75 - 124				
Dibromochloromethane	46.08	1.0	50	0	92.2	74 - 126				
Dibromomethane	49.19	1.0	50	0	98.4	79 - 123				
Dichlorodifluoromethane	46.64	1.0	50	0	93.3	32 - 152				
Ethylbenzene	42.33	1.0	50	0	84.7	79 - 121				
Hexachlorobutadiene	41.25	1.0	50	0	82.5	66 - 134				
Isopropylbenzene	43.14	1.0	50	0	86.3	72 - 131				
m,p-Xylene	83.77	2.0	100	0	83.8	80 - 121				
Methylene chloride	42.94	2.0	50	0	85.9	74 - 124				
Naphthalene	46.08	1.0	50	0	92.2	61 - 128				
n-Butylbenzene	42.46	1.0	50	0	84.9	75 - 128				
n-Propylbenzene	46.02	1.0	50	0	92.0	76 - 126				
o-Xylene	42.96	1.0	50	0	85.9	78 - 122				
sec-Butylbenzene	39.81	1.0	50	0	79.6	77 - 126				
Styrene	45.2	1.0	50	0	90.4	78 - 123				
tert-Butylbenzene	45.73	1.0	50	0	91.5	78 - 124				
Tetrachloroethene	41.78	1.0	50	0	83.6	74 - 129				
Toluene	41.99	1.0	50	0	84.0	80 - 121				
trans-1,2-Dichloroethene	45.17	1.0	50	0	90.3	75 - 124				
trans-1,3-Dichloropropene	49.76	1.0	50	0	99.5	73 - 127				
Trichloroethene	45.5	1.0	50	0	91.0	79 - 123				
Trichlorofluoromethane	44.91	1.0	50	0	89.8	65 - 141				
Vinyl chloride	44.07	1.0	50	0	88.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.44*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.44*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.11*	*1.0*	*50*	*0*	*96.2*	*80 - 119*				
Surr: Toluene-d8	*53.41*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: **R317691** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060281-01MS** Units: **ug/L** Analysis Date: **11-Jun-2018 00:25**
Client ID: **MW8_060518** Run ID: **VOA2_317691** SeqNo: **4594477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.69	1.0	50	0	87.4	78 - 124				
1,1,1-Trichloroethane	44.39	1.0	50	0	88.8	74 - 131				
1,1,2,2-Tetrachloroethane	37.75	1.0	50	0	75.5	71 - 121				
1,1,2-Trichloroethane	42.46	1.0	50	0	84.9	80 - 119				
1,1-Dichloroethane	43.83	1.0	50	0	87.7	77 - 125				
1,1-Dichloroethene	44.78	1.0	50	0	89.6	71 - 131				
1,1-Dichloropropene	40.6	1.0	50	0	81.2	78 - 125				
1,2,3-Trichlorobenzene	39.1	1.0	50	0	78.2	69 - 129				
1,2,3-Trichloropropane	37.97	1.0	50	0	75.9	73 - 122				
1,2,4-Trichlorobenzene	37.73	1.0	50	0	75.5	69 - 130				
1,2,4-Trimethylbenzene	38.2	1.0	50	0	76.4	76 - 124				
1,2-Dibromo-3-chloropropane	41.13	1.0	50	0	82.3	62 - 128				
1,2-Dibromoethane	43.77	1.0	50	0	87.5	77 - 121				
1,2-Dichlorobenzene	39.63	1.0	50	0	79.3	80 - 119				S
1,2-Dichloroethane	48.89	1.0	50	3.774	90.2	73 - 128				
1,2-Dichloropropane	42.25	1.0	50	0	84.5	78 - 122				
1,3,5-Trimethylbenzene	46.31	1.0	50	0	92.6	75 - 124				
1,3-Dichlorobenzene	39.64	1.0	50	0	79.3	80 - 119				S
1,3-Dichloropropane	42.66	1.0	50	0	85.3	80 - 119				
1,4-Dichlorobenzene	39.46	1.0	50	0	78.9	79 - 118				S
2,2-Dichloropropane	34.3	1.0	50	0	68.6	60 - 139				
2-Butanone	88.8	2.0	100	0	88.8	56 - 143				
2-Chlorotoluene	45.35	1.0	50	0	90.7	79 - 122				
2-Hexanone	81.92	2.0	100	0	81.9	57 - 139				
4-Chlorotoluene	45.51	1.0	50	0	91.0	78 - 122				
4-Isopropyltoluene	38.63	1.0	50	0	77.3	77 - 127				
4-Methyl-2-pentanone	85.95	2.0	100	0	85.9	67 - 130				
Acetone	85.53	2.0	100	0	85.5	39 - 160				
Benzene	42.75	1.0	50	0.4514	84.6	79 - 120				
Bromobenzene	39.17	1.0	50	0	78.3	80 - 120				S
Bromochloromethane	46.26	1.0	50	0	92.5	78 - 123				
Bromodichloromethane	44.33	1.0	50	0	88.7	79 - 125				
Bromoform	44.2	1.0	50	0	88.4	66 - 130				
Bromomethane	48.54	1.0	50	0	97.1	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: **R317691** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060281-01MS** Units: **ug/L** Analysis Date: **11-Jun-2018 00:25**
Client ID: **MW8_060518** Run ID: **VOA2_317691** SeqNo: **4594477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	88.3	2.0	100	0	88.3	64 - 133				
Carbon tetrachloride	47.37	1.0	50	0	94.7	72 - 136				
Chlorobenzene	42.03	1.0	50	0	84.1	82 - 118				
Chloroethane	47.85	1.0	50	0	95.7	60 - 138				
Chloroform	43.39	1.0	50	0	86.8	79 - 124				
Chloromethane	37.75	1.0	50	0	75.5	50 - 139				
cis-1,2-Dichloroethene	50.72	1.0	50	6.82	87.8	78 - 123				
cis-1,3-Dichloropropene	43.67	1.0	50	0	87.3	75 - 124				
Dibromochloromethane	43.81	1.0	50	0	87.6	74 - 126				
Dibromomethane	46.73	1.0	50	0	93.5	79 - 123				
Dichlorodifluoromethane	34.23	1.0	50	0	68.5	32 - 152				
Ethylbenzene	42.15	1.0	50	0	84.3	79 - 121				
Hexachlorobutadiene	36.48	1.0	50	0	73.0	66 - 134				
Isopropylbenzene	43.03	1.0	50	0	86.1	72 - 131				
m,p-Xylene	81.94	2.0	100	0	81.9	80 - 121				
Methylene chloride	41.4	2.0	50	0	82.8	74 - 124				
Naphthalene	40.39	1.0	50	0	80.8	61 - 128				
n-Butylbenzene	40.33	1.0	50	0	80.7	75 - 128				
n-Propylbenzene	46.3	1.0	50	0	92.6	76 - 126				
o-Xylene	41.96	1.0	50	0	83.9	78 - 122				
sec-Butylbenzene	38.86	1.0	50	0	77.7	77 - 126				
Styrene	43.15	1.0	50	0	86.3	78 - 123				
tert-Butylbenzene	45.24	1.0	50	0	90.5	78 - 124				
Tetrachloroethene	40.97	1.0	50	0	81.9	74 - 129				
Toluene	41.14	1.0	50	0	82.3	80 - 121				
trans-1,2-Dichloroethene	44.55	1.0	50	0	89.1	75 - 124				
trans-1,3-Dichloropropene	44.67	1.0	50	0	89.3	73 - 127				
Trichloroethene	239.2	1.0	50	192.6	93.2	79 - 123				E
Trichlorofluoromethane	43.57	1.0	50	0	87.1	65 - 141				
Vinyl chloride	43.05	1.0	50	0	86.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.16*	*1.0*	*50*	*0*	*86.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.82*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.37*	*1.0*	*50*	*0*	*96.7*	*80 - 119*				
Surr: Toluene-d8	*53.27*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060281-01MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 00:50**
Client ID: **MW8_060518** Run ID: **VOA2_317691** SeqNo: **4594478** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.65	1.0	50	0	87.3	78 - 124	43.69	0.0794	20	
1,1,1-Trichloroethane	44.04	1.0	50	0	88.1	74 - 131	44.39	0.783	20	
1,1,2,2-Tetrachloroethane	38.48	1.0	50	0	77.0	71 - 121	37.75	1.93	20	
1,1,2-Trichloroethane	42.99	1.0	50	0	86.0	80 - 119	42.46	1.23	20	
1,1-Dichloroethane	44.01	1.0	50	0	88.0	77 - 125	43.83	0.416	20	
1,1-Dichloroethene	43.94	1.0	50	0	87.9	71 - 131	44.78	1.88	20	
1,1-Dichloropropene	40.87	1.0	50	0	81.7	78 - 125	40.6	0.659	20	
1,2,3-Trichlorobenzene	39.33	1.0	50	0	78.7	69 - 129	39.1	0.598	20	
1,2,3-Trichloropropane	38.88	1.0	50	0	77.8	73 - 122	37.97	2.38	20	
1,2,4-Trichlorobenzene	39.73	1.0	50	0	79.5	69 - 130	37.73	5.15	20	
1,2,4-Trimethylbenzene	38.85	1.0	50	0	77.7	76 - 124	38.2	1.69	20	
1,2-Dibromo-3-chloropropane	41.14	1.0	50	0	82.3	62 - 128	41.13	0.0304	20	
1,2-Dibromoethane	44.01	1.0	50	0	88.0	77 - 121	43.77	0.545	20	
1,2-Dichlorobenzene	40.18	1.0	50	0	80.4	80 - 119	39.63	1.37	20	
1,2-Dichloroethane	49.44	1.0	50	3.774	91.3	73 - 128	48.89	1.14	20	
1,2-Dichloropropane	42.48	1.0	50	0	85.0	78 - 122	42.25	0.55	20	
1,3,5-Trimethylbenzene	46.33	1.0	50	0	92.7	75 - 124	46.31	0.0288	20	
1,3-Dichlorobenzene	40.08	1.0	50	0	80.2	80 - 119	39.64	1.09	20	
1,3-Dichloropropane	42.95	1.0	50	0	85.9	80 - 119	42.66	0.683	20	
1,4-Dichlorobenzene	40.22	1.0	50	0	80.4	79 - 118	39.46	1.9	20	
2,2-Dichloropropane	34.21	1.0	50	0	68.4	60 - 139	34.3	0.272	20	
2-Butanone	91.02	2.0	100	0	91.0	56 - 143	88.8	2.47	20	
2-Chlorotoluene	45.65	1.0	50	0	91.3	79 - 122	45.35	0.675	20	
2-Hexanone	84.62	2.0	100	0	84.6	57 - 139	81.92	3.24	20	
4-Chlorotoluene	45.63	1.0	50	0	91.3	78 - 122	45.51	0.256	20	
4-Isopropyltoluene	38.98	1.0	50	0	78.0	77 - 127	38.63	0.908	20	
4-Methyl-2-pentanone	87.29	2.0	100	0	87.3	67 - 130	85.95	1.54	20	
Acetone	90.76	2.0	100	0	90.8	39 - 160	85.53	5.93	20	
Benzene	43.02	1.0	50	0.4514	85.1	79 - 120	42.75	0.623	20	
Bromobenzene	39.41	1.0	50	0	78.8	80 - 120	39.17	0.607	20	S
Bromochloromethane	46.64	1.0	50	0	93.3	78 - 123	46.26	0.819	20	
Bromodichloromethane	44.98	1.0	50	0	90.0	79 - 125	44.33	1.46	20	
Bromoform	44.13	1.0	50	0	88.3	66 - 130	44.2	0.153	20	
Bromomethane	48.13	1.0	50	0	96.3	53 - 141	48.54	0.848	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317691 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060281-01MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 00:50**
Client ID: **MW8_060518** Run ID: **VOA2_317691** SeqNo: **4594478** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	89.22	2.0	100	0	89.2	64 - 133	88.3	1.03	20	
Carbon tetrachloride	46.96	1.0	50	0	93.9	72 - 136	47.37	0.871	20	
Chlorobenzene	42	1.0	50	0	84.0	82 - 118	42.03	0.063	20	
Chloroethane	47.15	1.0	50	0	94.3	60 - 138	47.85	1.48	20	
Chloroform	43.27	1.0	50	0	86.5	79 - 124	43.39	0.27	20	
Chloromethane	38.82	1.0	50	0	77.6	50 - 139	37.75	2.79	20	
cis-1,2-Dichloroethene	51.13	1.0	50	6.82	88.6	78 - 123	50.72	0.817	20	
cis-1,3-Dichloropropene	44.08	1.0	50	0	88.2	75 - 124	43.67	0.935	20	
Dibromochloromethane	44.45	1.0	50	0	88.9	74 - 126	43.81	1.47	20	
Dibromomethane	46.65	1.0	50	0	93.3	79 - 123	46.73	0.181	20	
Dichlorodifluoromethane	34.33	1.0	50	0	68.7	32 - 152	34.23	0.29	20	
Ethylbenzene	42.51	1.0	50	0	85.0	79 - 121	42.15	0.848	20	
Hexachlorobutadiene	38.22	1.0	50	0	76.4	66 - 134	36.48	4.65	20	
Isopropylbenzene	42.84	1.0	50	0	85.7	72 - 131	43.03	0.454	20	
m,p-Xylene	82.4	2.0	100	0	82.4	80 - 121	81.94	0.552	20	
Methylene chloride	41.12	2.0	50	0	82.2	74 - 124	41.4	0.685	20	
Naphthalene	41.88	1.0	50	0	83.8	61 - 128	40.39	3.64	20	
n-Butylbenzene	40.61	1.0	50	0	81.2	75 - 128	40.33	0.697	20	
n-Propylbenzene	46.41	1.0	50	0	92.8	76 - 126	46.3	0.223	20	
o-Xylene	42.05	1.0	50	0	84.1	78 - 122	41.96	0.233	20	
sec-Butylbenzene	38.98	1.0	50	0	78.0	77 - 126	38.86	0.29	20	
Styrene	43.42	1.0	50	0	86.8	78 - 123	43.15	0.632	20	
tert-Butylbenzene	45.43	1.0	50	0	90.9	78 - 124	45.24	0.421	20	
Tetrachloroethene	41.03	1.0	50	0	82.1	74 - 129	40.97	0.158	20	
Toluene	41.34	1.0	50	0	82.7	80 - 121	41.14	0.483	20	
trans-1,2-Dichloroethene	45.13	1.0	50	0	90.3	75 - 124	44.55	1.29	20	
trans-1,3-Dichloropropene	45.76	1.0	50	0	91.5	73 - 127	44.67	2.42	20	
Trichloroethene	239.9	1.0	50	192.6	94.5	79 - 123	239.2	0.268	20	E
Trichlorofluoromethane	42.68	1.0	50	0	85.4	65 - 141	43.57	2.07	20	
Vinyl chloride	42.69	1.0	50	0	85.4	58 - 137	43.05	0.847	20	
Surr: 1,2-Dichloroethane-d4	*43.9*	*1.0*	*50*	*0*	*87.8*	*81 - 118*	*43.16*	*1.69*	*20*	
Surr: 4-Bromofluorobenzene	*52.21*	*1.0*	*50*	*0*	*104*	*85 - 114*	*51.82*	*0.755*	*20*	
Surr: Dibromofluoromethane	*48.31*	*1.0*	*50*	*0*	*96.6*	*80 - 119*	*48.37*	*0.125*	*20*	
Surr: Toluene-d8	*53.31*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.27*	*0.0892*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317691 **Instrument:** VOA2 **Method:** SW8260

The following samples were analyzed in this batch: HS18060281-01 HS18060281-02 HS18060281-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: **R317765** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **MBLK-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 11:56**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **MBLK-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 11:56**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.95*	*1.0*	*50*	*0*	*83.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.08*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*55.89*	*1.0*	*50*	*0*	*112*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 10:41**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.47	1.0	50	0	88.9	78 - 124				
1,1,1-Trichloroethane	42.41	1.0	50	0	84.8	74 - 131				
1,1,2,2-Tetrachloroethane	41.08	1.0	50	0	82.2	71 - 121				
1,1,2-Trichloroethane	44.55	1.0	50	0	89.1	80 - 119				
1,1-Dichloroethane	44.32	1.0	50	0	88.6	77 - 125				
1,1-Dichloroethene	41.04	1.0	50	0	82.1	71 - 131				
1,1-Dichloropropene	39.7	1.0	50	0	79.4	78 - 125				
1,2,3-Trichlorobenzene	41.72	1.0	50	0	83.4	69 - 129				
1,2,3-Trichloropropane	42.52	1.0	50	0	85.0	73 - 122				
1,2,4-Trichlorobenzene	41.74	1.0	50	0	83.5	69 - 130				
1,2,4-Trimethylbenzene	38.58	1.0	50	0	77.2	76 - 124				
1,2-Dibromo-3-chloropropane	44.48	1.0	50	0	89.0	62 - 128				
1,2-Dibromoethane	46.52	1.0	50	0	93.0	77 - 121				
1,2-Dichlorobenzene	41.21	1.0	50	0	82.4	80 - 119				
1,2-Dichloroethane	46.23	1.0	50	0	92.5	73 - 128				
1,2-Dichloropropane	43.53	1.0	50	0	87.1	78 - 122				
1,3,5-Trimethylbenzene	46.26	1.0	50	0	92.5	75 - 124				
1,3-Dichlorobenzene	41.14	1.0	50	0	82.3	80 - 119				
1,3-Dichloropropane	44.8	1.0	50	0	89.6	80 - 119				
1,4-Dichlorobenzene	41.5	1.0	50	0	83.0	79 - 118				
2,2-Dichloropropane	42.66	1.0	50	0	85.3	60 - 139				
2-Butanone	96.07	2.0	100	0	96.1	56 - 143				
2-Chlorotoluene	46.16	1.0	50	0	92.3	79 - 122				
2-Hexanone	93.31	2.0	100	0	93.3	57 - 139				
4-Chlorotoluene	46.34	1.0	50	0	92.7	78 - 122				
4-Isopropyltoluene	38.65	1.0	50	0	77.3	77 - 127				
4-Methyl-2-pentanone	91.96	2.0	100	0	92.0	67 - 130				
Acetone	95.96	2.0	100	0	96.0	39 - 160				
Benzene	43.03	1.0	50	0	86.1	79 - 120				
Bromobenzene	40.35	1.0	50	0	80.7	80 - 120				
Bromochloromethane	47	1.0	50	0	94.0	78 - 123				
Bromodichloromethane	45.61	1.0	50	0	91.2	79 - 125				
Bromoform	47.15	1.0	50	0	94.3	66 - 130				
Bromomethane	45.86	1.0	50	0	91.7	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 10:41**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	85.51	2.0	100	0	85.5	64 - 133				
Carbon tetrachloride	45.55	1.0	50	0	91.1	72 - 136				
Chlorobenzene	42.9	1.0	50	0	85.8	82 - 118				
Chloroethane	49.27	1.0	50	0	98.5	60 - 138				
Chloroform	42.83	1.0	50	0	85.7	79 - 124				
Chloromethane	38.58	1.0	50	0	77.2	50 - 139				
cis-1,2-Dichloroethene	44.33	1.0	50	0	88.7	78 - 123				
cis-1,3-Dichloropropene	47.65	1.0	50	0	95.3	75 - 124				
Dibromochloromethane	45.88	1.0	50	0	91.8	74 - 126				
Dibromomethane	48.7	1.0	50	0	97.4	79 - 123				
Dichlorodifluoromethane	43.65	1.0	50	0	87.3	32 - 152				
Ethylbenzene	41.4	1.0	50	0	82.8	79 - 121				
Hexachlorobutadiene	38.41	1.0	50	0	76.8	66 - 134				
Isopropylbenzene	41.53	1.0	50	0	83.1	72 - 131				
m,p-Xylene	81.88	2.0	100	0	81.9	80 - 121				
Methylene chloride	41.7	2.0	50	0	83.4	74 - 124				
Naphthalene	45.21	1.0	50	0	90.4	61 - 128				
n-Butylbenzene	41.35	1.0	50	0	82.7	75 - 128				
n-Propylbenzene	45.23	1.0	50	0	90.5	76 - 126				
o-Xylene	42.49	1.0	50	0	85.0	78 - 122				
sec-Butylbenzene	39.7	1.0	50	0	79.4	77 - 126				
Styrene	44.74	1.0	50	0	89.5	78 - 123				
tert-Butylbenzene	44.35	1.0	50	0	88.7	78 - 124				
Tetrachloroethene	40.27	1.0	50	0	80.5	74 - 129				
Toluene	41.42	1.0	50	0	82.8	80 - 121				
trans-1,2-Dichloroethene	43.86	1.0	50	0	87.7	75 - 124				
trans-1,3-Dichloropropene	49.49	1.0	50	0	99.0	73 - 127				
Trichloroethene	45.4	1.0	50	0	90.8	79 - 123				
Trichlorofluoromethane	41.14	1.0	50	0	82.3	65 - 141				
Vinyl chloride	42.43	1.0	50	0	84.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*42.53*	*1.0*	*50*	*0*	*85.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.24*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.05*	*1.0*	*50*	*0*	*96.1*	*80 - 119*				
Surr: Toluene-d8	*53.64*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060425-05MS** Units: **ug/L** Analysis Date: **11-Jun-2018 15:24**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.93	1.0	50	0	87.9	78 - 124				
1,1,1-Trichloroethane	42.93	1.0	50	0	85.9	74 - 131				
1,1,2,2-Tetrachloroethane	39.98	1.0	50	0	80.0	71 - 121				
1,1,2-Trichloroethane	43.23	1.0	50	0	86.5	80 - 119				
1,1-Dichloroethane	43.07	1.0	50	0	86.1	77 - 125				
1,1-Dichloroethene	40.9	1.0	50	0	81.8	71 - 131				
1,1-Dichloropropene	39.89	1.0	50	0	79.8	78 - 125				
1,2,3-Trichlorobenzene	40.3	1.0	50	0	80.6	69 - 129				
1,2,3-Trichloropropane	41.79	1.0	50	0	83.6	73 - 122				
1,2,4-Trichlorobenzene	39.47	1.0	50	0	78.9	69 - 130				
1,2,4-Trimethylbenzene	37.9	1.0	50	0	75.8	76 - 124				S
1,2-Dibromo-3-chloropropane	45.17	1.0	50	0	90.3	62 - 128				
1,2-Dibromoethane	45.28	1.0	50	0	90.6	77 - 121				
1,2-Dichlorobenzene	39.89	1.0	50	0	79.8	80 - 119				S
1,2-Dichloroethane	48.69	1.0	50	4.653	88.1	73 - 128				
1,2-Dichloropropane	42.49	1.0	50	0	85.0	78 - 122				
1,3,5-Trimethylbenzene	45.64	1.0	50	0	91.3	75 - 124				
1,3-Dichlorobenzene	39.68	1.0	50	0	79.4	80 - 119				S
1,3-Dichloropropane	43.85	1.0	50	0	87.7	80 - 119				
1,4-Dichlorobenzene	39.48	1.0	50	0	79.0	79 - 118				S
2,2-Dichloropropane	40.48	1.0	50	0	81.0	60 - 139				
2-Butanone	101.4	2.0	100	0	101	56 - 143				
2-Chlorotoluene	44.65	1.0	50	0	89.3	79 - 122				
2-Hexanone	105.1	2.0	100	0	105	57 - 139				
4-Chlorotoluene	45.17	1.0	50	0	90.3	78 - 122				
4-Isopropyltoluene	38.3	1.0	50	0	76.6	77 - 127				S
4-Methyl-2-pentanone	95.38	2.0	100	0	95.4	67 - 130				
Acetone	91.57	2.0	100	0	91.6	39 - 160				
Benzene	42.11	1.0	50	0.2869	83.7	79 - 120				
Bromobenzene	38.37	1.0	50	0	76.7	80 - 120				S
Bromochloromethane	45.62	1.0	50	0	91.2	78 - 123				
Bromodichloromethane	44.24	1.0	50	0	88.5	79 - 125				
Bromoform	45.84	1.0	50	0	91.7	66 - 130				
Bromomethane	39.22	1.0	50	0	78.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060425-05MS** Units: **ug/L** Analysis Date: **11-Jun-2018 15:24**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	84.49	2.0	100	0	84.5	64 - 133				
Carbon tetrachloride	45.38	1.0	50	0	90.8	72 - 136				
Chlorobenzene	41.93	1.0	50	0	83.9	82 - 118				
Chloroethane	45.24	1.0	50	0	90.5	60 - 138				
Chloroform	44.29	1.0	50	2.642	83.3	79 - 124				
Chloromethane	34.69	1.0	50	0	69.4	50 - 139				
cis-1,2-Dichloroethene	46.47	1.0	50	3.033	86.9	78 - 123				
cis-1,3-Dichloropropene	45.28	1.0	50	0	90.6	75 - 124				
Dibromochloromethane	44.65	1.0	50	0	89.3	74 - 126				
Dibromomethane	46.83	1.0	50	0	93.7	79 - 123				
Dichlorodifluoromethane	31.69	1.0	50	0	63.4	32 - 152				
Ethylbenzene	41.92	1.0	50	0	83.8	79 - 121				
Hexachlorobutadiene	37.55	1.0	50	0	75.1	66 - 134				
Isopropylbenzene	42.23	1.0	50	0	84.5	72 - 131				
m,p-Xylene	82.06	2.0	100	0	82.1	80 - 121				
Methylene chloride	40.47	2.0	50	0	80.9	74 - 124				
Naphthalene	43.22	1.0	50	0	86.4	61 - 128				
n-Butylbenzene	40.44	1.0	50	0	80.9	75 - 128				
n-Propylbenzene	45.44	1.0	50	0	90.9	76 - 126				
o-Xylene	42.15	1.0	50	0	84.3	78 - 122				
sec-Butylbenzene	38.23	1.0	50	0	76.5	77 - 126				S
Styrene	43.35	1.0	50	0	86.7	78 - 123				
tert-Butylbenzene	44.62	1.0	50	0	89.2	78 - 124				
Tetrachloroethene	41.38	1.0	50	0	82.8	74 - 129				
Toluene	40.95	1.0	50	0	81.9	80 - 121				
trans-1,2-Dichloroethene	41.96	1.0	50	0	83.9	75 - 124				
trans-1,3-Dichloropropene	47.02	1.0	50	0	94.0	73 - 127				
Trichloroethene	290.4	1.0	50	248.7	83.4	79 - 123				EO
Trichlorofluoromethane	40.05	1.0	50	0	80.1	65 - 141				
Vinyl chloride	40.28	1.0	50	0	80.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.24*	*1.0*	*50*	*0*	*86.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.38*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*47.69*	*1.0*	*50*	*0*	*95.4*	*80 - 119*				
Surr: Toluene-d8	*53.41*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060425-05MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 15:50**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.32	1.0	50	0	86.6	78 - 124	43.93	1.41	20	
1,1,1-Trichloroethane	42.25	1.0	50	0	84.5	74 - 131	42.93	1.6	20	
1,1,2,2-Tetrachloroethane	40.91	1.0	50	0	81.8	71 - 121	39.98	2.3	20	
1,1,2-Trichloroethane	43.38	1.0	50	0	86.8	80 - 119	43.23	0.345	20	
1,1-Dichloroethane	42.58	1.0	50	0	85.2	77 - 125	43.07	1.14	20	
1,1-Dichloroethene	39.53	1.0	50	0	79.1	71 - 131	40.9	3.4	20	
1,1-Dichloropropene	39.19	1.0	50	0	78.4	78 - 125	39.89	1.76	20	
1,2,3-Trichlorobenzene	42.19	1.0	50	0	84.4	69 - 129	40.3	4.58	20	
1,2,3-Trichloropropane	42.24	1.0	50	0	84.5	73 - 122	41.79	1.08	20	
1,2,4-Trichlorobenzene	40.97	1.0	50	0	81.9	69 - 130	39.47	3.73	20	
1,2,4-Trimethylbenzene	38.26	1.0	50	0	76.5	76 - 124	37.9	0.926	20	
1,2-Dibromo-3-chloropropane	47.66	1.0	50	0	95.3	62 - 128	45.17	5.36	20	
1,2-Dibromoethane	45.03	1.0	50	0	90.1	77 - 121	45.28	0.564	20	
1,2-Dichlorobenzene	40.02	1.0	50	0	80.0	80 - 119	39.89	0.341	20	
1,2-Dichloroethane	49.11	1.0	50	4.653	88.9	73 - 128	48.69	0.862	20	
1,2-Dichloropropane	41.69	1.0	50	0	83.4	78 - 122	42.49	1.9	20	
1,3,5-Trimethylbenzene	45.55	1.0	50	0	91.1	75 - 124	45.64	0.196	20	
1,3-Dichlorobenzene	39.74	1.0	50	0	79.5	80 - 119	39.68	0.16	20	S
1,3-Dichloropropane	43.23	1.0	50	0	86.5	80 - 119	43.85	1.42	20	
1,4-Dichlorobenzene	40.14	1.0	50	0	80.3	79 - 118	39.48	1.66	20	
2,2-Dichloropropane	40.05	1.0	50	0	80.1	60 - 139	40.48	1.06	20	
2-Butanone	101.8	2.0	100	0	102	56 - 143	101.4	0.369	20	
2-Chlorotoluene	45.25	1.0	50	0	90.5	79 - 122	44.65	1.34	20	
2-Hexanone	107.1	2.0	100	0	107	57 - 139	105.1	1.89	20	
4-Chlorotoluene	45.51	1.0	50	0	91.0	78 - 122	45.17	0.741	20	
4-Isopropyltoluene	38.58	1.0	50	0	77.2	77 - 127	38.3	0.739	20	
4-Methyl-2-pentanone	97.45	2.0	100	0	97.5	67 - 130	95.38	2.15	20	
Acetone	94.43	2.0	100	0	94.4	39 - 160	91.57	3.07	20	
Benzene	41.53	1.0	50	0.2869	82.5	79 - 120	42.11	1.39	20	
Bromobenzene	39.4	1.0	50	0	78.8	80 - 120	38.37	2.64	20	S
Bromochloromethane	45.73	1.0	50	0	91.5	78 - 123	45.62	0.245	20	
Bromodichloromethane	43.63	1.0	50	0	87.3	79 - 125	44.24	1.39	20	
Bromoform	46.15	1.0	50	0	92.3	66 - 130	45.84	0.691	20	
Bromomethane	39.47	1.0	50	0	78.9	53 - 141	39.22	0.623	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060425-05MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 15:50**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	83.96	2.0	100	0	84.0	64 - 133	84.49	0.624	20	
Carbon tetrachloride	44.43	1.0	50	0	88.9	72 - 136	45.38	2.11	20	
Chlorobenzene	41.47	1.0	50	0	82.9	82 - 118	41.93	1.09	20	
Chloroethane	43.01	1.0	50	0	86.0	60 - 138	45.24	5.04	20	
Chloroform	43.9	1.0	50	2.642	82.5	79 - 124	44.29	0.88	20	
Chloromethane	33.97	1.0	50	0	67.9	50 - 139	34.69	2.09	20	
cis-1,2-Dichloroethene	45.81	1.0	50	3.033	85.6	78 - 123	46.47	1.42	20	
cis-1,3-Dichloropropene	45.4	1.0	50	0	90.8	75 - 124	45.28	0.26	20	
Dibromochloromethane	44.22	1.0	50	0	88.4	74 - 126	44.65	0.969	20	
Dibromomethane	47.06	1.0	50	0	94.1	79 - 123	46.83	0.491	20	
Dichlorodifluoromethane	30.37	1.0	50	0	60.7	32 - 152	31.69	4.24	20	
Ethylbenzene	40.95	1.0	50	0	81.9	79 - 121	41.92	2.34	20	
Hexachlorobutadiene	38.55	1.0	50	0	77.1	66 - 134	37.55	2.61	20	
Isopropylbenzene	41.66	1.0	50	0	83.3	72 - 131	42.23	1.36	20	
m,p-Xylene	81.38	2.0	100	0	81.4	80 - 121	82.06	0.832	20	
Methylene chloride	39.9	2.0	50	0	79.8	74 - 124	40.47	1.43	20	
Naphthalene	46.17	1.0	50	0	92.3	61 - 128	43.22	6.6	20	
n-Butylbenzene	40.86	1.0	50	0	81.7	75 - 128	40.44	1.03	20	
n-Propylbenzene	45.28	1.0	50	0	90.6	76 - 126	45.44	0.354	20	
o-Xylene	41.34	1.0	50	0	82.7	78 - 122	42.15	1.94	20	
sec-Butylbenzene	38.27	1.0	50	0	76.5	77 - 126	38.23	0.0876	20	S
Styrene	43	1.0	50	0	86.0	78 - 123	43.35	0.794	20	
tert-Butylbenzene	44.28	1.0	50	0	88.6	78 - 124	44.62	0.776	20	
Tetrachloroethene	40.43	1.0	50	0	80.9	74 - 129	41.38	2.32	20	
Toluene	40.39	1.0	50	0	80.8	80 - 121	40.95	1.36	20	
trans-1,2-Dichloroethene	42.68	1.0	50	0	85.4	75 - 124	41.96	1.7	20	
trans-1,3-Dichloropropene	46.12	1.0	50	0	92.2	73 - 127	47.02	1.94	20	
Trichloroethene	283.8	1.0	50	248.7	70.0	79 - 123	290.4	2.33	20	SEO
Trichlorofluoromethane	38.67	1.0	50	0	77.3	65 - 141	40.05	3.52	20	
Vinyl chloride	39.81	1.0	50	0	79.6	58 - 137	40.28	1.16	20	
Surr: 1,2-Dichloroethane-d4	*43.76*	*1.0*	*50*	*0*	*87.5*	*81 - 118*	*43.24*	*1.18*	*20*	
Surr: 4-Bromofluorobenzene	*52.22*	*1.0*	*50*	*0*	*104*	*85 - 114*	*52.38*	*0.307*	*20*	
Surr: Dibromofluoromethane	*47.91*	*1.0*	*50*	*0*	*95.8*	*80 - 119*	*47.69*	*0.453*	*20*	
Surr: Toluene-d8	*53.6*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.41*	*0.351*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060281

QC BATCH REPORT

Batch ID: R317765 **Instrument:** VOA2 **Method:** SW8260

The following samples were analyzed in this batch: HS18060281-02 HS18060281-03 HS18060281-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060281**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 19-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060281

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18060281-01	MW8_060518	Login	6/6/2018 7:26:41 PM	JRM	Sub
HS18060281-01	MW8_060518	Login	6/6/2018 7:26:41 PM	JRM	EXT026
HS18060281-01	MW8_060518	Login	6/6/2018 7:26:41 PM	JRM	VOA250
HS18060281-02	MW21-060518	Login	6/6/2018 7:26:41 PM	JRM	Sub
HS18060281-02	MW21-060518	Login	6/6/2018 7:26:41 PM	JRM	EXT026
HS18060281-02	MW21-060518	Login	6/6/2018 7:26:41 PM	JRM	VOA250
HS18060281-03	MW21-060518-a	Login	6/6/2018 7:26:41 PM	JRM	Sub
HS18060281-03	MW21-060518-a	Login	6/6/2018 7:26:41 PM	JRM	EXT026
HS18060281-03	MW21-060518-a	Login	6/6/2018 7:26:41 PM	JRM	VOA250
HS18060281-04	Trip Blank	Login	6/6/2018 7:26:41 PM	JRM	VOA250

Date: 19-Jun-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**06-Jun-2018 08:48**
Work Order:	HS18060281	Received by:	**PMG**

Checklist completed by: *Jared R. Makan* (eSignature) 6-Jun-2018 (Date)

Reviewed by: *RJ Modashia* (eSignature) 7-Jun-2018 (Date)

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	☐ Not Present
Custody seals intact on shipping container/cooler?	☑	☐	☐ Not Present
Custody seals intact on sample bottles?	☐	☐	☑ Not Present
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	☑ N/A
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	1.4c/0.9c UC/C	IR11	
Cooler(s)/Kit(s):	43942		
Date/Time sample(s) sent to storage:	06/06/2018 19:40		
Water - VOA vials have zero headspace?	☑	☐	☐ No VOA vials submitted
Water - pH acceptable upon receipt?	☑	☐	☐ N/A
pH adjusted?	☐	☑	☐ N/A
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00900167

bhate

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NW01312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested [5] / Quality Assurance Samples [6]

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
MW8_060518		6/5/18	1205	-	N		WG	5	X	X		X										
MW8_060518-MS		6/5/18	1205	-	MS		WG	5	X	X		X										
MW8_060518_SD		6/5/18	1205	-	SD		WG	5	X	X		X										
MW21_060518		6/5/18	1310		N		WG	6	X	X	X	X										
MW21_060518_a		6/5/18	1310		FD		WG	6	X	X	X	X										
TRIP BLANK		6/5/18		-	TB		W	2	X													
				-																		
				-																		
				-																		
				-																		
				-																		

HS18060281

Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/5/18	1430	1. [signature]	6/6/18	08:48.
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

Method of Shipment: _____

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

43942

VIC
1.4°
#11
9F-0.5°

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 6/5/18 Time: 1430
Name: Scott Beesinger
Company: Bhate

Seal Broken By:
Date:

FedEx
TRK# 0221 7376 9752 9260
WED - 06 JUN 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH
FID 162706 05JUN18 GSGA 546C1/4BF5/0C8A

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1815740; 1815988; 1815991; 1815992; 1815993; 1816534

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2101 (216711)

General Set Information: There were fourteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 1815740001/1815988001-05/1815992001 - 1:1,000. 1815740002/05 – 1:100. 1815740003 – 10,000. Samples 1815991001/1815993001/1816534001 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605275) was less than 1/2 the CRDL. The recovery for the LCS (605276) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on samples 1815988004/05 (Client ID: MW8-060518). The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L. The Matrix Spike and duplicate (MS/MSD) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected. The MS/MSD relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 14JUND18/19/21-23/33/35/36 and 15JUND03/05.

Thomas Bosch June 18, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 18, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1815988**
Project ID: HS18060281 060518
Purchase Order: HS18060281
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
MW8_060518	1815988001	06/05/18	06/08/18	
MW21_060518	1815988002	06/05/18	06/08/18	
MW21_060518-a	1815988003	06/05/18	06/08/18	

Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
MW8_060518MS	1815988004	06/05/18	06/08/18	
MW8_060518MSD	1815988005	06/05/18	06/08/18	

***Client QC is reported as part of the Quality Control results report, if requested.**

ANALYTICAL REPORT

Workorder: 34-1815988
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW8_060518** | Sampling Site: NA | Collected: 06/05/2018
Lab ID: 1815988001 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2101 (HBN: 216711)
Analyzed: 06/14/2018 17:13
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**8800**	1000	2000	4000	1000	

Sample ID: **MW21_060518** | Sampling Site: NA | Collected: 06/05/2018
Lab ID: 1815988002 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2101 (HBN: 216711)
Analyzed: 06/14/2018 15:22
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**35000**	1000	2000	4000	1000	

Sample ID: **MW21_060518-a** | Sampling Site: NA | Collected: 06/05/2018
Lab ID: 1815988003 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2101 (HBN: 216711)
Analyzed: 06/14/2018 15:36
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**36000**	1000	2000	4000	1000	

Comments

Workorder: 1815988

The field samples were analyzed and reported at 1:1,000 dilutions. The reporting limits have been adjusted accordingly.

Quality Control: EPA 6850, DoD QSM - (HBN: 216711)

The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/17/2018 13:08	/S/ Stephen Brose 06/18/2018 15:12

ANALYTICAL REPORT

Workorder: 34-1815988
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1815988
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1815988

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2101 (HBN: 216711)
Analyzed By: Thomas Bosch

Blank

LMB: 605275
Analyzed: 06/14/2018 12:28
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605276
Analyzed: 06/14/2018 12:42
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.26	5.00	105	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1815988001
Analyzed: 06/14/2018 17:13
Dilution: 1000
Units: ug/L

MS: 1815988004
Analyzed: 06/14/2018 18:25
Dilution: 1000
Units: ug/L

MSD: 1815988005
Analyzed: 06/14/2018 18:39
Dilution: 1000
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	8800	16400	5000	# 152	78.8	123.8	16400	# 152	0.018	0.0	20.0

Continuing Calibration Verification

CCV: 605272
Analyzed: 06/14/2018 11:45
Units: ug/L
Criteria: ± 15%

CCV: 605277
Analyzed: 06/14/2018 17:27
Units: ug/L
Criteria: ± 15%

CCV: 605342
Analyzed: 06/14/2018 20:33
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.7	25.0	103	28.0	25.0	112	27.9	25.0	112

CCV: 605457
Analyzed: 06/15/2018 10:37
Units: ug/L
Criteria: ± 15%

CCV: 605459
Analyzed: 06/15/2018 12:03
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	27.6	25.0	110	27.9	25.0	112

Interference Check Sample

ICSA: 605274
Analyzed: 06/14/2018 13:13
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.09	1.00	109

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1815988

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2101 (HBN: 216711)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

LODV: 605273 Analyzed: 06/14/2018 11:59 Units: ug/L Criteria: ± 50%				LODV: 605278 Analyzed: 06/14/2018 17:56 Units: ug/L Criteria: ± 50%			LODV: 605343 Analyzed: 06/14/2018 20:48 Units: ug/L Criteria: ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.03	1.00	103	1.18	1.00	118	1.20	1.00	120

LODV: 605458 Analyzed: 06/15/2018 10:51 Units: ug/L Criteria: ± 50%				LODV: 605460 Analyzed: 06/15/2018 12:17 Units: ug/L Criteria: ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.895	1.00	89.5	0.868	1.00	86.8

Comments

The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch 06/17/2018 13:08	/S/ Stephen Brose 06/18/2018 15:12

Symbols and Definitions

- ✱ - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

1815988

18698#7

Subcontract Chain of Custody

COC ID: 9239

1815988

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18060281
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060281-01**	**MW8_060518**	**Groundwater**	**05 Jun 2018 12:05**
	SUB_Perch-6850			14 Jun 2018
2.	**HS18060281-02**	**MW21-060518**	**Groundwater**	**05 Jun 2018 13:10**
	SUB_Perch-6850			14 Jun 2018
3.	**HS18060281-03**	**MW21-060518-a**	**Groundwater**	**05 Jun 2018 13:10**
	SUB_Perch-6850			14 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

MS/MSD - MW8-060518

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 6/7/18 1800

Received By: Jennifer Gossell Date/Time: 06-08-18 9:40

Cooler ID(s): _____ Temperature(s): _____

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston
Project/Task/Site: 1815988
Date/Time of Receipt: 06-08-18 9:40
Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:						
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8593	3 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tami Van Tassell (Signature) Tami Van Tassell (Printed Name) 06-08-18 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

NO Paper Work
TA 06-08-18

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00900179

Part # 159469-45

Must Deliver Next Business Day
Time and Tempature Sensitive!

ALS

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 07JUN18
ACTWGT: 17.30 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN.

BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060281/306/08/10/52 - RJ

54661/48E5/53C1

FedEx Express

E

J171016102001ov

TRK# 0201 4380 9529 8878

FRI - 08 JUN 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060281	Split:	Workorder ID: 1815988	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	
			COOL	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/05/2018 12:05	MW8_060518	1815988001		Water	A	1	A
2	06/05/2018 13:10	MW21_060518	1815988002		Water	A	1	A
3	06/05/2018 13:10	MW21_060518-a	1815988003		Water	A	1	A
4	06/05/2018 12:05	MW8_060518MS	1815988004	MS	Water	A	1	A
5	06/05/2018 12:05	MW8_060518MSD	1815988005	MSD	Water	A	1	A
6								
7								
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/08/2018 09:40	ALS Sample Receiving	Sample Login
Julie Warath	6/8/18 1430	15C	storage
R.33.1	6-14-18/08:00	T. Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

Batch Worklist

Batch: ELMS/ 2101
Rule: EPA 6850, DoD QSM Water

Created: 6/14/2018 08:55
Analyst: T. Bosch

Instrument: LCMS04
Status: WP

HBN: 216711

Workorder: 1815740 [ENV_LVL4]
Workorder: 1815988 [ENV_LVL4]
Workorder: 1815991 [ENV_LVL4]
Workorder: 1815992 [ENV_LVL4]
Workorder: 1815993 [ENV_LVL4]
Workorder: 1816534 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	605272	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
2	605273	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
3	605275	LMB for HBN 216711 [ELMS/2101]				LMB	3		E6850Q413Q	5311		6/19/2018	6/14/2018
4	605276	LCS for HBN 216711 [ELMS/2101]				LCS	3		E6850Q413Q	5311		6/19/2018	6/14/2018
5	1815740001	MW5_060418				SAMPLE	3	1815740001-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
6	605274	ICS for HBN 216711 [ELMS/2101]				ICS	3		E6850..D3Q	5311		6/19/2018	6/14/2018
7	1815740004	18CPTMW23SW-060418				SAMPLE	3	1815740004-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
8	1815740006	18WW24_060418				SAMPLE	3	1815740006-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
9	1815740007	18WW25_060418				SAMPLE	3	1815740007-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
10	1815988002	MW21_060518				SAMPLE	3	1815988002-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
11	1815988003	MW21_060518-a				SAMPLE	3	1815988003-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
12	1815988001	MW8_060518				SAMPLE	3	1815988001-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
13	605277	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
14	605278	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
15	1815988004	MW8_060518MS				MS	3	1815988004-A	E6850Q413Q	5480		6/19/2018	6/14/2018
16	1815988005	MW8_060518MSD				MSD	3	1815988005-A	E6850Q413Q	5480		6/19/2018	6/14/2018
17	1815992001	LH18/24-SP140_060618				SAMPLE	3	1815992001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/14/2018
18	1815740002	18CPTMW08DW-060418				SAMPLE	3	1815740002-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
19	1815740003	18CPTMW08SW-060418				SAMPLE	3	1815740003-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
20	1815740005	18CPTMW23-060418				SAMPLE	3	1815740005-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
21	605342	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
22	605343	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
23	605457	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/15/2018
24	605458	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/15/2018

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
25	1815991001	LH18/24-SP650_060618				SAMPLE	3	1815991001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/15/2018
26	1815993001	LH18/24-SP650_060618				SAMPLE	3	1815993001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/15/2018
27	1816534001	LH18/24-SP650_061218				SAMPLE	3	1816534001-A	E6850Q41.3	5480	7/10/2018	6/15/2018	6/15/2018
28	605459	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/15/2018
29	605460	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/15/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1815740 (001-07); 1815988 (001-05); 1815991 (001); 1815992 (001); 1815993 (001); 1816534 (001) ELMS Batch/HBN ID: 2101 (216711)
Prep Date: 06/14/2018 Analysis Date: 06/14,15/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\14JUN18D.s & 15JUN18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/14/2018, sequence 14JU18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605276; Target = 5.0µg/L. ASTM type II water was used for LMB 605275.

MS/MSD: MS/MSD was performed on samples 1815988004/05 (Client ID: MW8_060518). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815740001/1815988001-05/1815992001 - 1:1,000. 1815740002/05 – 1:100. 1815740003 – 10,000. Samples 1815991001/1815993001/1816534001 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 14JUND18/19/21-23/33/35/36 and 15JUND03/05.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216711-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733	Created By: Thomas Bosch	Amount: 100 mL
MFG: AccuStandard	Create Date: 05/10/2017 11:05AM	Expires: 10/04/2018
MFG Lot: 216095148		Usable: Yes
Part ID: IC-PER-10X-1		Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)		Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM		Expires: 11/07/2025
MFG Lot: Not Provided			Usable: Yes
Part ID: Not Provided			Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

ALS

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	Verified By: Thomas Bosch	Usable: Yes
Pipette ID: Not Provided	Verify Date:	Lab Lot: CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK	Description - 6850 QC WKG STD 100ug/L

Standard:	41831	**Created By:**	Thomas Bosch	**Amount:**	10 mL
MFG:	ALS/SLC	**Create Date:**	05/09/2018 10:05AM	**Expires:**	05/09/2019
MFG Lot:	TNB: 05/09/2018			**Usable:**	Yes
Pipette ID:	Not Provided			**Lab Lot:**	CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 41830	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018		Usable: Yes
Pipette ID: Not Provided		Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109		Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House		Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided			Usable: Yes
Part ID: Not Provided			Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ISO 17025 ISO GUIDE 34 ISO 9001 ULTRA

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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June 25, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060352**

Revision: **1**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 9 sample(s) on Jun 07, 2018 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060352

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060352-01	MW2_060618	Groundwater		06-Jun-2018 08:40	07-Jun-2018 08:37	☐
HS18060352-02	18CPTMW01DW_060618	Groundwater		06-Jun-2018 09:35	07-Jun-2018 08:37	☐
HS18060352-03	18CPTMW01SW_060618	Groundwater		06-Jun-2018 10:30	07-Jun-2018 08:37	☐
HS18060352-04	18CPTMW15_060618	Groundwater		06-Jun-2018 11:30	07-Jun-2018 08:37	☐
HS18060352-05	18CPTMW15_06062018_a	Groundwater		06-Jun-2018 11:30	07-Jun-2018 08:37	☐
HS18060352-06	18WW18_060618	Groundwater		06-Jun-2018 12:35	07-Jun-2018 08:37	☐
HS18060352-07	18WW17_060618	Groundwater		06-Jun-2018 12:55	07-Jun-2018 08:37	☐
HS18060352-08	C04_060618	Groundwater		06-Jun-2018 13:40	07-Jun-2018 08:37	☐
HS18060352-09	Trip Blank	Water	ALS-041918-52	06-Jun-2018 00:00	07-Jun-2018 08:37	☐

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060352

CASE NARRATIVE

Work Order Comments

- Revision 1: Added Report Options.

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129262

Sample ID: MW2_060618 (HS18060352-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: LCSD-129262

- Surrogate 2-Fluorobiphenyl recovered above the control limit, it is not associated with target compound. The LCS/LCSD RPD recovered above the RPD limits for 2-Fluorobiphenyl and Nitrobenzene-d5.

GCMS Volatiles by Method SW8260

Batch ID: R317857

Sample ID: 18CPTMW01SW_060618 (HS18060352-03)

- Lowest practical dilution of 50x performed due to high concentration of non-target analyte(s). surrogate Toluene-d8 recpvered sligjhtly above the upper control limit.

Sample ID: HS18060400-04MS

- MS and MSD are for an unrelated sample.

Batch ID: R317765

Sample ID: HS18060425-05MS

- MS and MSD are for an unrelated sample

Batch ID: R318107

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129290

Sample ID: HS18060425-05MS

- MS/MSD and DUPs re for an unrelated sample

Metals by Method SW7470

Batch ID: 129254

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Revision:1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW2_060618
Collection Date: 06-Jun-2018 08:40

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
1,1,1-Trichloroethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
1,1,2,2-Tetrachloroethane	250	U	250	250	500	ug/L	500	12-Jun-2018 20:37
1,1,2-Trichloroethane	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
1,1-Dichloroethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
1,1-Dichloroethene	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
1,1-Dichloropropene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
1,2,3-Trichlorobenzene	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
1,2,3-Trichloropropane	250	U	250	250	500	ug/L	500	12-Jun-2018 20:37
1,2,4-Trichlorobenzene	250	U	250	250	500	ug/L	500	12-Jun-2018 20:37
1,2,4-Trimethylbenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
1,2-Dibromo-3-chloropropane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
1,2-Dibromoethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
1,2-Dichlorobenzene	250	U	250	250	500	ug/L	500	12-Jun-2018 20:37
1,2-Dichloroethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
1,2-Dichloropropane	250	U	250	250	500	ug/L	500	12-Jun-2018 20:37
1,3,5-Trimethylbenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
1,3-Dichlorobenzene	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
1,3-Dichloropropane	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
1,4-Dichlorobenzene	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
2,2-Dichloropropane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
2-Butanone	500	U	250	500	1000	ug/L	500	12-Jun-2018 20:37
2-Chlorotoluene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
2-Hexanone	500	U	500	500	1000	ug/L	500	12-Jun-2018 20:37
4-Chlorotoluene	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
4-Isopropyltoluene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
4-Methyl-2-pentanone	500	U	350	500	1000	ug/L	500	12-Jun-2018 20:37
Acetone	500	U	200	500	1000	ug/L	500	12-Jun-2018 20:37
Benzene	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
Bromobenzene	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
Bromochloromethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
Bromodichloromethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
Bromoform	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
Bromomethane	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
Carbon disulfide	500	U	300	500	1000	ug/L	500	12-Jun-2018 20:37
Carbon tetrachloride	250	U	250	250	500	ug/L	500	12-Jun-2018 20:37
Chlorobenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Chloroethane	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW2_060618
Collection Date: 06-Jun-2018 08:40

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
Chloromethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
cis-1,2-Dichloroethene	**34,000**		**100**	**250**	**500**	**ug/L**	500	12-Jun-2018 20:37
cis-1,3-Dichloropropene	250	U	50	250	500	ug/L	500	12-Jun-2018 20:37
Dibromochloromethane	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Dibromomethane	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
Dichlorodifluoromethane	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Ethylbenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Hexachlorobutadiene	250	U	500	250	500	ug/L	500	12-Jun-2018 20:37
Isopropylbenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
m,p-Xylene	500	U	250	500	1000	ug/L	500	12-Jun-2018 20:37
Methylene chloride	**240,000**		**2000**	**5000**	**10000**	**ug/L**	5000	12-Jun-2018 21:04
n-Butylbenzene	250	U	200	250	500	ug/L	500	12-Jun-2018 20:37
n-Propylbenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Naphthalene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
o-Xylene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
sec-Butylbenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Styrene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
tert-Butylbenzene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Tetrachloroethene	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Toluene	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
trans-1,2-Dichloroethene	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
trans-1,3-Dichloropropene	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
Trichloroethene	**5,000**		**100**	**250**	**500**	**ug/L**	500	12-Jun-2018 20:37
Trichlorofluoromethane	250	U	150	250	500	ug/L	500	12-Jun-2018 20:37
Vinyl chloride	250	U	100	250	500	ug/L	500	12-Jun-2018 20:37
Surr: 1,2-Dichloroethane-d4	*86.6*			**0**	*81-118*	*%REC*	*500*	*12-Jun-2018 20:37*
Surr: 1,2-Dichloroethane-d4	*86.4*			**0**	*81-118*	*%REC*	*5000*	*12-Jun-2018 21:04*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*500*	*12-Jun-2018 20:37*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5000*	*12-Jun-2018 21:04*
Surr: Dibromofluoromethane	*99.4*			**0**	*80-119*	*%REC*	*500*	*12-Jun-2018 20:37*
Surr: Dibromofluoromethane	*99.0*			**0**	*80-119*	*%REC*	*5000*	*12-Jun-2018 21:04*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*5000*	*12-Jun-2018 21:04*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*500*	*12-Jun-2018 20:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18 24	WorkOrder:HS18060352
Sample ID:	MW2_060618	Lab ID:HS18060352-01
Collection Date:	06-Jun-2018 08:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	**4.5**		**0.10**	**0.10**	**0.10**	**ug/L**	10	13-Jun-2018 11:49
Surr: 2-Fluorobiphenyl	*121*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 11:49*
Surr: 4-Terphenyl-d14	*90.4*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 11:49*
Surr: Nitrobenzene-d5	*93.2*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 11:49*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW01DW_060618
Collection Date: 06-Jun-2018 09:35

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 16:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 16:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 16:09
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 16:09
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 16:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24	WorkOrder:HS18060352	
Sample ID:	18CPTMW01DW_060618	Lab ID:HS18060352-02	
Collection Date:	06-Jun-2018 09:35	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 16:09
Methylene chloride	**2.1**		**0.40**	**1.0**	**2.0**	**ug/L**	1	12-Jun-2018 16:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 16:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 16:09
Surr: 1,2-Dichloroethane-d4	*85.1*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 16:09*
Surr: 4-Bromofluorobenzene	*99.6*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 16:09*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 16:09*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 16:09*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.016**		**0.010**	**0.010**	**0.010**	**ug/L**	1	12-Jun-2018 16:19
Surr: 2-Fluorobiphenyl	*53.6*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 16:19*
Surr: 4-Terphenyl-d14	*106*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 16:19*
Surr: Nitrobenzene-d5	*44.9*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 16:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW01DW_060618
Collection Date: 06-Jun-2018 09:35

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 12-Jun-2018		Analyst: JDE
Aluminum	**0.0444**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	13-Jun-2018 13:02
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	13-Jun-2018 13:02
Arsenic	**0.00249**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:02
Barium	**0.109**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:02
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:02
Cadmium	**0.000206**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:02
Calcium	**7.11**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	13-Jun-2018 13:02
Chromium	**0.0172**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	13-Jun-2018 13:02
Cobalt	**0.000456**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:02
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	13-Jun-2018 13:02
Iron	**0.837**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:02
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	13-Jun-2018 13:02
Magnesium	**4.85**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:02
Manganese	**0.0264**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:02
Nickel	**0.00235**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:02
Potassium	**184**		**0.180**	**1.00**	**2.00**	**mg/L**	10	13-Jun-2018 16:02
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	13-Jun-2018 13:02
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:02
Sodium	**291**		**0.140**	**1.00**	**2.00**	**mg/L**	10	13-Jun-2018 16:02
Thallium	**0.000383**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:02
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	13-Jun-2018 13:02
Zinc	**0.00393**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:02
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	11-Jun-2018 15:12
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW01SW_060618
Collection Date: 06-Jun-2018 10:30

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
1,1,1-Trichloroethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
1,1,2,2-Tetrachloroethane	25	U	25	25	50	ug/L	50	12-Jun-2018 20:11
1,1,2-Trichloroethane	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
1,1-Dichloroethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
1,1-Dichloroethene	**79**		**10**	**25**	**50**	**ug/L**	50	12-Jun-2018 20:11
1,1-Dichloropropene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
1,2,3-Trichlorobenzene	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
1,2,3-Trichloropropane	25	U	25	25	50	ug/L	50	12-Jun-2018 20:11
1,2,4-Trichlorobenzene	25	U	25	25	50	ug/L	50	12-Jun-2018 20:11
1,2,4-Trimethylbenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
1,2-Dibromo-3-chloropropane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
1,2-Dibromoethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
1,2-Dichlorobenzene	25	U	25	25	50	ug/L	50	12-Jun-2018 20:11
1,2-Dichloroethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
1,2-Dichloropropane	25	U	25	25	50	ug/L	50	12-Jun-2018 20:11
1,3,5-Trimethylbenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
1,3-Dichlorobenzene	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
1,3-Dichloropropane	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
1,4-Dichlorobenzene	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
2,2-Dichloropropane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
2-Butanone	50	U	25	50	100	ug/L	50	12-Jun-2018 20:11
2-Chlorotoluene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
2-Hexanone	50	U	50	50	100	ug/L	50	12-Jun-2018 20:11
4-Chlorotoluene	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
4-Isopropyltoluene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
4-Methyl-2-pentanone	50	U	35	50	100	ug/L	50	12-Jun-2018 20:11
Acetone	50	U	20	50	100	ug/L	50	12-Jun-2018 20:11
Benzene	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
Bromobenzene	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
Bromochloromethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
Bromodichloromethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
Bromoform	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
Bromomethane	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
Carbon disulfide	50	U	30	50	100	ug/L	50	12-Jun-2018 20:11
Carbon tetrachloride	25	U	25	25	50	ug/L	50	12-Jun-2018 20:11
Chlorobenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Chloroethane	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW01SW_060618
Collection Date: 06-Jun-2018 10:30

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
Chloromethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
cis-1,2-Dichloroethene	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
cis-1,3-Dichloropropene	25	U	5.0	25	50	ug/L	50	12-Jun-2018 20:11
Dibromochloromethane	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Dibromomethane	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
Dichlorodifluoromethane	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Ethylbenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Hexachlorobutadiene	25	U	50	25	50	ug/L	50	12-Jun-2018 20:11
Isopropylbenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
m,p-Xylene	50	U	25	50	100	ug/L	50	12-Jun-2018 20:11
Methylene chloride	**840**		**20**	**50**	**100**	**ug/L**	50	12-Jun-2018 20:11
n-Butylbenzene	25	U	20	25	50	ug/L	50	12-Jun-2018 20:11
n-Propylbenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Naphthalene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
o-Xylene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
sec-Butylbenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Styrene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
tert-Butylbenzene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Tetrachloroethene	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Toluene	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
trans-1,2-Dichloroethene	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
trans-1,3-Dichloropropene	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
Trichloroethene	**81**		**10**	**25**	**50**	**ug/L**	50	12-Jun-2018 20:11
Trichlorofluoromethane	25	U	15	25	50	ug/L	50	12-Jun-2018 20:11
Vinyl chloride	25	U	10	25	50	ug/L	50	12-Jun-2018 20:11
Surr: 1,2-Dichloroethane-d4	*85.8*			**0**	*81-118*	*%REC*	*50*	*12-Jun-2018 20:11*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*50*	*12-Jun-2018 20:11*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*50*	*12-Jun-2018 20:11*
Surr: Toluene-d8	*112*	*S*		**0**	*89-112*	*%REC*	*50*	*12-Jun-2018 20:11*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	12-Jun-2018 16:39
Surr: 2-Fluorobiphenyl	*91.9*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 16:39*
Surr: 4-Terphenyl-d14	*67.2*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 16:39*
Surr: Nitrobenzene-d5	*44.9*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 16:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW01SW_060618
Collection Date: 06-Jun-2018 10:30

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 12-Jun-2018		Analyst: JDE
Aluminum	**0.0185**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	13-Jun-2018 13:04
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	13-Jun-2018 13:04
Arsenic	**0.0131**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:04
Barium	**0.991**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:04
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:04
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:04
Calcium	**31.0**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	13-Jun-2018 13:04
Chromium	0.00100	U	0.000400	0.00100	0.00400	mg/L	1	13-Jun-2018 13:04
Cobalt	**0.000762**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:04
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	13-Jun-2018 13:04
Iron	**58.5**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:04
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	13-Jun-2018 13:04
Magnesium	**19.0**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:04
Manganese	**0.632**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:04
Nickel	**0.00125**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:04
Potassium	**4.95**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:04
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	13-Jun-2018 13:04
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:04
Sodium	**103**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:04
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:04
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	13-Jun-2018 13:04
Zinc	**0.00504**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:04
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	11-Jun-2018 15:14
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW15_060618
Collection Date: 06-Jun-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 17:30
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 17:30
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 17:30
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 17:30
Benzene	**3.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 17:30
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 17:30
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW15_060618
Collection Date: 06-Jun-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 17:30
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 17:30
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:30
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 17:30
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:30
Surr: 1,2-Dichloroethane-d4	*86.9*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 17:30*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 17:30*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 17:30*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 17:30*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.065**		**0.010**	**0.010**	**0.010**	**ug/L**	1	12-Jun-2018 17:00
Surr: 2-Fluorobiphenyl	*111*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:00*
Surr: 4-Terphenyl-d14	*66.1*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:00*
Surr: Nitrobenzene-d5	*51.7*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:00*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW15_06062018_a
Collection Date: 06-Jun-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 17:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 17:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 17:57
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 17:57
Benzene	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 17:57
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 17:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW15_06062018_a
Collection Date: 06-Jun-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 17:57
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 17:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 17:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 17:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 17:57
Surr: 1,2-Dichloroethane-d4	*86.0*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 17:57*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 17:57*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 17:57*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 17:57*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.031**		**0.010**	**0.010**	**0.010**	**ug/L**	1	12-Jun-2018 17:21
Surr: 2-Fluorobiphenyl	*51.4*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:21*
Surr: 4-Terphenyl-d14	*58.5*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:21*
Surr: Nitrobenzene-d5	*48.5*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:21*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW18_060618
Collection Date: 06-Jun-2018 12:35

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 18:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 18:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 18:23
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 18:23
Benzene	**0.75**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 18:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 18:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW18_060618
Collection Date: 06-Jun-2018 12:35

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 18:23
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 18:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:23
Surr: 1,2-Dichloroethane-d4	*86.0*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 18:23*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 18:23*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 18:23*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 18:23*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	12-Jun-2018 17:41
Surr: 2-Fluorobiphenyl	*110*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:41*
Surr: 4-Terphenyl-d14	*59.9*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:41*
Surr: Nitrobenzene-d5	*48.1*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 17:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW18_060618
Collection Date: 06-Jun-2018 12:35

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 12-Jun-2018		Analyst: JDE
Aluminum	**0.466**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	13-Jun-2018 13:07
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	13-Jun-2018 13:07
Arsenic	**0.00589**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:07
Barium	**1.30**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:07
Beryllium	**0.000218**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:07
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:07
Calcium	**54.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	13-Jun-2018 13:07
Chromium	**0.0161**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	13-Jun-2018 13:07
Cobalt	**0.000661**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:07
Copper	**0.00480**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	13-Jun-2018 13:07
Iron	**102**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:07
Lead	**0.000775**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 16:14
Magnesium	**32.4**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:07
Manganese	**2.12**		**0.00350**	**0.00500**	**0.0250**	**mg/L**	5	13-Jun-2018 16:04
Nickel	**0.00906**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:07
Potassium	**3.58**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:07
Selenium	**0.00151**	J	**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	13-Jun-2018 13:07
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:07
Sodium	**143**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:07
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:07
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	13-Jun-2018 13:07
Zinc	**0.00670**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:07
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	**0.0000530**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	11-Jun-2018 15:15
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW17_060618
Collection Date: 06-Jun-2018 12:55

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 18:49
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 18:49
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 18:49
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 18:49
Benzene	**0.50**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 18:49
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 18:49
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW17_060618
Collection Date: 06-Jun-2018 12:55

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
cis-1,2-Dichloroethene	**0.83**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 18:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 18:49
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 18:49
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 18:49
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Trichloroethene	**40**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 18:49
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 18:49
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 18:49*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 18:49*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 18:49*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 18:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW17_060618
Collection Date: 06-Jun-2018 12:55

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 12-Jun-2018		Analyst: JDE
Aluminum	**0.00998**	J	**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	13-Jun-2018 13:09
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	13-Jun-2018 13:09
Arsenic	**0.000631**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:09
Barium	**3.43**		**0.0190**	**0.0250**	**0.0400**	**mg/L**	10	13-Jun-2018 16:06
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:09
Cadmium	**0.000414**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:09
Calcium	**332**		**0.340**	**1.00**	**5.00**	**mg/L**	10	13-Jun-2018 16:06
Chromium	**0.0452**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	13-Jun-2018 13:09
Cobalt	**0.000732**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:09
Copper	**0.00112**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	13-Jun-2018 13:09
Iron	**0.294**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:09
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	13-Jun-2018 13:09
Magnesium	**217**		**0.100**	**1.00**	**2.00**	**mg/L**	10	13-Jun-2018 16:06
Manganese	**0.0362**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:09
Nickel	**0.0512**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:09
Potassium	**1.72**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:09
Selenium	**0.0122**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	13-Jun-2018 13:09
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:09
Sodium	**1,060**		**0.140**	**1.00**	**2.00**	**mg/L**	10	13-Jun-2018 16:06
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:09
Vanadium	**0.00233**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:09
Zinc	**0.0367**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:09
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	11-Jun-2018 15:17
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C04_060618
Collection Date: 06-Jun-2018 13:40

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 15:18
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 15:18
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 15:18
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 15:18
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 15:18
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C04_060618
Collection Date: 06-Jun-2018 13:40

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 15:18
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 15:18
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:18
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:18
Surr: 1,2-Dichloroethane-d4	*85.7*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 15:18*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 15:18*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 15:18*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 15:18*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 06-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 12:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 12:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 12:48
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 12:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 12:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 06-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060352
Lab ID:HS18060352-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 12:48
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 12:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 12:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 12:48
Surr: 1,2-Dichloroethane-d4	*84.5*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 12:48*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 12:48*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 12:48*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 12:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

Batch ID: 129254 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060352-02	1	10 (mL)	10 (mL)	1
HS18060352-03	1	10 (mL)	10 (mL)	1
HS18060352-06	1	10 (mL)	10 (mL)	1
HS18060352-07	1	10 (mL)	10 (mL)	1

Batch ID: 129262 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060352-01	1	1000	1 (mL)	0.001
HS18060352-02	1	1000	1 (mL)	0.001
HS18060352-03	1	1000	1 (mL)	0.001
HS18060352-04	1	1000	1 (mL)	0.001
HS18060352-05	1	1000	1 (mL)	0.001
HS18060352-06	1	1000	1 (mL)	0.001

Batch ID: 129290 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060352-02	1	10	10 (mL)	1
HS18060352-03	1	10	10 (mL)	1
HS18060352-06	1	10	10 (mL)	1
HS18060352-07	1	10	10 (mL)	1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129254	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060352-02	18CPTMW01DW_060618	06 Jun 2018 09:35		11 Jun 2018 11:00	11 Jun 2018 15:12	1
HS18060352-03	18CPTMW01SW_060618	06 Jun 2018 10:30		11 Jun 2018 11:00	11 Jun 2018 15:14	1
HS18060352-06	18WW18_060618	06 Jun 2018 12:35		11 Jun 2018 11:00	11 Jun 2018 15:15	1
HS18060352-07	18WW17_060618	06 Jun 2018 12:55		11 Jun 2018 11:00	11 Jun 2018 15:17	1
Batch ID 129262	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060352-01	MW2_060618	06 Jun 2018 08:40		11 Jun 2018 15:42	13 Jun 2018 11:49	10
HS18060352-02	18CPTMW01DW_060618	06 Jun 2018 09:35		11 Jun 2018 15:42	12 Jun 2018 16:19	1
HS18060352-03	18CPTMW01SW_060618	06 Jun 2018 10:30		11 Jun 2018 15:42	12 Jun 2018 16:39	1
HS18060352-04	18CPTMW15_060618	06 Jun 2018 11:30		11 Jun 2018 15:42	12 Jun 2018 17:00	1
HS18060352-05	18CPTMW15_06062018_a	06 Jun 2018 11:30		11 Jun 2018 15:42	12 Jun 2018 17:21	1
HS18060352-06	18WW18_060618	06 Jun 2018 12:35		11 Jun 2018 15:42	12 Jun 2018 17:41	1
Batch ID 129290	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060352-02	18CPTMW01DW_060618	06 Jun 2018 09:35		12 Jun 2018 11:00	13 Jun 2018 16:02	10
HS18060352-02	18CPTMW01DW_060618	06 Jun 2018 09:35		12 Jun 2018 11:00	13 Jun 2018 13:02	1
HS18060352-03	18CPTMW01SW_060618	06 Jun 2018 10:30		12 Jun 2018 11:00	13 Jun 2018 13:04	1
HS18060352-06	18WW18_060618	06 Jun 2018 12:35		12 Jun 2018 11:00	13 Jun 2018 16:14	1
HS18060352-06	18WW18_060618	06 Jun 2018 12:35		12 Jun 2018 11:00	13 Jun 2018 16:04	5
HS18060352-06	18WW18_060618	06 Jun 2018 12:35		12 Jun 2018 11:00	13 Jun 2018 13:07	1
HS18060352-07	18WW17_060618	06 Jun 2018 12:55		12 Jun 2018 11:00	13 Jun 2018 16:06	10
HS18060352-07	18WW17_060618	06 Jun 2018 12:55		12 Jun 2018 11:00	13 Jun 2018 13:09	1
Batch ID R317765	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060352-09	Trip Blank	06 Jun 2018 00:00			11 Jun 2018 12:48	1
Batch ID R317857	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060352-01	MW2_060618	06 Jun 2018 08:40			12 Jun 2018 21:04	5000
HS18060352-01	MW2_060618	06 Jun 2018 08:40			12 Jun 2018 20:37	500
HS18060352-02	18CPTMW01DW_060618	06 Jun 2018 09:35			12 Jun 2018 16:09	1
HS18060352-03	18CPTMW01SW_060618	06 Jun 2018 10:30			12 Jun 2018 20:11	50
HS18060352-04	18CPTMW15_060618	06 Jun 2018 11:30			12 Jun 2018 17:30	1
HS18060352-05	18CPTMW15_06062018_a	06 Jun 2018 11:30			12 Jun 2018 17:57	1
HS18060352-06	18WW18_060618	06 Jun 2018 12:35			12 Jun 2018 18:23	1
HS18060352-07	18WW17_060618	06 Jun 2018 12:55			12 Jun 2018 18:49	1
Batch ID R318107	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060352-08	C04_060618	06 Jun 2018 13:40			16 Jun 2018 15:18	1

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ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318532	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060352-01	MW2_060618	06 Jun 2018 08:40			25 Jun 2018 09:39	1
HS18060352-02	18CPTMW01DW_060618	06 Jun 2018 09:35			25 Jun 2018 09:39	1
HS18060352-03	18CPTMW01SW_060618	06 Jun 2018 10:30			25 Jun 2018 09:39	1
HS18060352-04	18CPTMW15_060618	06 Jun 2018 11:30			25 Jun 2018 09:39	1
HS18060352-05	18CPTMW15_06062018_a	06 Jun 2018 11:30			25 Jun 2018 09:39	1
HS18060352-06	18WW18_060618	06 Jun 2018 12:35			25 Jun 2018 09:39	1
HS18060352-07	18WW17_060618	06 Jun 2018 12:55			25 Jun 2018 09:39	1
HS18060352-08	C04_060618	06 Jun 2018 13:40			25 Jun 2018 09:39	1

Revision:1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129254 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129254** Units: **mg/L** Analysis Date: **11-Jun-2018 13:59**
Client ID: Run ID: **HG03_317727** SeqNo: **4595817** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129254** Units: **mg/L** Analysis Date: **11-Jun-2018 14:01**
Client ID: Run ID: **HG03_317727** SeqNo: **4595818** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00504	0.000200	0.005	0	101	80 - 120				

MS Sample ID: **HS18060248-01MS** Units: **mg/L** Analysis Date: **11-Jun-2018 14:04**
Client ID: Run ID: **HG03_317727** SeqNo: **4595820** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.000200	0.005	0.000009	100	75 - 125				

MSD Sample ID: **HS18060248-01MSD** Units: **mg/L** Analysis Date: **11-Jun-2018 14:35**
Client ID: Run ID: **HG03_317727** SeqNo: **4595825** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00519	0.000200	0.005	0.000009	104	75 - 125	0.00502	3.33	20	

The following samples were analyzed in this batch: HS18060352-02 HS18060352-03 HS18060352-06 HS18060352-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129290** Units: **mg/L** Analysis Date: **13-Jun-2018 12:59**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599057** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004852	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01545	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.05673	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129290** Units: **mg/L** Analysis Date: **13-Jun-2018 13:00**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599058** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.0965	0.0100	0.1	0	96.5	80 - 120				
Antimony	0.05107	0.00200	0.05	0	102	80 - 120				
Arsenic	0.04684	0.00200	0.05	0	93.7	80 - 120				
Barium	0.04582	0.00400	0.05	0	91.6	80 - 120				
Beryllium	0.04837	0.00200	0.05	0	96.7	80 - 120				
Cadmium	0.04654	0.00200	0.05	0	93.1	80 - 120				
Calcium	4.684	0.500	5	0	93.7	80 - 120				
Chromium	0.04987	0.00400	0.05	0	99.7	80 - 120				
Cobalt	0.05057	0.00500	0.05	0	101	80 - 120				
Copper	0.05082	0.00200	0.05	0	102	80 - 120				
Iron	4.967	0.200	5	0	99.3	80 - 120				
Magnesium	4.393	0.200	5	0	87.9	80 - 120				
Manganese	0.0496	0.00500	0.05	0	99.2	80 - 120				
Nickel	0.05056	0.00200	0.05	0	101	80 - 120				
Potassium	4.614	0.200	5	0	92.3	80 - 120				
Selenium	0.04802	0.00200	0.05	0	96.0	80 - 120				
Silver	0.04722	0.00200	0.05	0	94.4	80 - 120				
Sodium	4.975	0.200	5	0	99.5	80 - 120				
Thallium	0.04184	0.00200	0.05	0	83.7	80 - 120				
Vanadium	0.0471	0.00500	0.05	0	94.2	80 - 120				
Zinc	0.05041	0.00400	0.05	0	101	80 - 120				

LCS Sample ID: **LCS-129290** Units: **mg/L** Analysis Date: **13-Jun-2018 14:14**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4607527** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0504	0.00200	0.05	0	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060425-05MS** Units: **mg/L** Analysis Date: **13-Jun-2018 13:17**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599066** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.107	0.0100	0.1	0.01388	93.2	80 - 120				
Antimony	0.0508	0.00200	0.05	-0.000122	102	80 - 120				
Arsenic	0.04927	0.00200	0.05	0.000914	96.7	80 - 120				
Barium	1.103	0.00400	0.05	1.001	204	80 - 120				SO
Beryllium	0.05509	0.00200	0.05	-0.000002	110	80 - 120				
Cadmium	0.04899	0.00200	0.05	0.001283	95.4	80 - 120				
Calcium	110.9	0.500	5	107.1	75.2	80 - 120				SO
Chromium	0.2159	0.00400	0.05	0.1811	69.6	80 - 120				S
Cobalt	0.05472	0.00500	0.05	0.005309	98.8	80 - 120				
Copper	0.05143	0.00200	0.05	0.003655	95.5	80 - 120				
Iron	5.74	0.200	5	0.8723	97.4	80 - 120				
Magnesium	36.92	0.200	5	31.86	101	80 - 120				O
Manganese	0.1232	0.00500	0.05	0.07445	97.5	80 - 120				
Nickel	0.3699	0.00200	0.05	0.3205	98.7	80 - 120				O
Potassium	6.972	0.200	5	2.259	94.3	80 - 120				
Selenium	0.04795	0.00200	0.05	0.001043	93.8	80 - 120				
Silver	0.04517	0.00200	0.05	0.000004	90.3	80 - 120				
Sodium	396.4	0.200	5	385.5	219	80 - 120				SEO
Thallium	0.04353	0.00200	0.05	0.000014	87.0	80 - 120				
Vanadium	0.05274	0.00500	0.05	0.002425	101	80 - 120				
Zinc	0.06201	0.00400	0.05	0.01255	98.9	80 - 120				

MS Sample ID: **HS18060425-05MS** Units: **mg/L** Analysis Date: **13-Jun-2018 14:16**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4603336** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04461	0.00200	0.05	0.000074	89.1	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060425-05MSD** Units: **mg/L** Analysis Date: **13-Jun-2018 13:22**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599069** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1051	0.0100	0.1	0.01388	91.2	80 - 120	0.1008	4.22	20	
Antimony	0.05005	0.00200	0.05	-0.000122	100	80 - 120	0.04901	2.1	20	
Arsenic	0.04804	0.00200	0.05	0.000914	94.3	80 - 120	0.04842	0.771	20	
Barium	1.087	0.00400	0.05	1.001	172	80 - 120	1.058	2.71	20	SO
Beryllium	0.053	0.00200	0.05	-0.000002	106	80 - 120	0.05999	12.4	20	
Cadmium	0.0472	0.00200	0.05	0.001283	91.8	80 - 120	0.04907	3.88	20	
Calcium	109.8	0.500	5	107.1	53.8	80 - 120	110.8	0.89	20	SO
Chromium	0.1971	0.00400	0.05	0.1811	32.1	80 - 120	0.212	7.29	20	S
Cobalt	0.05359	0.00500	0.05	0.005309	96.6	80 - 120	0.05475	2.14	20	
Copper	0.05061	0.00200	0.05	0.003655	93.9	80 - 120	0.05126	1.28	20	
Iron	5.642	0.200	5	0.8723	95.4	80 - 120	5.72	1.36	20	
Magnesium	35.14	0.200	5	31.86	65.7	80 - 120	33.23	5.6	20	SO
Manganese	0.122	0.00500	0.05	0.07445	95.0	80 - 120	0.1208	0.913	20	
Nickel	0.3697	0.00200	0.05	0.3205	98.3	80 - 120	0.3727	0.828	20	O
Potassium	6.771	0.200	5	2.259	90.2	80 - 120	6.859	1.28	20	
Selenium	0.04763	0.00200	0.05	0.001043	93.2	80 - 120	0.0504	5.66	20	
Silver	0.04524	0.00200	0.05	0.000004	90.5	80 - 120	0.04616	1.99	20	
Sodium	390.2	0.200	5	385.5	94.8	80 - 120	392.2	0.505	20	EO
Thallium	0.04066	0.00200	0.05	0.000014	81.3	80 - 120	0.04508	10.3	20	
Vanadium	0.05075	0.00500	0.05	0.002425	96.6	80 - 120	0.05002	1.45	20	
Zinc	0.0603	0.00400	0.05	0.01255	95.5	80 - 120	0.06194	2.69	20	

MSD Sample ID: **HS18060425-05MSD** Units: **mg/L** Analysis Date: **13-Jun-2018 14:18**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4603337** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04266	0.00200	0.05	0.000074	85.2	80 - 120	0.04461	4.47	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060425-05PDS** Units: **mg/L** Analysis Date: **13-Jun-2018 13:24**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599070** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1042	0.0100	0.1	0.01388	90.3	75 - 125				
Antimony	0.08976	0.00200	0.1	-0.000122	89.9	75 - 125				
Arsenic	0.09501	0.00200	0.1	0.000914	94.1	75 - 125				
Barium	1.035	0.00400	0.1	1.001	34.3	75 - 125				SO
Beryllium	0.106	0.00200	0.1	-0.000002	106	75 - 125				
Cadmium	0.09231	0.00200	0.1	0.001283	91.0	75 - 125				
Calcium	103.7	0.500	10	107.1	-34.4	75 - 125				SO
Chromium	0.262	0.00400	0.1	0.1811	80.9	75 - 125				
Cobalt	0.1008	0.00500	0.1	0.005309	95.5	75 - 125				
Copper	0.09622	0.00200	0.1	0.003655	92.6	75 - 125				
Iron	10.21	0.200	10	0.8723	93.4	75 - 125				
Manganese	0.1608	0.00500	0.1	0.07445	86.3	75 - 125				
Potassium	11.1	0.200	10	2.259	88.4	75 - 125				
Selenium	0.0938	0.00200	0.1	0.001043	92.8	75 - 125				
Silver	0.08871	0.00200	0.1	0.000004	88.7	75 - 125				
Thallium	0.09138	0.00200	0.1	0.000014	91.4	75 - 125				
Vanadium	0.09743	0.00500	0.1	0.002425	95.0	75 - 125				
Zinc	0.1073	0.00400	0.1	0.01255	94.7	75 - 125				

PDS Sample ID: **HS18060425-05PDS** Units: **mg/L** Analysis Date: **13-Jun-2018 14:20**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4603338** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.08691	0.00200	0.1	0.000074	86.8	75 - 125				

PDS Sample ID: **HS18060425-05PDS** Units: **mg/L** Analysis Date: **13-Jun-2018 16:12**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4607700** PrepDate: **12-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Magnesium	125.8	2.00	100	32.54	93.2	75 - 125				
Sodium	469.2	2.00	100	378.1	91.1	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060425-05SD** Units: **mg/L** Analysis Date: **13-Jun-2018 13:15**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599065** PrepDate: **12-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02764	0.0500					0.01388	0	10	J
Antimony	0.00500	0.0100					-0.000122	0	10	U
Arsenic	0.00500	0.0100					0.000914	0	10	U
Barium	0.9958	0.0200					1.001	0.494	10	
Beryllium	0.00500	0.0100					-0.000002	0	10	U
Cadmium	0.001243	0.0100					0.001283	0	10	J
Calcium	106.4	2.50					107.1	0.63	10	
Chromium	0.1757	0.0200					0.1811	2.99	10	
Cobalt	0.005519	0.0250					0.005309	0	10	J
Copper	0.0100	0.0100					0.003655	0	10	U
Iron	0.8731	1.00					0.8723	0	10	J
Lead	0.00500	0.0100					0.000074	0	10	U
Manganese	0.07318	0.0250					0.07445	1.7	10	
Nickel	0.3236	0.0100					0.3205	0.967	10	
Potassium	2.071	1.00					2.259	8.32	10	
Selenium	0.0100	0.0100					0.001043	0	10	U
Silver	0.00500	0.0100					0.000004	0	10	U
Sodium	385.8	1.00					385.5	0.086	10	
Thallium	0.00500	0.0100					0.000014	0	10	U
Vanadium	0.009362	0.0250					0.002425	0	10	J
Zinc	0.01449	0.0200					0.01255	0	10	J

SD Sample ID: **HS18060425-05SD** Units: **mg/L** Analysis Date: **13-Jun-2018 16:10**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4607699** PrepDate: **12-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Magnesium	31.1	10.0					32.54	4.4	10	

The following samples were analyzed in this batch: HS18060352-02 HS18060352-03 HS18060352-06 HS18060352-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: 129262 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129262** Units: **ug/L** Analysis Date: **12-Jun-2018 14:57**
Client ID: Run ID: **SV-5_317937** SeqNo: **4608593** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.09698*	*0*	*0.08*	*0*	*121*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.05382*	*0*	*0.08*	*0*	*67.3*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04298*	*0*	*0.08*	*0*	*53.7*	*40 - 140*				

LCS Sample ID: **LCS-129262** Units: **ug/L** Analysis Date: **12-Jun-2018 15:17**
Client ID: Run ID: **SV-5_317937** SeqNo: **4608594** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.04247	0.010	0.08	0	53.1	40 - 140				
Surr: 2-Fluorobiphenyl	*0.07214*	*0*	*0.08*	*0*	*90.2*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.0536*	*0*	*0.08*	*0*	*67.0*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.03722*	*0*	*0.08*	*0*	*46.5*	*40 - 140*				

LCSD Sample ID: **LCSD-129262** Units: **ug/L** Analysis Date: **12-Jun-2018 15:38**
Client ID: Run ID: **SV-5_317937** SeqNo: **4608595** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.04608	0.010	0.08	0	57.6	40 - 140	0.04247	8.16	20	
Surr: 2-Fluorobiphenyl	*0.1299*	*0*	*0.08*	*0*	*162*	*40 - 140*	*0.07214*	*57.1*	*20*	SR
Surr: 4-Terphenyl-d14	*0.05436*	*0*	*0.08*	*0*	*68.0*	*40 - 140*	*0.0536*	*1.41*	*20*	
Surr: Nitrobenzene-d5	*0.0797*	*0*	*0.08*	*0*	*99.6*	*40 - 140*	*0.03722*	*72.7*	*20*	R

The following samples were analyzed in this batch: HS18060352-01 HS18060352-02 HS18060352-03 HS18060352-04 HS18060352-05 HS18060352-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: **R317765** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **MBLK-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 11:56**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: **R317765** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **MBLK-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 11:56**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.95*	*1.0*	*50*	*0*	*83.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.08*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*55.89*	*1.0*	*50*	*0*	*112*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 10:41**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.47	1.0	50	0	88.9	78 - 124				
1,1,1-Trichloroethane	42.41	1.0	50	0	84.8	74 - 131				
1,1,2,2-Tetrachloroethane	41.08	1.0	50	0	82.2	71 - 121				
1,1,2-Trichloroethane	44.55	1.0	50	0	89.1	80 - 119				
1,1-Dichloroethane	44.32	1.0	50	0	88.6	77 - 125				
1,1-Dichloroethene	41.04	1.0	50	0	82.1	71 - 131				
1,1-Dichloropropene	39.7	1.0	50	0	79.4	78 - 125				
1,2,3-Trichlorobenzene	41.72	1.0	50	0	83.4	69 - 129				
1,2,3-Trichloropropane	42.52	1.0	50	0	85.0	73 - 122				
1,2,4-Trichlorobenzene	41.74	1.0	50	0	83.5	69 - 130				
1,2,4-Trimethylbenzene	38.58	1.0	50	0	77.2	76 - 124				
1,2-Dibromo-3-chloropropane	44.48	1.0	50	0	89.0	62 - 128				
1,2-Dibromoethane	46.52	1.0	50	0	93.0	77 - 121				
1,2-Dichlorobenzene	41.21	1.0	50	0	82.4	80 - 119				
1,2-Dichloroethane	46.23	1.0	50	0	92.5	73 - 128				
1,2-Dichloropropane	43.53	1.0	50	0	87.1	78 - 122				
1,3,5-Trimethylbenzene	46.26	1.0	50	0	92.5	75 - 124				
1,3-Dichlorobenzene	41.14	1.0	50	0	82.3	80 - 119				
1,3-Dichloropropane	44.8	1.0	50	0	89.6	80 - 119				
1,4-Dichlorobenzene	41.5	1.0	50	0	83.0	79 - 118				
2,2-Dichloropropane	42.66	1.0	50	0	85.3	60 - 139				
2-Butanone	96.07	2.0	100	0	96.1	56 - 143				
2-Chlorotoluene	46.16	1.0	50	0	92.3	79 - 122				
2-Hexanone	93.31	2.0	100	0	93.3	57 - 139				
4-Chlorotoluene	46.34	1.0	50	0	92.7	78 - 122				
4-Isopropyltoluene	38.65	1.0	50	0	77.3	77 - 127				
4-Methyl-2-pentanone	91.96	2.0	100	0	92.0	67 - 130				
Acetone	95.96	2.0	100	0	96.0	39 - 160				
Benzene	43.03	1.0	50	0	86.1	79 - 120				
Bromobenzene	40.35	1.0	50	0	80.7	80 - 120				
Bromochloromethane	47	1.0	50	0	94.0	78 - 123				
Bromodichloromethane	45.61	1.0	50	0	91.2	79 - 125				
Bromoform	47.15	1.0	50	0	94.3	66 - 130				
Bromomethane	45.86	1.0	50	0	91.7	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 10:41**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	85.51	2.0	100	0	85.5	64 - 133				
Carbon tetrachloride	45.55	1.0	50	0	91.1	72 - 136				
Chlorobenzene	42.9	1.0	50	0	85.8	82 - 118				
Chloroethane	49.27	1.0	50	0	98.5	60 - 138				
Chloroform	42.83	1.0	50	0	85.7	79 - 124				
Chloromethane	38.58	1.0	50	0	77.2	50 - 139				
cis-1,2-Dichloroethene	44.33	1.0	50	0	88.7	78 - 123				
cis-1,3-Dichloropropene	47.65	1.0	50	0	95.3	75 - 124				
Dibromochloromethane	45.88	1.0	50	0	91.8	74 - 126				
Dibromomethane	48.7	1.0	50	0	97.4	79 - 123				
Dichlorodifluoromethane	43.65	1.0	50	0	87.3	32 - 152				
Ethylbenzene	41.4	1.0	50	0	82.8	79 - 121				
Hexachlorobutadiene	38.41	1.0	50	0	76.8	66 - 134				
Isopropylbenzene	41.53	1.0	50	0	83.1	72 - 131				
m,p-Xylene	81.88	2.0	100	0	81.9	80 - 121				
Methylene chloride	41.7	2.0	50	0	83.4	74 - 124				
Naphthalene	45.21	1.0	50	0	90.4	61 - 128				
n-Butylbenzene	41.35	1.0	50	0	82.7	75 - 128				
n-Propylbenzene	45.23	1.0	50	0	90.5	76 - 126				
o-Xylene	42.49	1.0	50	0	85.0	78 - 122				
sec-Butylbenzene	39.7	1.0	50	0	79.4	77 - 126				
Styrene	44.74	1.0	50	0	89.5	78 - 123				
tert-Butylbenzene	44.35	1.0	50	0	88.7	78 - 124				
Tetrachloroethene	40.27	1.0	50	0	80.5	74 - 129				
Toluene	41.42	1.0	50	0	82.8	80 - 121				
trans-1,2-Dichloroethene	43.86	1.0	50	0	87.7	75 - 124				
trans-1,3-Dichloropropene	49.49	1.0	50	0	99.0	73 - 127				
Trichloroethene	45.4	1.0	50	0	90.8	79 - 123				
Trichlorofluoromethane	41.14	1.0	50	0	82.3	65 - 141				
Vinyl chloride	42.43	1.0	50	0	84.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*42.53*	*1.0*	*50*	*0*	*85.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.24*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.05*	*1.0*	*50*	*0*	*96.1*	*80 - 119*				
Surr: Toluene-d8	*53.64*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060425-05MS** Units: **ug/L** Analysis Date: **11-Jun-2018 15:24**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.93	1.0	50	0	87.9	78 - 124				
1,1,1-Trichloroethane	42.93	1.0	50	0	85.9	74 - 131				
1,1,2,2-Tetrachloroethane	39.98	1.0	50	0	80.0	71 - 121				
1,1,2-Trichloroethane	43.23	1.0	50	0	86.5	80 - 119				
1,1-Dichloroethane	43.07	1.0	50	0	86.1	77 - 125				
1,1-Dichloroethene	40.9	1.0	50	0	81.8	71 - 131				
1,1-Dichloropropene	39.89	1.0	50	0	79.8	78 - 125				
1,2,3-Trichlorobenzene	40.3	1.0	50	0	80.6	69 - 129				
1,2,3-Trichloropropane	41.79	1.0	50	0	83.6	73 - 122				
1,2,4-Trichlorobenzene	39.47	1.0	50	0	78.9	69 - 130				
1,2,4-Trimethylbenzene	37.9	1.0	50	0	75.8	76 - 124				S
1,2-Dibromo-3-chloropropane	45.17	1.0	50	0	90.3	62 - 128				
1,2-Dibromoethane	45.28	1.0	50	0	90.6	77 - 121				
1,2-Dichlorobenzene	39.89	1.0	50	0	79.8	80 - 119				S
1,2-Dichloroethane	48.69	1.0	50	4.653	88.1	73 - 128				
1,2-Dichloropropane	42.49	1.0	50	0	85.0	78 - 122				
1,3,5-Trimethylbenzene	45.64	1.0	50	0	91.3	75 - 124				
1,3-Dichlorobenzene	39.68	1.0	50	0	79.4	80 - 119				S
1,3-Dichloropropane	43.85	1.0	50	0	87.7	80 - 119				
1,4-Dichlorobenzene	39.48	1.0	50	0	79.0	79 - 118				S
2,2-Dichloropropane	40.48	1.0	50	0	81.0	60 - 139				
2-Butanone	101.4	2.0	100	0	101	56 - 143				
2-Chlorotoluene	44.65	1.0	50	0	89.3	79 - 122				
2-Hexanone	105.1	2.0	100	0	105	57 - 139				
4-Chlorotoluene	45.17	1.0	50	0	90.3	78 - 122				
4-Isopropyltoluene	38.3	1.0	50	0	76.6	77 - 127				S
4-Methyl-2-pentanone	95.38	2.0	100	0	95.4	67 - 130				
Acetone	91.57	2.0	100	0	91.6	39 - 160				
Benzene	42.11	1.0	50	0.2869	83.7	79 - 120				
Bromobenzene	38.37	1.0	50	0	76.7	80 - 120				S
Bromochloromethane	45.62	1.0	50	0	91.2	78 - 123				
Bromodichloromethane	44.24	1.0	50	0	88.5	79 - 125				
Bromoform	45.84	1.0	50	0	91.7	66 - 130				
Bromomethane	39.22	1.0	50	0	78.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060425-05MS** Units: **ug/L** Analysis Date: **11-Jun-2018 15:24**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	84.49	2.0	100	0	84.5	64 - 133				
Carbon tetrachloride	45.38	1.0	50	0	90.8	72 - 136				
Chlorobenzene	41.93	1.0	50	0	83.9	82 - 118				
Chloroethane	45.24	1.0	50	0	90.5	60 - 138				
Chloroform	44.29	1.0	50	2.642	83.3	79 - 124				
Chloromethane	34.69	1.0	50	0	69.4	50 - 139				
cis-1,2-Dichloroethene	46.47	1.0	50	3.033	86.9	78 - 123				
cis-1,3-Dichloropropene	45.28	1.0	50	0	90.6	75 - 124				
Dibromochloromethane	44.65	1.0	50	0	89.3	74 - 126				
Dibromomethane	46.83	1.0	50	0	93.7	79 - 123				
Dichlorodifluoromethane	31.69	1.0	50	0	63.4	32 - 152				
Ethylbenzene	41.92	1.0	50	0	83.8	79 - 121				
Hexachlorobutadiene	37.55	1.0	50	0	75.1	66 - 134				
Isopropylbenzene	42.23	1.0	50	0	84.5	72 - 131				
m,p-Xylene	82.06	2.0	100	0	82.1	80 - 121				
Methylene chloride	40.47	2.0	50	0	80.9	74 - 124				
Naphthalene	43.22	1.0	50	0	86.4	61 - 128				
n-Butylbenzene	40.44	1.0	50	0	80.9	75 - 128				
n-Propylbenzene	45.44	1.0	50	0	90.9	76 - 126				
o-Xylene	42.15	1.0	50	0	84.3	78 - 122				
sec-Butylbenzene	38.23	1.0	50	0	76.5	77 - 126				S
Styrene	43.35	1.0	50	0	86.7	78 - 123				
tert-Butylbenzene	44.62	1.0	50	0	89.2	78 - 124				
Tetrachloroethene	41.38	1.0	50	0	82.8	74 - 129				
Toluene	40.95	1.0	50	0	81.9	80 - 121				
trans-1,2-Dichloroethene	41.96	1.0	50	0	83.9	75 - 124				
trans-1,3-Dichloropropene	47.02	1.0	50	0	94.0	73 - 127				
Trichloroethene	290.4	1.0	50	248.7	83.4	79 - 123				EO
Trichlorofluoromethane	40.05	1.0	50	0	80.1	65 - 141				
Vinyl chloride	40.28	1.0	50	0	80.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.24*	*1.0*	*50*	*0*	*86.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.38*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*47.69*	*1.0*	*50*	*0*	*95.4*	*80 - 119*				
Surr: Toluene-d8	*53.41*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060425-05MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 15:50**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.32	1.0	50	0	86.6	78 - 124	43.93	1.41	20	
1,1,1-Trichloroethane	42.25	1.0	50	0	84.5	74 - 131	42.93	1.6	20	
1,1,2,2-Tetrachloroethane	40.91	1.0	50	0	81.8	71 - 121	39.98	2.3	20	
1,1,2-Trichloroethane	43.38	1.0	50	0	86.8	80 - 119	43.23	0.345	20	
1,1-Dichloroethane	42.58	1.0	50	0	85.2	77 - 125	43.07	1.14	20	
1,1-Dichloroethene	39.53	1.0	50	0	79.1	71 - 131	40.9	3.4	20	
1,1-Dichloropropene	39.19	1.0	50	0	78.4	78 - 125	39.89	1.76	20	
1,2,3-Trichlorobenzene	42.19	1.0	50	0	84.4	69 - 129	40.3	4.58	20	
1,2,3-Trichloropropane	42.24	1.0	50	0	84.5	73 - 122	41.79	1.08	20	
1,2,4-Trichlorobenzene	40.97	1.0	50	0	81.9	69 - 130	39.47	3.73	20	
1,2,4-Trimethylbenzene	38.26	1.0	50	0	76.5	76 - 124	37.9	0.926	20	
1,2-Dibromo-3-chloropropane	47.66	1.0	50	0	95.3	62 - 128	45.17	5.36	20	
1,2-Dibromoethane	45.03	1.0	50	0	90.1	77 - 121	45.28	0.564	20	
1,2-Dichlorobenzene	40.02	1.0	50	0	80.0	80 - 119	39.89	0.341	20	
1,2-Dichloroethane	49.11	1.0	50	4.653	88.9	73 - 128	48.69	0.862	20	
1,2-Dichloropropane	41.69	1.0	50	0	83.4	78 - 122	42.49	1.9	20	
1,3,5-Trimethylbenzene	45.55	1.0	50	0	91.1	75 - 124	45.64	0.196	20	
1,3-Dichlorobenzene	39.74	1.0	50	0	79.5	80 - 119	39.68	0.16	20	S
1,3-Dichloropropane	43.23	1.0	50	0	86.5	80 - 119	43.85	1.42	20	
1,4-Dichlorobenzene	40.14	1.0	50	0	80.3	79 - 118	39.48	1.66	20	
2,2-Dichloropropane	40.05	1.0	50	0	80.1	60 - 139	40.48	1.06	20	
2-Butanone	101.8	2.0	100	0	102	56 - 143	101.4	0.369	20	
2-Chlorotoluene	45.25	1.0	50	0	90.5	79 - 122	44.65	1.34	20	
2-Hexanone	107.1	2.0	100	0	107	57 - 139	105.1	1.89	20	
4-Chlorotoluene	45.51	1.0	50	0	91.0	78 - 122	45.17	0.741	20	
4-Isopropyltoluene	38.58	1.0	50	0	77.2	77 - 127	38.3	0.739	20	
4-Methyl-2-pentanone	97.45	2.0	100	0	97.5	67 - 130	95.38	2.15	20	
Acetone	94.43	2.0	100	0	94.4	39 - 160	91.57	3.07	20	
Benzene	41.53	1.0	50	0.2869	82.5	79 - 120	42.11	1.39	20	
Bromobenzene	39.4	1.0	50	0	78.8	80 - 120	38.37	2.64	20	S
Bromochloromethane	45.73	1.0	50	0	91.5	78 - 123	45.62	0.245	20	
Bromodichloromethane	43.63	1.0	50	0	87.3	79 - 125	44.24	1.39	20	
Bromoform	46.15	1.0	50	0	92.3	66 - 130	45.84	0.691	20	
Bromomethane	39.47	1.0	50	0	78.9	53 - 141	39.22	0.623	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060425-05MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 15:50**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	83.96	2.0	100	0	84.0	64 - 133	84.49	0.624	20	
Carbon tetrachloride	44.43	1.0	50	0	88.9	72 - 136	45.38	2.11	20	
Chlorobenzene	41.47	1.0	50	0	82.9	82 - 118	41.93	1.09	20	
Chloroethane	43.01	1.0	50	0	86.0	60 - 138	45.24	5.04	20	
Chloroform	43.9	1.0	50	2.642	82.5	79 - 124	44.29	0.88	20	
Chloromethane	33.97	1.0	50	0	67.9	50 - 139	34.69	2.09	20	
cis-1,2-Dichloroethene	45.81	1.0	50	3.033	85.6	78 - 123	46.47	1.42	20	
cis-1,3-Dichloropropene	45.4	1.0	50	0	90.8	75 - 124	45.28	0.26	20	
Dibromochloromethane	44.22	1.0	50	0	88.4	74 - 126	44.65	0.969	20	
Dibromomethane	47.06	1.0	50	0	94.1	79 - 123	46.83	0.491	20	
Dichlorodifluoromethane	30.37	1.0	50	0	60.7	32 - 152	31.69	4.24	20	
Ethylbenzene	40.95	1.0	50	0	81.9	79 - 121	41.92	2.34	20	
Hexachlorobutadiene	38.55	1.0	50	0	77.1	66 - 134	37.55	2.61	20	
Isopropylbenzene	41.66	1.0	50	0	83.3	72 - 131	42.23	1.36	20	
m,p-Xylene	81.38	2.0	100	0	81.4	80 - 121	82.06	0.832	20	
Methylene chloride	39.9	2.0	50	0	79.8	74 - 124	40.47	1.43	20	
Naphthalene	46.17	1.0	50	0	92.3	61 - 128	43.22	6.6	20	
n-Butylbenzene	40.86	1.0	50	0	81.7	75 - 128	40.44	1.03	20	
n-Propylbenzene	45.28	1.0	50	0	90.6	76 - 126	45.44	0.354	20	
o-Xylene	41.34	1.0	50	0	82.7	78 - 122	42.15	1.94	20	
sec-Butylbenzene	38.27	1.0	50	0	76.5	77 - 126	38.23	0.0876	20	S
Styrene	43	1.0	50	0	86.0	78 - 123	43.35	0.794	20	
tert-Butylbenzene	44.28	1.0	50	0	88.6	78 - 124	44.62	0.776	20	
Tetrachloroethene	40.43	1.0	50	0	80.9	74 - 129	41.38	2.32	20	
Toluene	40.39	1.0	50	0	80.8	80 - 121	40.95	1.36	20	
trans-1,2-Dichloroethene	42.68	1.0	50	0	85.4	75 - 124	41.96	1.7	20	
trans-1,3-Dichloropropene	46.12	1.0	50	0	92.2	73 - 127	47.02	1.94	20	
Trichloroethene	283.8	1.0	50	248.7	70.0	79 - 123	290.4	2.33	20	SEO
Trichlorofluoromethane	38.67	1.0	50	0	77.3	65 - 141	40.05	3.52	20	
Vinyl chloride	39.81	1.0	50	0	79.6	58 - 137	40.28	1.16	20	
Surr: 1,2-Dichloroethane-d4	*43.76*	*1.0*	*50*	*0*	*87.5*	*81 - 118*	*43.24*	*1.18*	*20*	
Surr: 4-Bromofluorobenzene	*52.22*	*1.0*	*50*	*0*	*104*	*85 - 114*	*52.38*	*0.307*	*20*	
Surr: Dibromofluoromethane	*47.91*	*1.0*	*50*	*0*	*95.8*	*80 - 119*	*47.69*	*0.453*	*20*	
Surr: Toluene-d8	*53.6*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.41*	*0.351*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317765 **Instrument:** VOA2 **Method:** SW8260

The following samples were analyzed in this batch: HS18060352-09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: **R317857** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:49**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598292** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: **R317857** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:49**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598292** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.54*	*1.0*	*50*	*0*	*85.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.85*	*1.0*	*50*	*0*	*99.7*	*85 - 114*				
Surr: Dibromofluoromethane	*50.93*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*52.91*	*1.0*	*50*	*0*	*106*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: **R317857** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:00**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598291** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.36	1.0	50	0	88.7	78 - 124				
1,1,1-Trichloroethane	44.6	1.0	50	0	89.2	74 - 131				
1,1,2,2-Tetrachloroethane	41.05	1.0	50	0	82.1	71 - 121				
1,1,2-Trichloroethane	45.14	1.0	50	0	90.3	80 - 119				
1,1-Dichloroethane	44.78	1.0	50	0	89.6	77 - 125				
1,1-Dichloroethene	45.54	1.0	50	0	91.1	71 - 131				
1,1-Dichloropropene	42.61	1.0	50	0	85.2	78 - 125				
1,2,3-Trichlorobenzene	42.22	1.0	50	0	84.4	69 - 129				
1,2,3-Trichloropropane	43.95	1.0	50	0	87.9	73 - 122				
1,2,4-Trichlorobenzene	42.4	1.0	50	0	84.8	69 - 130				
1,2,4-Trimethylbenzene	39.51	1.0	50	0	79.0	76 - 124				
1,2-Dibromo-3-chloropropane	46.29	1.0	50	0	92.6	62 - 128				
1,2-Dibromoethane	46.99	1.0	50	0	94.0	77 - 121				
1,2-Dichlorobenzene	41.56	1.0	50	0	83.1	80 - 119				
1,2-Dichloroethane	46.74	1.0	50	0	93.5	73 - 128				
1,2-Dichloropropane	43.48	1.0	50	0	87.0	78 - 122				
1,3,5-Trimethylbenzene	47.84	1.0	50	0	95.7	75 - 124				
1,3-Dichlorobenzene	41.45	1.0	50	0	82.9	80 - 119				
1,3-Dichloropropane	45.38	1.0	50	0	90.8	80 - 119				
1,4-Dichlorobenzene	41.79	1.0	50	0	83.6	79 - 118				
2,2-Dichloropropane	44.37	1.0	50	0	88.7	60 - 139				
2-Butanone	101	2.0	100	0	101	56 - 143				
2-Chlorotoluene	46.83	1.0	50	0	93.7	79 - 122				
2-Hexanone	99.64	2.0	100	0	99.6	57 - 139				
4-Chlorotoluene	47.39	1.0	50	0	94.8	78 - 122				
4-Isopropyltoluene	40.95	1.0	50	0	81.9	77 - 127				
4-Methyl-2-pentanone	94.71	2.0	100	0	94.7	67 - 130				
Acetone	98.65	2.0	100	0	98.6	39 - 160				
Benzene	43.73	1.0	50	0	87.5	79 - 120				
Bromobenzene	40.34	1.0	50	0	80.7	80 - 120				
Bromochloromethane	48.28	1.0	50	0	96.6	78 - 123				
Bromodichloromethane	45.9	1.0	50	0	91.8	79 - 125				
Bromoform	47.97	1.0	50	0	95.9	66 - 130				
Bromomethane	46.38	1.0	50	0	92.8	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:00**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598291** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	88.36	2.0	100	0	88.4	64 - 133				
Carbon tetrachloride	49.21	1.0	50	0	98.4	72 - 136				
Chlorobenzene	43.65	1.0	50	0	87.3	82 - 118				
Chloroethane	47.21	1.0	50	0	94.4	60 - 138				
Chloroform	43.75	1.0	50	0	87.5	79 - 124				
Chloromethane	41.99	1.0	50	0	84.0	50 - 139				
cis-1,2-Dichloroethene	45.04	1.0	50	0	90.1	78 - 123				
cis-1,3-Dichloropropene	48.38	1.0	50	0	96.8	75 - 124				
Dibromochloromethane	46.5	1.0	50	0	93.0	74 - 126				
Dibromomethane	49.48	1.0	50	0	99.0	79 - 123				
Dichlorodifluoromethane	43.1	1.0	50	0	86.2	32 - 152				
Ethylbenzene	43.13	1.0	50	0	86.3	79 - 121				
Hexachlorobutadiene	42.66	1.0	50	0	85.3	66 - 134				
Isopropylbenzene	44.13	1.0	50	0	88.3	72 - 131				
m,p-Xylene	84.3	2.0	100	0	84.3	80 - 121				
Methylene chloride	43.05	2.0	50	0	86.1	74 - 124				
Naphthalene	46.09	1.0	50	0	92.2	61 - 128				
n-Butylbenzene	43.86	1.0	50	0	87.7	75 - 128				
n-Propylbenzene	47.6	1.0	50	0	95.2	76 - 126				
o-Xylene	43.37	1.0	50	0	86.7	78 - 122				
sec-Butylbenzene	40.89	1.0	50	0	81.8	77 - 126				
Styrene	45.35	1.0	50	0	90.7	78 - 123				
tert-Butylbenzene	46.91	1.0	50	0	93.8	78 - 124				
Tetrachloroethene	43.01	1.0	50	0	86.0	74 - 129				
Toluene	42.16	1.0	50	0	84.3	80 - 121				
trans-1,2-Dichloroethene	45.06	1.0	50	0	90.1	75 - 124				
trans-1,3-Dichloropropene	50.97	1.0	50	0	102	73 - 127				
Trichloroethene	45.92	1.0	50	0	91.8	79 - 123				
Trichlorofluoromethane	45.07	1.0	50	0	90.1	65 - 141				
Vinyl chloride	43.73	1.0	50	0	87.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.77*	*1.0*	*50*	*0*	*87.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.36*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.26*	*1.0*	*50*	*0*	*96.5*	*80 - 119*				
Surr: Toluene-d8	*53.83*	*1.0*	*50*	*0*	*108*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060400-04MS** Units: **ug/L** Analysis Date: **12-Jun-2018 13:58**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	42.78	1.0	50	0	85.6	78 - 124				
1,1,1-Trichloroethane	44.12	1.0	50	0	88.2	74 - 131				
1,1,2,2-Tetrachloroethane	39.67	1.0	50	0	79.3	71 - 121				
1,1,2-Trichloroethane	42.06	1.0	50	0	84.1	80 - 119				
1,1-Dichloroethane	42.94	1.0	50	0	85.9	77 - 125				
1,1-Dichloroethene	46.02	1.0	50	0	92.0	71 - 131				
1,1-Dichloropropene	42.54	1.0	50	0	85.1	78 - 125				
1,2,3-Trichlorobenzene	41.78	1.0	50	0	83.6	69 - 129				
1,2,3-Trichloropropane	42.46	1.0	50	0	84.9	73 - 122				
1,2,4-Trichlorobenzene	41.33	1.0	50	0	82.7	69 - 130				
1,2,4-Trimethylbenzene	39.2	1.0	50	0	78.4	76 - 124				
1,2-Dibromo-3-chloropropane	45.47	1.0	50	0	90.9	62 - 128				
1,2-Dibromoethane	43.94	1.0	50	0	87.9	77 - 121				
1,2-Dichlorobenzene	40.1	1.0	50	0	80.2	80 - 119				
1,2-Dichloroethane	43.64	1.0	50	0	87.3	73 - 128				
1,2-Dichloropropane	40.91	1.0	50	0	81.8	78 - 122				
1,3,5-Trimethylbenzene	47.5	1.0	50	0	95.0	75 - 124				
1,3-Dichlorobenzene	40	1.0	50	0	80.0	80 - 119				
1,3-Dichloropropane	42.1	1.0	50	0	84.2	80 - 119				
1,4-Dichlorobenzene	40.02	1.0	50	0	80.0	79 - 118				
2,2-Dichloropropane	44.7	1.0	50	0	89.4	60 - 139				
2-Butanone	98.31	2.0	100	0	98.3	56 - 143				
2-Chlorotoluene	45.95	1.0	50	0	91.9	79 - 122				
2-Hexanone	104.8	2.0	100	0	105	57 - 139				
4-Chlorotoluene	46.6	1.0	50	0	93.2	78 - 122				
4-Isopropyltoluene	41.41	1.0	50	0	82.8	77 - 127				
4-Methyl-2-pentanone	94.55	2.0	100	0	94.6	67 - 130				
Acetone	92.76	2.0	100	0	92.8	39 - 160				
Benzene	41.68	1.0	50	0	83.4	79 - 120				
Bromobenzene	38.96	1.0	50	0	77.9	80 - 120				S
Bromochloromethane	45.22	1.0	50	0	90.4	78 - 123				
Bromodichloromethane	43.32	1.0	50	0	86.6	79 - 125				
Bromoform	44.79	1.0	50	0	89.6	66 - 130				
Bromomethane	44.64	1.0	50	0	89.3	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060400-04MS** Units: **ug/L** Analysis Date: **12-Jun-2018 13:58**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	88.76	2.0	100	0	88.8	64 - 133				
Carbon tetrachloride	48.69	1.0	50	0	97.4	72 - 136				
Chlorobenzene	41.5	1.0	50	0	83.0	82 - 118				
Chloroethane	45.43	1.0	50	0	90.9	60 - 138				
Chloroform	41.77	1.0	50	0	83.5	79 - 124				
Chloromethane	37.85	1.0	50	0	75.7	50 - 139				
cis-1,2-Dichloroethene	43.06	1.0	50	0	86.1	78 - 123				
cis-1,3-Dichloropropene	44.51	1.0	50	0	89.0	75 - 124				
Dibromochloromethane	43.03	1.0	50	0	86.1	74 - 126				
Dibromomethane	45.05	1.0	50	0	90.1	79 - 123				
Dichlorodifluoromethane	37.66	1.0	50	0	75.3	32 - 152				
Ethylbenzene	42.23	1.0	50	0	84.5	79 - 121				
Hexachlorobutadiene	43.94	1.0	50	0	87.9	66 - 134				
Isopropylbenzene	44.27	1.0	50	0	88.5	72 - 131				
m,p-Xylene	83.13	2.0	100	0	83.1	80 - 121				
Methylene chloride	40.23	2.0	50	0	80.5	74 - 124				
Naphthalene	44.35	1.0	50	0	88.7	61 - 128				
n-Butylbenzene	44.87	1.0	50	0	89.7	75 - 128				
n-Propylbenzene	47.7	1.0	50	0	95.4	76 - 126				
o-Xylene	42.05	1.0	50	0	84.1	78 - 122				
sec-Butylbenzene	41.26	1.0	50	0	82.5	77 - 126				
Styrene	43.42	1.0	50	0	86.8	78 - 123				
tert-Butylbenzene	47.36	1.0	50	0	94.7	78 - 124				
Tetrachloroethene	42.74	1.0	50	0	85.5	74 - 129				
Toluene	41.2	1.0	50	0	82.4	80 - 121				
trans-1,2-Dichloroethene	43.67	1.0	50	0	87.3	75 - 124				
trans-1,3-Dichloropropene	47.31	1.0	50	0	94.6	73 - 127				
Trichloroethene	44.31	1.0	50	0	88.6	79 - 123				
Trichlorofluoromethane	46.75	1.0	50	0	93.5	65 - 141				
Vinyl chloride	44.14	1.0	50	0	88.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.62*	*1.0*	*50*	*0*	*87.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.02*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.97*	*1.0*	*50*	*0*	*95.9*	*80 - 119*				
Surr: Toluene-d8	*53.69*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060400-04MSD** Units: **ug/L** Analysis Date: **12-Jun-2018 14:24**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	42.51	1.0	50	0	85.0	78 - 124	42.78	0.628	20	
1,1,1-Trichloroethane	43.77	1.0	50	0	87.5	74 - 131	44.12	0.806	20	
1,1,2,2-Tetrachloroethane	38.33	1.0	50	0	76.7	71 - 121	39.67	3.44	20	
1,1,2-Trichloroethane	41.73	1.0	50	0	83.5	80 - 119	42.06	0.784	20	
1,1-Dichloroethane	42.83	1.0	50	0	85.7	77 - 125	42.94	0.237	20	
1,1-Dichloroethene	45.09	1.0	50	0	90.2	71 - 131	46.02	2.05	20	
1,1-Dichloropropene	41.73	1.0	50	0	83.5	78 - 125	42.54	1.93	20	
1,2,3-Trichlorobenzene	41.43	1.0	50	0	82.9	69 - 129	41.78	0.83	20	
1,2,3-Trichloropropane	40.77	1.0	50	0	81.5	73 - 122	42.46	4.04	20	
1,2,4-Trichlorobenzene	40.8	1.0	50	0	81.6	69 - 130	41.33	1.29	20	
1,2,4-Trimethylbenzene	38.22	1.0	50	0	76.4	76 - 124	39.2	2.52	20	
1,2-Dibromo-3-chloropropane	43.47	1.0	50	0	86.9	62 - 128	45.47	4.49	20	
1,2-Dibromoethane	43.72	1.0	50	0	87.4	77 - 121	43.94	0.509	20	
1,2-Dichlorobenzene	38.79	1.0	50	0	77.6	80 - 119	40.1	3.3	20	S
1,2-Dichloroethane	44.56	1.0	50	0	89.1	73 - 128	43.64	2.07	20	
1,2-Dichloropropane	40.97	1.0	50	0	81.9	78 - 122	40.91	0.149	20	
1,3,5-Trimethylbenzene	46.03	1.0	50	0	92.1	75 - 124	47.5	3.16	20	
1,3-Dichlorobenzene	39.28	1.0	50	0	78.6	80 - 119	40	1.81	20	S
1,3-Dichloropropane	41.98	1.0	50	0	84.0	80 - 119	42.1	0.269	20	
1,4-Dichlorobenzene	39.33	1.0	50	0	78.7	79 - 118	40.02	1.74	20	S
2,2-Dichloropropane	43.77	1.0	50	0	87.5	60 - 139	44.7	2.1	20	
2-Butanone	97.33	2.0	100	0	97.3	56 - 143	98.31	1	20	
2-Chlorotoluene	44.52	1.0	50	0	89.0	79 - 122	45.95	3.16	20	
2-Hexanone	103.9	2.0	100	0	104	57 - 139	104.8	0.854	20	
4-Chlorotoluene	44.81	1.0	50	0	89.6	78 - 122	46.6	3.91	20	
4-Isopropyltoluene	40.11	1.0	50	0	80.2	77 - 127	41.41	3.18	20	
4-Methyl-2-pentanone	93.98	2.0	100	0	94.0	67 - 130	94.55	0.605	20	
Acetone	96.04	2.0	100	0	96.0	39 - 160	92.76	3.48	20	
Benzene	41.14	1.0	50	0	82.3	79 - 120	41.68	1.31	20	
Bromobenzene	37.46	1.0	50	0	74.9	80 - 120	38.96	3.93	20	S
Bromochloromethane	43.91	1.0	50	0	87.8	78 - 123	45.22	2.95	20	
Bromodichloromethane	42.85	1.0	50	0	85.7	79 - 125	43.32	1.1	20	
Bromoform	44.43	1.0	50	0	88.9	66 - 130	44.79	0.789	20	
Bromomethane	43.42	1.0	50	0	86.8	53 - 141	44.64	2.77	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060400-04MSD** Units: **ug/L** Analysis Date: **12-Jun-2018 14:24**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	88.54	2.0	100	0	88.5	64 - 133	88.76	0.247	20	
Carbon tetrachloride	48.35	1.0	50	0	96.7	72 - 136	48.69	0.682	20	
Chlorobenzene	41	1.0	50	0	82.0	82 - 118	41.5	1.2	20	
Chloroethane	45.71	1.0	50	0	91.4	60 - 138	45.43	0.608	20	
Chloroform	41.31	1.0	50	0	82.6	79 - 124	41.77	1.12	20	
Chloromethane	37.82	1.0	50	0	75.6	50 - 139	37.85	0.0866	20	
cis-1,2-Dichloroethene	42.37	1.0	50	0	84.7	78 - 123	43.06	1.62	20	
cis-1,3-Dichloropropene	44.23	1.0	50	0	88.5	75 - 124	44.51	0.63	20	
Dibromochloromethane	42.39	1.0	50	0	84.8	74 - 126	43.03	1.49	20	
Dibromomethane	44.95	1.0	50	0	89.9	79 - 123	45.05	0.241	20	
Dichlorodifluoromethane	37.32	1.0	50	0	74.6	32 - 152	37.66	0.91	20	
Ethylbenzene	41.82	1.0	50	0	83.6	79 - 121	42.23	0.979	20	
Hexachlorobutadiene	42.25	1.0	50	0	84.5	66 - 134	43.94	3.91	20	
Isopropylbenzene	43.32	1.0	50	0	86.6	72 - 131	44.27	2.16	20	
m,p-Xylene	81.87	2.0	100	0	81.9	80 - 121	83.13	1.53	20	
Methylene chloride	39.99	2.0	50	0	80.0	74 - 124	40.23	0.609	20	
Naphthalene	44.73	1.0	50	0	89.5	61 - 128	44.35	0.85	20	
n-Butylbenzene	43.7	1.0	50	0	87.4	75 - 128	44.87	2.65	20	
n-Propylbenzene	46.07	1.0	50	0	92.1	76 - 126	47.7	3.47	20	
o-Xylene	41.57	1.0	50	0	83.1	78 - 122	42.05	1.16	20	
sec-Butylbenzene	39.76	1.0	50	0	79.5	77 - 126	41.26	3.71	20	
Styrene	42.68	1.0	50	0	85.4	78 - 123	43.42	1.71	20	
tert-Butylbenzene	45.73	1.0	50	0	91.5	78 - 124	47.36	3.5	20	
Tetrachloroethene	41.91	1.0	50	0	83.8	74 - 129	42.74	1.97	20	
Toluene	40.54	1.0	50	0	81.1	80 - 121	41.2	1.62	20	
trans-1,2-Dichloroethene	44.23	1.0	50	0	88.5	75 - 124	43.67	1.27	20	
trans-1,3-Dichloropropene	47.08	1.0	50	0	94.2	73 - 127	47.31	0.483	20	
Trichloroethene	43.8	1.0	50	0	87.6	79 - 123	44.31	1.17	20	
Trichlorofluoromethane	46.45	1.0	50	0	92.9	65 - 141	46.75	0.638	20	
Vinyl chloride	43.25	1.0	50	0	86.5	58 - 137	44.14	2.03	20	
Surr: 1,2-Dichloroethane-d4	*44.76*	*1.0*	*50*	*0*	*89.5*	*81 - 118*	*43.62*	*2.58*	*20*	
Surr: 4-Bromofluorobenzene	*52.44*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.02*	*0.802*	*20*	
Surr: Dibromofluoromethane	*47.19*	*1.0*	*50*	*0*	*94.4*	*80 - 119*	*47.97*	*1.63*	*20*	
Surr: Toluene-d8	*53.68*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.69*	*0.0217*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060352-01	HS18060352-02	HS18060352-03	HS18060352-04
HS18060352-05	HS18060352-06	HS18060352-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 14:03**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: **R318107** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 14:03**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.46*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.63*	*1.0*	*50*	*0*	*99.3*	*85 - 114*				
Surr: Dibromofluoromethane	*50.9*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*53.1*	*1.0*	*50*	*0*	*106*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 13:13**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.44	1.0	50	0	92.9	78 - 124				
1,1,1-Trichloroethane	45.27	1.0	50	0	90.5	74 - 131				
1,1,2,2-Tetrachloroethane	44.85	1.0	50	0	89.7	71 - 121				
1,1,2-Trichloroethane	46	1.0	50	0	92.0	80 - 119				
1,1-Dichloroethane	47.19	1.0	50	0	94.4	77 - 125				
1,1-Dichloroethene	46.84	1.0	50	0	93.7	71 - 131				
1,1-Dichloropropene	42.26	1.0	50	0	84.5	78 - 125				
1,2,3-Trichlorobenzene	48.61	1.0	50	0	97.2	69 - 129				
1,2,3-Trichloropropane	46.74	1.0	50	0	93.5	73 - 122				
1,2,4-Trichlorobenzene	47.07	1.0	50	0	94.1	69 - 130				
1,2,4-Trimethylbenzene	41.9	1.0	50	0	83.8	76 - 124				
1,2-Dibromo-3-chloropropane	50.93	1.0	50	0	102	62 - 128				
1,2-Dibromoethane	48.72	1.0	50	0	97.4	77 - 121				
1,2-Dichlorobenzene	44	1.0	50	0	88.0	80 - 119				
1,2-Dichloroethane	49.4	1.0	50	0	98.8	73 - 128				
1,2-Dichloropropane	45.49	1.0	50	0	91.0	78 - 122				
1,3,5-Trimethylbenzene	49.88	1.0	50	0	99.8	75 - 124				
1,3-Dichlorobenzene	43.47	1.0	50	0	86.9	80 - 119				
1,3-Dichloropropane	47.12	1.0	50	0	94.2	80 - 119				
1,4-Dichlorobenzene	43.92	1.0	50	0	87.8	79 - 118				
2,2-Dichloropropane	44.28	1.0	50	0	88.6	60 - 139				
2-Butanone	112	2.0	100	0	112	56 - 143				
2-Chlorotoluene	49.1	1.0	50	0	98.2	79 - 122				
2-Hexanone	115	2.0	100	0	115	57 - 139				
4-Chlorotoluene	48.98	1.0	50	0	98.0	78 - 122				
4-Isopropyltoluene	43.49	1.0	50	0	87.0	77 - 127				
4-Methyl-2-pentanone	101.9	2.0	100	0	102	67 - 130				
Acetone	109.4	2.0	100	0	109	39 - 160				
Benzene	44.98	1.0	50	0	90.0	79 - 120				
Bromobenzene	41.37	1.0	50	0	82.7	80 - 120				
Bromochloromethane	50.03	1.0	50	0	100	78 - 123				
Bromodichloromethane	47.94	1.0	50	0	95.9	79 - 125				
Bromoform	49.12	1.0	50	0	98.2	66 - 130				
Bromomethane	44.37	1.0	50	0	88.7	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 13:13**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	91.03	2.0	100	0	91.0	64 - 133				
Carbon tetrachloride	51.2	1.0	50	0	102	72 - 136				
Chlorobenzene	44.67	1.0	50	0	89.3	82 - 118				
Chloroethane	49.73	1.0	50	0	99.5	60 - 138				
Chloroform	45.1	1.0	50	0	90.2	79 - 124				
Chloromethane	40.06	1.0	50	0	80.1	50 - 139				
cis-1,2-Dichloroethene	46.59	1.0	50	0	93.2	78 - 123				
cis-1,3-Dichloropropene	49.93	1.0	50	0	99.9	75 - 124				
Dibromochloromethane	46.35	1.0	50	0	92.7	74 - 126				
Dibromomethane	51.47	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	49.18	1.0	50	0	98.4	32 - 152				
Ethylbenzene	44	1.0	50	0	88.0	79 - 121				
Hexachlorobutadiene	47.6	1.0	50	0	95.2	66 - 134				
Isopropylbenzene	44.77	1.0	50	0	89.5	72 - 131				
m,p-Xylene	87.15	2.0	100	0	87.1	80 - 121				
Methylene chloride	44.39	2.0	50	0	88.8	74 - 124				
Naphthalene	50.85	1.0	50	0	102	61 - 128				
n-Butylbenzene	46.75	1.0	50	0	93.5	75 - 128				
n-Propylbenzene	48.94	1.0	50	0	97.9	76 - 126				
o-Xylene	44.62	1.0	50	0	89.2	78 - 122				
sec-Butylbenzene	42.98	1.0	50	0	86.0	77 - 126				
Styrene	46.17	1.0	50	0	92.3	78 - 123				
tert-Butylbenzene	49.66	1.0	50	0	99.3	78 - 124				
Tetrachloroethene	43.31	1.0	50	0	86.6	74 - 129				
Toluene	42.79	1.0	50	0	85.6	80 - 121				
trans-1,2-Dichloroethene	46.62	1.0	50	0	93.2	75 - 124				
trans-1,3-Dichloropropene	52.86	1.0	50	0	106	73 - 127				
Trichloroethene	45.86	1.0	50	0	91.7	79 - 123				
Trichlorofluoromethane	47.13	1.0	50	0	94.3	65 - 141				
Vinyl chloride	45.67	1.0	50	0	91.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.96*	*1.0*	*50*	*0*	*87.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.88*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.27*	*1.0*	*50*	*0*	*96.5*	*80 - 119*				
Surr: Toluene-d8	*50.22*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060552-02MS** Units: **ug/L** Analysis Date: **16-Jun-2018 16:07**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.64	1.0	50	0	95.3	78 - 124				
1,1,1-Trichloroethane	50.03	1.0	50	0	100	74 - 131				
1,1,2,2-Tetrachloroethane	44.34	1.0	50	0	88.7	71 - 121				
1,1,2-Trichloroethane	46.18	1.0	50	0	92.4	80 - 119				
1,1-Dichloroethane	49.77	1.0	50	0	99.5	77 - 125				
1,1-Dichloroethene	51.65	1.0	50	0	103	71 - 131				
1,1-Dichloropropene	45.99	1.0	50	0	92.0	78 - 125				
1,2,3-Trichlorobenzene	46.97	1.0	50	0	93.9	69 - 129				
1,2,3-Trichloropropane	44.54	1.0	50	0	89.1	73 - 122				
1,2,4-Trichlorobenzene	45.77	1.0	50	0	91.5	69 - 130				
1,2,4-Trimethylbenzene	43.03	1.0	50	0	86.1	76 - 124				
1,2-Dibromo-3-chloropropane	49.55	1.0	50	0	99.1	62 - 128				
1,2-Dibromoethane	48.46	1.0	50	0	96.9	77 - 121				
1,2-Dichlorobenzene	44.65	1.0	50	0	89.3	80 - 119				
1,2-Dichloroethane	52.96	1.0	50	2.898	100	73 - 128				
1,2-Dichloropropane	46.37	1.0	50	0	92.7	78 - 122				
1,3,5-Trimethylbenzene	53.17	1.0	50	0	106	75 - 124				
1,3-Dichlorobenzene	44.09	1.0	50	0	88.2	80 - 119				
1,3-Dichloropropane	47.53	1.0	50	0	95.1	80 - 119				
1,4-Dichlorobenzene	44.45	1.0	50	0	88.9	79 - 118				
2,2-Dichloropropane	44.2	1.0	50	0	88.4	60 - 139				
2-Butanone	106.4	2.0	100	0	106	56 - 143				
2-Chlorotoluene	51.57	1.0	50	0	103	79 - 122				
2-Hexanone	105.9	2.0	100	0	106	57 - 139				
4-Chlorotoluene	51.51	1.0	50	0	103	78 - 122				
4-Isopropyltoluene	46.51	1.0	50	0	93.0	77 - 127				
4-Methyl-2-pentanone	102	2.0	100	0	102	67 - 130				
Acetone	107.6	2.0	100	0	108	39 - 160				
Benzene	47.85	1.0	50	1.392	92.9	79 - 120				
Bromobenzene	42.35	1.0	50	0	84.7	80 - 120				
Bromochloromethane	50.82	1.0	50	0	102	78 - 123				
Bromodichloromethane	48.8	1.0	50	0	97.6	79 - 125				
Bromoform	48.81	1.0	50	0	97.6	66 - 130				
Bromomethane	47.94	1.0	50	0	95.9	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060552-02MS** Units: **ug/L** Analysis Date: **16-Jun-2018 16:07**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	99.66	2.0	100	0	99.7	64 - 133				
Carbon tetrachloride	56.54	1.0	50	0	113	72 - 136				
Chlorobenzene	46.12	1.0	50	0	92.2	82 - 118				
Chloroethane	55.9	1.0	50	0	112	60 - 138				
Chloroform	47.1	1.0	50	0	94.2	79 - 124				
Chloromethane	41.93	1.0	50	0	83.9	50 - 139				
cis-1,2-Dichloroethene	53.71	1.0	50	4.893	97.6	78 - 123				
cis-1,3-Dichloropropene	49.27	1.0	50	0	98.5	75 - 124				
Dibromochloromethane	47.12	1.0	50	0	94.2	74 - 126				
Dibromomethane	51.29	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	53.26	1.0	50	0	107	32 - 152				
Ethylbenzene	47.13	1.0	50	0	94.3	79 - 121				
Hexachlorobutadiene	48.73	1.0	50	0	97.5	66 - 134				
Isopropylbenzene	48.83	1.0	50	0	97.7	72 - 131				
m,p-Xylene	91.79	2.0	100	0	91.8	80 - 121				
Methylene chloride	45.7	2.0	50	0	91.4	74 - 124				
Naphthalene	47.91	1.0	50	0	95.8	61 - 128				
n-Butylbenzene	49.14	1.0	50	0	98.3	75 - 128				
n-Propylbenzene	52.99	1.0	50	0	106	76 - 126				
o-Xylene	46.67	1.0	50	0	93.3	78 - 122				
sec-Butylbenzene	46.67	1.0	50	0	93.3	77 - 126				
Styrene	46.81	1.0	50	0	93.6	78 - 123				
tert-Butylbenzene	54.01	1.0	50	0	108	78 - 124				
Tetrachloroethene	47.4	1.0	50	0	94.8	74 - 129				
Toluene	45.57	1.0	50	0	91.1	80 - 121				
trans-1,2-Dichloroethene	50.44	1.0	50	1.38	98.1	75 - 124				
trans-1,3-Dichloropropene	50.63	1.0	50	0	101	73 - 127				
Trichloroethene	74.7	1.0	50	27.8	93.8	79 - 123				
Trichlorofluoromethane	53.01	1.0	50	0	106	65 - 141				
Vinyl chloride	51.48	1.0	50	0	103	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.82*	*1.0*	*50*	*0*	*89.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.65*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.31*	*1.0*	*50*	*0*	*96.6*	*80 - 119*				
Surr: Toluene-d8	*50.79*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060552-02MSD** Units: **ug/L** Analysis Date: **16-Jun-2018 16:32**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.67	1.0	50	0	93.3	78 - 124	47.64	2.06	20	
1,1,1-Trichloroethane	48.77	1.0	50	0	97.5	74 - 131	50.03	2.56	20	
1,1,2,2-Tetrachloroethane	44.16	1.0	50	0	88.3	71 - 121	44.34	0.407	20	
1,1,2-Trichloroethane	45.95	1.0	50	0	91.9	80 - 119	46.18	0.494	20	
1,1-Dichloroethane	48.75	1.0	50	0	97.5	77 - 125	49.77	2.07	20	
1,1-Dichloroethene	50.6	1.0	50	0	101	71 - 131	51.65	2.05	20	
1,1-Dichloropropene	44.65	1.0	50	0	89.3	78 - 125	45.99	2.95	20	
1,2,3-Trichlorobenzene	46.54	1.0	50	0	93.1	69 - 129	46.97	0.921	20	
1,2,3-Trichloropropane	43.14	1.0	50	0	86.3	73 - 122	44.54	3.19	20	
1,2,4-Trichlorobenzene	45.63	1.0	50	0	91.3	69 - 130	45.77	0.305	20	
1,2,4-Trimethylbenzene	42.68	1.0	50	0	85.4	76 - 124	43.03	0.802	20	
1,2-Dibromo-3-chloropropane	48.11	1.0	50	0	96.2	62 - 128	49.55	2.95	20	
1,2-Dibromoethane	47.48	1.0	50	0	95.0	77 - 121	48.46	2.04	20	
1,2-Dichlorobenzene	43.93	1.0	50	0	87.9	80 - 119	44.65	1.61	20	
1,2-Dichloroethane	50.55	1.0	50	2.898	95.3	73 - 128	52.96	4.66	20	
1,2-Dichloropropane	45.79	1.0	50	0	91.6	78 - 122	46.37	1.27	20	
1,3,5-Trimethylbenzene	52.46	1.0	50	0	105	75 - 124	53.17	1.35	20	
1,3-Dichlorobenzene	43.72	1.0	50	0	87.4	80 - 119	44.09	0.852	20	
1,3-Dichloropropane	46.38	1.0	50	0	92.8	80 - 119	47.53	2.46	20	
1,4-Dichlorobenzene	44.25	1.0	50	0	88.5	79 - 118	44.45	0.466	20	
2,2-Dichloropropane	42.03	1.0	50	0	84.1	60 - 139	44.2	5.03	20	
2-Butanone	104.5	2.0	100	0	105	56 - 143	106.4	1.76	20	
2-Chlorotoluene	51.49	1.0	50	0	103	79 - 122	51.57	0.156	20	
2-Hexanone	102.5	2.0	100	0	103	57 - 139	105.9	3.25	20	
4-Chlorotoluene	50.44	1.0	50	0	101	78 - 122	51.51	2.09	20	
4-Isopropyltoluene	45.45	1.0	50	0	90.9	77 - 127	46.51	2.3	20	
4-Methyl-2-pentanone	99.52	2.0	100	0	99.5	67 - 130	102	2.48	20	
Acetone	105.1	2.0	100	0	105	39 - 160	107.6	2.37	20	
Benzene	46.8	1.0	50	1.392	90.8	79 - 120	47.85	2.22	20	
Bromobenzene	42.2	1.0	50	0	84.4	80 - 120	42.35	0.361	20	
Bromochloromethane	50.52	1.0	50	0	101	78 - 123	50.82	0.582	20	
Bromodichloromethane	48.09	1.0	50	0	96.2	79 - 125	48.8	1.48	20	
Bromoform	48.4	1.0	50	0	96.8	66 - 130	48.81	0.837	20	
Bromomethane	46.09	1.0	50	0	92.2	53 - 141	47.94	3.94	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060552-02MSD** Units: **ug/L** Analysis Date: **16-Jun-2018 16:32**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	96.61	2.0	100	0	96.6	64 - 133	99.66	3.1	20	
Carbon tetrachloride	54.64	1.0	50	0	109	72 - 136	56.54	3.43	20	
Chlorobenzene	45.44	1.0	50	0	90.9	82 - 118	46.12	1.48	20	
Chloroethane	54.33	1.0	50	0	109	60 - 138	55.9	2.86	20	
Chloroform	46.57	1.0	50	0	93.1	79 - 124	47.1	1.14	20	
Chloromethane	40.94	1.0	50	0	81.9	50 - 139	41.93	2.38	20	
cis-1,2-Dichloroethene	52.35	1.0	50	4.893	94.9	78 - 123	53.71	2.57	20	
cis-1,3-Dichloropropene	48.04	1.0	50	0	96.1	75 - 124	49.27	2.52	20	
Dibromochloromethane	46.74	1.0	50	0	93.5	74 - 126	47.12	0.8	20	
Dibromomethane	50.46	1.0	50	0	101	79 - 123	51.29	1.63	20	
Dichlorodifluoromethane	51.34	1.0	50	0	103	32 - 152	53.26	3.67	20	
Ethylbenzene	46.08	1.0	50	0	92.2	79 - 121	47.13	2.25	20	
Hexachlorobutadiene	48.71	1.0	50	0	97.4	66 - 134	48.73	0.0412	20	
Isopropylbenzene	47.36	1.0	50	0	94.7	72 - 131	48.83	3.07	20	
m,p-Xylene	89.53	2.0	100	0	89.5	80 - 121	91.79	2.5	20	
Methylene chloride	43.97	2.0	50	0	87.9	74 - 124	45.7	3.85	20	
Naphthalene	48.56	1.0	50	0	97.1	61 - 128	47.91	1.35	20	
n-Butylbenzene	48.29	1.0	50	0	96.6	75 - 128	49.14	1.74	20	
n-Propylbenzene	52.03	1.0	50	0	104	76 - 126	52.99	1.82	20	
o-Xylene	45.37	1.0	50	0	90.7	78 - 122	46.67	2.84	20	
sec-Butylbenzene	46.18	1.0	50	0	92.4	77 - 126	46.67	1.04	20	
Styrene	45.97	1.0	50	0	91.9	78 - 123	46.81	1.83	20	
tert-Butylbenzene	52.39	1.0	50	0	105	78 - 124	54.01	3.05	20	
Tetrachloroethene	45.79	1.0	50	0	91.6	74 - 129	47.4	3.46	20	
Toluene	44.46	1.0	50	0	88.9	80 - 121	45.57	2.46	20	
trans-1,2-Dichloroethene	49.67	1.0	50	1.38	96.6	75 - 124	50.44	1.53	20	
trans-1,3-Dichloropropene	49.31	1.0	50	0	98.6	73 - 127	50.63	2.64	20	
Trichloroethene	73.15	1.0	50	27.8	90.7	79 - 123	74.7	2.1	20	
Trichlorofluoromethane	52.06	1.0	50	0	104	65 - 141	53.01	1.82	20	
Vinyl chloride	49.23	1.0	50	0	98.5	58 - 137	51.48	4.49	20	
Surr: 1,2-Dichloroethane-d4	*44.41*	*1.0*	*50*	*0*	*88.8*	*81 - 118*	*44.82*	*0.93*	*20*	
Surr: 4-Bromofluorobenzene	*52.42*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.65*	*0.448*	*20*	
Surr: Dibromofluoromethane	*48.34*	*1.0*	*50*	*0*	*96.7*	*80 - 119*	*48.31*	*0.0698*	*20*	
Surr: Toluene-d8	*50.76*	*1.0*	*50*	*0*	*102*	*89 - 112*	*50.79*	*0.0466*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060352

QC BATCH REPORT

Batch ID: R318107 **Instrument:** VOA2 **Method:** SW8260

The following samples were analyzed in this batch: HS18060352-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060352**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 25-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 25-Jun-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**07-Jun-2018 08:37**
Work Order:	HS18060352	Received by:	**NDR**

Checklist completed by: *Paresh M. Giga* (eSignature) 7-Jun-2018 (Date)

Reviewed by: *RJ Modashia* (eSignature) 7-Jun-2018 (Date)

Matrices: **Groundwater/Water**

Carrier name: **FedEx**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	3.2c/2.7c U/c		IR11
Cooler(s)/Kit(s):	43965		
Date/Time sample(s) sent to storage:	6/7/18 16:30		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate ENVIRONMENTAL CONSTRUCTION ENGINEERING

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) | Quality Assurance Samples (6)

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
MW2_060618		6/6/18	0840	-	N		WG	5	X	X		X										
18CPTMW01DW_060618		6/6/18	0935	-	N		WG	6	X	X	X	X										
18CPTMW01SW_060618		6/6/18	1030	-	N		WG	6	X	X	X	X										
18CPTMW15_060618		6/6/18	1130		N		WG	5	X	X		X										
18CPTMW15_060618_a		6/6/18	1130		FD		WG	5	X	X		X										
18WW18_060618		6/6/18	1235	-	N		WG	6	X	X	X	X										
18WW17_060618		6/6/18	1255	-	N		WG	5	X	X	X											
C04_060618		6/6/18	1340	-	N		WG	4	X	X												
TRIP BLANK		6/6/18		-	TB		W	2	X													
				-																		
				-																		

HS18060352
Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/6/18	1415	1. NR	6/7/18	08:37
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

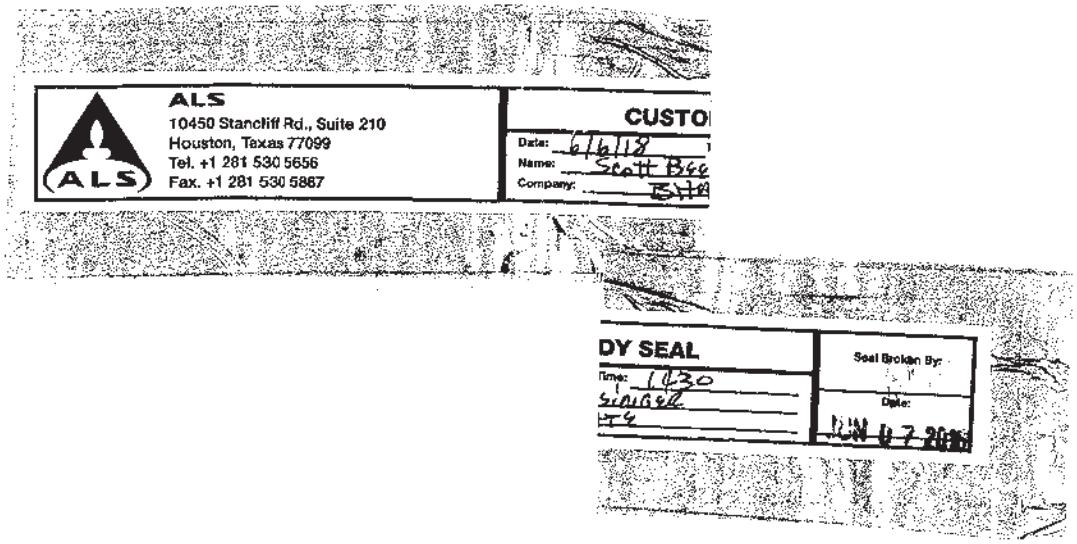
Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

43965'

UC.
3.2°
#11
9F-0.5°

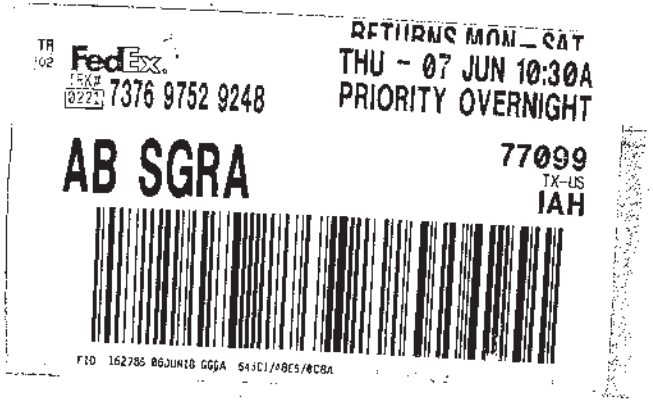


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5867

CUSTO
Date: 6/6/18
Name: Scott Bee
Company: BHA

DY SEAL
Time: 1430
Singer
HTE

Seal Broken By:
Date:
JUN 07 2018



TR
102
FedEx.
TRK# 0221 7376 9752 9248

RETURNS MON - SAT
THU - 07 JUN 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FID 162786 06JUN18 GGGA 543C1/48E5/0C8A

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1815995; 1816211

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2102 (216868)

General Set Information: There were sixteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions.
1815995004/05; 1816211002/03/05-07/09 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605574) was less than 1/2 the CRDL. The recovery for the LCS (605575) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on samples 1816211006/07 (Client ID: MW22-060718). The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L. The Matrix Spike and duplicate (MS/MSD) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected. The MS/MSD relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 18JUND11/27.

Thomas Bosch June 20, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 20, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1815995**
Project ID: HS18060352 060618
Purchase Order: HS18060352
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
MW2_060618	1815995001	06/06/18	06/08/18	
18CPTMW01DW_060618	1815995002	06/06/18	06/08/18	
18CPTMW01SW_060618	1815995003	06/06/18	06/08/18	
18CPTMW15_060618	1815995004	06/06/18	06/08/18	
18CPTMW15_06062018-a	1815995005	06/06/18	06/08/18	
18WW18_060618	1815995006	06/06/18	06/08/18	
18WW17_060618	1815995007	06/06/18	06/08/18	
C04_060618	1815995008	06/06/18	06/08/18	

ANALYTICAL REPORT

Workorder: 34-1815995
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW2_060618** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995001 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 11:57
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	1.3	1.0	2.0	4.0	1	J

Sample ID: **18CPTMW01DW_060618** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995002 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 12:11
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18CPTMW01SW_060618** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995003 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 12:25
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18CPTMW15_060618** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995004 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 12:39
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**380**	10	20	40	10	

ANALYTICAL REPORT

Workorder: 34-1815995
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **18CPTMW15_06062018-a** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995005 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 12:54
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**400**	10	20	40	10	

Sample ID: **18WW18_060618** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995006 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 13:09
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18WW17_060618** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995007 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/19/2018 08:51
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**97000**	10000	20000	40000	10000	

Sample ID: **C04_060618** | Sampling Site: NA | Collected: 06/06/2018
Lab ID: 1815995008 | Media: 125 mL Nalgene | Received: 06/08/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 13:37
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1815995
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Comments

Workorder: 1815995

The following samples were analyzed and reported at various dilutions. 1815995004/05 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.

Quality Control: EPA 6850, DoD QSM - (HBN: 216868)

The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/20/2018 13:46	/S/ Stephen Brose 06/20/2018 17:02

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1815995
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1815995

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850, DoD QSM
Batch: ELMS/2102 (HBN: 216868)
Analyzed By: Thomas Bosch

Blank

LMB: 605574
Analyzed: 06/18/2018 11:27
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605575
Analyzed: 06/18/2018 11:41
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.95	5.00	99.0	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1816211005
Analyzed: 06/18/2018 15:16
Dilution: 10
Units: ug/L

MS: 1816211006
Analyzed: 06/18/2018 15:34
Dilution: 10
Units: ug/L

MSD: 1816211007
Analyzed: 06/18/2018 15:49
Dilution: 10
Units: ug/L

Analyte	Result	Result	Target	% Rec		QC Limits		Result	% Rec		RPD	QC Limits	
Perchlorate	66.0	129	50	#	127	78.8	123.8	132	#	132	2.08	0.0	20.0

Continuing Calibration Verification

CCV: 605571
Analyzed: 06/18/2018 10:44
Units: ug/L
Criteria: ± 15%

CCV: 605576
Analyzed: 06/18/2018 14:20
Units: ug/L
Criteria: ± 15%

CCV: 605578
Analyzed: 06/18/2018 17:00
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.2	25.0	101	25.9	25.0	104	26.5	25.0	106

CCV: 605825
Analyzed: 06/19/2018 08:37
Units: ug/L
Criteria: ± 15%

CCV: 605826
Analyzed: 06/19/2018 09:05
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.9	25.0	104	25.4	25.0	102

Interference Check Sample

ICSA: 605573
Analyzed: 06/18/2018 11:12
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.957	1.00	95.7

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1815995

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850, DoD QSM
Batch: ELMS/2102 (HBN: 216868)
Analyzed By: Thomas Bosch

Limit of Detection Verification

LODV: 605572				**LODV:** 605577			**LODV:** 605579		
Analyzed: 06/18/2018 10:58				**Analyzed:** 06/18/2018 14:34			**Analyzed:** 06/18/2018 17:14		
Units: ug/L				**Units:** ug/L			**Units:** ug/L		
Criteria: ± 50%				**Criteria:** ± 50%			**Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.910	1.00	91.0	1.04	1.00	104	1.12	1.00	112

Comments

The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/20/2018 13:46	06/20/2018 17:01

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ⬢ - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

W 1815995

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9249

1815995

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18060352
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060352-01**	**MW2_060618**	**Groundwater**	**06 Jun 2018 08:40**
	SUB_Perch-6850			15 Jun 2018
2.	**HS18060352-02**	**18CPTMW01DW_060618**	**Groundwater**	**06 Jun 2018 09:35**
	SUB_Perch-6850			15 Jun 2018
3.	**HS18060352-03**	**18CPTMW01SW_060618**	**Groundwater**	**06 Jun 2018 10:30**
	SUB_Perch-6850			15 Jun 2018
4.	**HS18060352-04**	**18CPTMW15_060618**	**Groundwater**	**06 Jun 2018 11:30**
	SUB_Perch-6850			15 Jun 2018
5.	**HS18060352-05**	**18CPTMW15_06062018_a**	**Groundwater**	**06 Jun 2018 11:30**
	SUB_Perch-6850			15 Jun 2018
6.	**HS18060352-06**	**18WW18_060618**	**Groundwater**	**06 Jun 2018 12:35**
	SUB_Perch-6850			15 Jun 2018
7.	**HS18060352-07**	**18WW17_060618**	**Groundwater**	**06 Jun 2018 12:55**
	SUB_Perch-6850			15 Jun 2018
8.	**HS18060352-08**	**C04_060618**	**Groundwater**	**06 Jun 2018 13:40**
	SUB_Perch-6850			15 Jun 2018

Subcontract Chain of Custody

COC ID: 9249

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	9/7/18 1800
Received By:	Jennifer Jessee	Date/Time:	09-08-18 9:40
Cooler ID(s):		Temperature(s):	

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060352	Split:	Workorder ID: 1815995	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/06/2018 08:40	MW2_060618	1815995001		Water	A	1	A
2	06/06/2018 09:35	18CPTMW01DW_060618	1815995002		Water	A	1	A
3	06/06/2018 10:30	18CPTMW01SW_060618	1815995003		Water	A	1	A
4	06/06/2018 11:30	18CPTMW15_060618	1815995004		Water	A	1	A
5	06/06/2018 11:30	18CPTMW15_06062018-a	1815995005		Water	A	1	A
6	06/06/2018 12:35	18WW18_060618	1815995006		Water	A	1	A
7	06/06/2018 12:55	18WW17_060618	1815995007		Water	A	1	A
8	06/06/2018 13:40	C04_060618	1815995008		Water	A	1	A
9								
10								

81 of 100

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/08/2018 09:40	ALS Sample Receiving	Sample Login
Julie Warath	6/8/18 1400	15C	Storage
R.33.1	6-18-18/07:55	T.Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston
Project/Task/Site: 1815995
Date/Time of Receipt: 06-08-18 9:40
Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8593	3 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tami Van Tassell (Signature) Tami Van Tassell (Printed Name) 06-08-18 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

NO Paper Work
TA 06-08-18

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

Part # 159469-43

Must Deliver Next Business Day
Time and Tempature Sensitive!

ALS

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 07JUN18
ACTWGT: 17.30 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060281/306/08/10/52-RJ

546C1/4BE5/53C1

FedEx Express

E

J171016102001uv

TRK# 0201 4380 9529 8878

FRI - 08 JUN 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2102 **Created:** 6/18/2018 07:36 **Instrument:** **HBN:** 216868
Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1815995 [ENV_LVL4]
Workorder: 1816211 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	605571	CCV for HBN 216868 [ELMS/2102]				CCV	3		E685041C3Q	5311		6/21/2018	
2	605572	LODV for HBN 216868 [ELMS/2102				LODV	3		E6850..D3Q	5311		6/21/2018	
3	605573	ICS for HBN 216868 [ELMS/2102]				ICS	3		E6850..D3Q	5311		6/21/2018	
4	605574	LMB for HBN 216868 [ELMS/2102]				LMB	3		E6850Q413Q	5311		6/21/2018	
5	605575	LCS for HBN 216868 [ELMS/2102]				LCS	3		E6850Q413Q	5311		6/21/2018	
6	1815995001	MW2_060618				SAMPLE	3	1815995001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
7	1815995002	18CPTMW01DW_060618				SAMPLE	3	1815995002-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
8	1815995003	18CPTMW01SW_060618				SAMPLE	3	1815995003-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
9	1815995004	18CPTMW15_060618				SAMPLE	3	1815995004-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
8	1815995005	18CPTMW15_06062018-a				SAMPLE	3	1815995005-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
10	1815995006	18WW18_060618				SAMPLE	3	1815995006-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
12	1815995007	18WW17_060618				SAMPLE	3	1815995007-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
13	1815995008	C04_060618				SAMPLE	3	1815995008-A	E6850Q41.3	5480	7/4/2018	6/21/2018	
14	1816211001	18CPTMW04SW_060718				SAMPLE	3	1816211001-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
15	1816211002	18CPTMW04_060718				SAMPLE	3	1816211002-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
16	605576	CCV for HBN 216868 [ELMS/2102]				CCV	3		E685041C3Q	5311		6/21/2018	
17	605577	LODV for HBN 216868 [ELMS/2102				LODV	3		E6850..D3Q	5311		6/21/2018	
18	1816211003	18CPTMW04_060718-a				SAMPLE	3	1816211003-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
19	1816211004	18CPTMW06_060718				SAMPLE	3	1816211004-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
20	1816211005	MW22_060718				SAMPLE	3	1816211005-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
21	1816211006	MW22_060718MS				MS	3	1816211006-A	E6850Q413Q	5480		6/21/2018	
22	1816211007	MW22_060718MSD				MSD	3	1816211007-A	E6850Q413Q	5480		6/21/2018	
23	1816211008	MW18_060718				SAMPLE	3	1816211008-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
24	1816211009	18WW08_060718				SAMPLE	3	1816211009-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
25	1816211010	18WW09_060718				SAMPLE	3	1816211010-A	E6850Q41.3	5480	7/5/2018	6/21/2018	
26	605578	CCV for HBN 216868 [ELMS/2102]				CCV	3		E685041C3Q	5311		6/21/2018	
27	605579	LODV for HBN 216868 [ELMS/2102				LODV	3		E6850..D3Q	5311		6/21/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1815995 (001-08); 1816211 (001-10)
ELMS Batch/HBN ID: 2102 (216868)
Prep Date: 06/18/2018 Analysis Date: 06/18,19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.s & 18JUN18B.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605575; Target = 5.0µg/L. ASTM type II water was used for LMB 605574.

MS/MSD: MS/MSD was performed on samples 1815995006/06 (Client ID: MW22_060718). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815995004/05; 1816211002/03/05-07/09 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 18JUND11/27.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216868-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: **41829**
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733	Created By: Thomas Bosch	Amount: 100 mL
MFG: AccuStandard	Create Date: 05/10/2017 11:05AM	Expires: 10/04/2018
MFG Lot: 216095148		Usable: Yes
Part ID: IC-PER-10X-1		Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard:	41827	Created By:	Thomas Bosch	Amount:	10 mL
MFG:	ALS/SLC	Create Date:	05/09/2018 10:05AM	Expires:	05/09/2019
MFG Lot:	TNB: 05/09/2018	Verified By:	Thomas Bosch	Usable:	Yes
Pipette ID:	Not Provided	Verify Date:		Lab Lot:	CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 25, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060425**

Revision: **1**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 9 sample(s) on Jun 08, 2018 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060425

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060425-01	18CPTMW04SW_060718	Groundwater		07-Jun-2018 08:20	08-Jun-2018 08:30	☐
HS18060425-02	18CPTMW04_060718	Groundwater		07-Jun-2018 09:10	08-Jun-2018 08:30	☐
HS18060425-03	18CPTMW04_060718_a	Groundwater		07-Jun-2018 09:10	08-Jun-2018 08:30	☐
HS18060425-04	18CPTMW06_060718	Groundwater		07-Jun-2018 10:10	08-Jun-2018 08:30	☐
HS18060425-05	MW22_060718	Groundwater		07-Jun-2018 11:00	08-Jun-2018 08:30	☐
HS18060425-06	MW18_060718	Groundwater		07-Jun-2018 11:55	08-Jun-2018 08:30	☐
HS18060425-07	18WW08_060718	Groundwater		07-Jun-2018 12:45	08-Jun-2018 08:30	☐
HS18060425-08	18WW09_060718	Groundwater		07-Jun-2018 13:40	08-Jun-2018 08:30	☐
HS18060425-09	Trip Blank ALS-051618-51	Water		07-Jun-2018 00:00	08-Jun-2018 08:30	☐

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060425

CASE NARRATIVE

Work Order Comments

- Revision 1: Added Report Options.

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129262

Sample ID: 18CPTMW04_060718 (HS18060425-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 18CPTMW04_060718_a (HS18060425-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 18CPTMW06_060718 (HS18060425-04)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: LCSD-129262

- Surrogate 2-Fluorobiphenyl recovered above the control limit, it is not associated with target compound. The LCS/LCSD RPD recovered above the RPD limits for 2-Fluorobiphenyl and Nitrobenzene-d5.

GCMS Volatiles by Method SW8260

Batch ID: R317765

Sample ID: MW22_060718 (HS18060425-05MS)

- Some compounds outside recovery/RPD limits on MS/MSD.

Batch ID: R317791

Sample ID: HS18060400-08MS

- MS and MSD are for an unrelated sample.

Batch ID: R317857

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R317886

Sample ID: HS18060444-06MS

- MS and MSD are for an unrelated sample

Metals by Method SW7470

Batch ID: 129423

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Revision:1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060425

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 129290

Sample ID: MW22_060718 (HS18060425-05MS)

- Chromium failed in the MS/MSD but passed in the PDS.
- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Barium, Calcium, Magnesium, and Sodium.

Sample ID: MW22_060718 (HS18060425-05PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Barium and Calcium.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW04SW_060718
Collection Date: 07-Jun-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 06:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 06:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 06:48
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 06:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 06:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW04SW_060718
Collection Date: 07-Jun-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 06:48
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 06:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 06:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 06:48
Surr: 1,2-Dichloroethane-d4	*83.2*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 06:48*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 06:48*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 06:48*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 06:48*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	12-Jun-2018 18:02
Surr: 2-Fluorobiphenyl	*98.7*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 18:02*
Surr: 4-Terphenyl-d14	*84.1*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 18:02*
Surr: Nitrobenzene-d5	*48.5*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 18:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW04SW_060718
Collection Date: 07-Jun-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 12-Jun-2018		Analyst: JDE
Aluminum	**0.117**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	13-Jun-2018 13:11
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	13-Jun-2018 13:11
Arsenic	**0.00327**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:11
Barium	**0.888**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:11
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:11
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:11
Calcium	**29.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	13-Jun-2018 13:11
Chromium	**0.0104**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	13-Jun-2018 13:11
Cobalt	**0.0140**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:11
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	13-Jun-2018 13:11
Iron	**14.3**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:11
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	13-Jun-2018 13:11
Magnesium	**16.8**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:11
Manganese	**0.713**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:11
Nickel	**0.00849**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:11
Potassium	**70.9**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:11
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	13-Jun-2018 13:11
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:11
Sodium	**116**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:11
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:11
Vanadium	**0.000798**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:11
Zinc	**0.0279**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:11
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 13:04
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW04_060718
Collection Date: 07-Jun-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,1-Dichloroethene	**2.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,2-Dichloroethane	**3.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 07:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 07:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 07:13
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 07:13
Benzene	**0.59**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 07:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW04_060718
Collection Date: 07-Jun-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
cis-1,2-Dichloroethene	**42**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 07:13
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 07:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Trichloroethene	**800**		**2.0**	**5.0**	**10**	**ug/L**	10	12-Jun-2018 19:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:13
Vinyl chloride	**0.66**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:13
Surr: 1,2-Dichloroethane-d4	*85.1*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 07:13*
Surr: 1,2-Dichloroethane-d4	*85.4*			**0**	*81-118*	*%REC*	*10*	*12-Jun-2018 19:17*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 07:13*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*12-Jun-2018 19:17*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 07:13*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*10*	*12-Jun-2018 19:17*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 07:13*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*10*	*12-Jun-2018 19:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18 24	WorkOrder:HS18060425
Sample ID:	18CPTMW04_060718	Lab ID:HS18060425-02
Collection Date:	07-Jun-2018 09:10	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	**2.8**		**0.10**	**0.10**	**0.10**	**ug/L**	10	13-Jun-2018 12:10
Surr: 2-Fluorobiphenyl	*109*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 12:10*
Surr: 4-Terphenyl-d14	*85.5*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 12:10*
Surr: Nitrobenzene-d5	*61.0*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 12:10*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW04_060718_a
Collection Date: 07-Jun-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,1-Dichloroethene	**2.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:37
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,2-Dichloroethane	**3.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:37
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 07:37
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 07:37
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 07:37
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 07:37
Benzene	**0.55**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:37
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 07:37
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW04_060718_a
Collection Date: 07-Jun-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:37
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
cis-1,2-Dichloroethene	**42**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 07:37
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 07:37
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 07:37
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 07:37
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Trichloroethene	**790**		**2.0**	**5.0**	**10**	**ug/L**	10	12-Jun-2018 19:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 07:37
Surr: 1,2-Dichloroethane-d4	*86.7*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 07:37*
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*10*	*12-Jun-2018 19:44*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 07:37*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*12-Jun-2018 19:44*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 07:37*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*10*	*12-Jun-2018 19:44*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 07:37*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*10*	*12-Jun-2018 19:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18 24	WorkOrder:HS18060425
Sample ID:	18CPTMW04_060718_a	Lab ID:HS18060425-03
Collection Date:	07-Jun-2018 09:10	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	**3.4**		**0.10**	**0.10**	**0.10**	**ug/L**	10	13-Jun-2018 12:30
Surr: 2-Fluorobiphenyl	*123*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 12:30*
Surr: 4-Terphenyl-d14	*83.0*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 12:30*
Surr: Nitrobenzene-d5	*64.4*			**0**	*40-140*	*%REC*	*10*	*13-Jun-2018 12:30*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW06_060718
Collection Date: 07-Jun-2018 10:10

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	13-Jun-2018 05:47
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	13-Jun-2018 05:47
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	13-Jun-2018 05:47
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	13-Jun-2018 05:47
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	13-Jun-2018 05:47
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW06_060718
Collection Date: 07-Jun-2018 10:10

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	13-Jun-2018 05:47
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	13-Jun-2018 05:47
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	13-Jun-2018 05:47
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 05:47
Surr: 1,2-Dichloroethane-d4	*86.4*			**0**	*81-118*	*%REC*	*1*	*13-Jun-2018 05:47*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*13-Jun-2018 05:47*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*13-Jun-2018 05:47*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*13-Jun-2018 05:47*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.78**		**0.050**	**0.050**	**0.050**	**ug/L**	5	13-Jun-2018 12:50
Surr: 2-Fluorobiphenyl	*118*			**0**	*40-140*	*%REC*	*5*	*13-Jun-2018 12:50*
Surr: 4-Terphenyl-d14	*84.7*			**0**	*40-140*	*%REC*	*5*	*13-Jun-2018 12:50*
Surr: Nitrobenzene-d5	*50.7*			**0**	*40-140*	*%REC*	*5*	*13-Jun-2018 12:50*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW22_060718
Collection Date: 07-Jun-2018 11:00

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,2-Dichloroethane	**4.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 13:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 13:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 13:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 13:13
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 13:13
Benzene	**0.29**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 13:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 13:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW22_060718
Collection Date: 07-Jun-2018 11:00

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**2.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 13:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
cis-1,2-Dichloroethene	**3.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	11-Jun-2018 13:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 13:13
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 13:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 13:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Trichloroethene	**260**		**1.0**	**2.5**	**5.0**	**ug/L**	5	13-Jun-2018 07:03
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 13:13
Surr: 1,2-Dichloroethane-d4	*87.1*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 13:13*
Surr: 1,2-Dichloroethane-d4	*84.6*			**0**	*81-118*	*%REC*	*5*	*13-Jun-2018 07:03*
Surr: 4-Bromofluorobenzene	*99.6*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 13:13*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5*	*13-Jun-2018 07:03*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 13:13*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*5*	*13-Jun-2018 07:03*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 13:13*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*13-Jun-2018 07:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW22_060718
Collection Date: 07-Jun-2018 11:00

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 12-Jun-2018		Analyst: JDE
Aluminum	**0.0139**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	13-Jun-2018 13:13
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	13-Jun-2018 13:13
Arsenic	**0.000914**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:13
Barium	**1.00**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:13
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:13
Cadmium	**0.00128**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:13
Calcium	**107**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	13-Jun-2018 13:13
Chromium	**0.181**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	13-Jun-2018 13:13
Cobalt	**0.00531**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:13
Copper	**0.00366**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	13-Jun-2018 13:13
Iron	**0.872**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:13
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	13-Jun-2018 13:13
Magnesium	**32.5**		**0.100**	**1.00**	**2.00**	**mg/L**	10	13-Jun-2018 16:08
Manganese	**0.0744**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:13
Nickel	**0.321**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:13
Potassium	**2.26**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:13
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	13-Jun-2018 13:13
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:13
Sodium	**378**		**0.140**	**1.00**	**2.00**	**mg/L**	10	13-Jun-2018 16:08
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:13
Vanadium	**0.00242**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:13
Zinc	**0.0125**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:13
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 12:49
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24	WorkOrder:HS18060425	
Sample ID:	MW18_060718	Lab ID:HS18060425-06	
Collection Date:	07-Jun-2018 11:55	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 08:02
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 08:02
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 08:02
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 08:02
Benzene	**0.22**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 08:02
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 08:02
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW18_060718
Collection Date: 07-Jun-2018 11:55

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
cis-1,2-Dichloroethene	**0.62**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jun-2018 08:02
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 08:02
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 08:02
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:02
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Trichloroethene	**5.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	13-Jun-2018 06:11
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:02
Surr: 1,2-Dichloroethane-d4	*85.3*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 08:02*
Surr: 1,2-Dichloroethane-d4	*86.3*			**0**	*81-118*	*%REC*	*1*	*13-Jun-2018 06:11*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 08:02*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*13-Jun-2018 06:11*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 08:02*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*13-Jun-2018 06:11*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 08:02*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*13-Jun-2018 06:11*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW08_060718
Collection Date: 07-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 08:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jun-2018 08:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jun-2018 08:27
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 08:27
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jun-2018 08:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW08_060718
Collection Date: 07-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jun-2018 08:27
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jun-2018 08:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jun-2018 08:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	13-Jun-2018 06:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jun-2018 08:27
Surr: 1,2-Dichloroethane-d4	*84.1*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2018 08:27*
Surr: 1,2-Dichloroethane-d4	*85.9*			**0**	*81-118*	*%REC*	*1*	*13-Jun-2018 06:36*
Surr: 4-Bromofluorobenzene	*100.0*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2018 08:27*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*85-114*	*%REC*	*1*	*13-Jun-2018 06:36*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2018 08:27*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*13-Jun-2018 06:36*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2018 08:27*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*13-Jun-2018 06:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18 24	WorkOrder:HS18060425
Sample ID:	18WW08_060718	Lab ID:HS18060425-07
Collection Date:	07-Jun-2018 12:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	12-Jun-2018 19:25
Surr: 2-Fluorobiphenyl	*87.7*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 19:25*
Surr: 4-Terphenyl-d14	*70.8*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 19:25*
Surr: Nitrobenzene-d5	*42.9*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 19:25*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW09_060718
Collection Date: 07-Jun-2018 13:40

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 11-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	12-Jun-2018 19:45
Surr: 2-Fluorobiphenyl	*72.4*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 19:45*
Surr: 4-Terphenyl-d14	*65.1*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 19:45*
Surr: Nitrobenzene-d5	*50.7*			**0**	*40-140*	*%REC*	*1*	*12-Jun-2018 19:45*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 12-Jun-2018		Analyst: JDE
Aluminum	**1.71**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	13-Jun-2018 13:26
Antimony	**0.00153**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:26
Arsenic	**0.00741**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:26
Barium	**0.293**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:26
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:26
Cadmium	**0.000617**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:26
Calcium	**19.2**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	13-Jun-2018 13:26
Chromium	**0.0417**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	13-Jun-2018 13:26
Cobalt	**0.00287**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:26
Copper	**0.00262**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	13-Jun-2018 13:26
Iron	**45.1**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:26
Lead	**0.00192**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 14:22
Magnesium	**10.3**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:26
Manganese	**0.874**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:26
Nickel	**0.0403**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	13-Jun-2018 13:26
Potassium	**3.16**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:26
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	13-Jun-2018 13:26
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:26
Sodium	**38.5**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	13-Jun-2018 13:26
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	13-Jun-2018 13:26
Vanadium	**0.00666**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	13-Jun-2018 13:26
Zinc	**0.0128**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	13-Jun-2018 13:26
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 13:09
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank ALS-051618-51
Collection Date: 07-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060425
Lab ID:HS18060425-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 23:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	11-Jun-2018 23:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	11-Jun-2018 23:50
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 23:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	11-Jun-2018 23:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

ANALYTICAL REPORT

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 WorkOrder:HS18060425
Sample ID: Trip Blank ALS-051618-51 Lab ID:HS18060425-09
Collection Date: 07-Jun-2018 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	11-Jun-2018 23:50
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	11-Jun-2018 23:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	11-Jun-2018 23:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	11-Jun-2018 23:50
Surr: 1,2-Dichloroethane-d4	*83.3*			**0**	*81-118*	*%REC*	*1*	*11-Jun-2018 23:50*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*11-Jun-2018 23:50*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*11-Jun-2018 23:50*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*11-Jun-2018 23:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

Batch ID: 129262 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060425-01	1	1000	1 (mL)	0.001
HS18060425-02	1	1000	1 (mL)	0.001
HS18060425-03	1	1000	1 (mL)	0.001
HS18060425-04	1	1000	1 (mL)	0.001
HS18060425-07	1	1000	1 (mL)	0.001
HS18060425-08	1	1000	1 (mL)	0.001

Batch ID: 129290 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060425-01	1	10	10 (mL)	1
HS18060425-05	1	10	10 (mL)	1
HS18060425-08	1	10	10 (mL)	1

Batch ID: 129423 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060425-01	1	10 (mL)	10 (mL)	1
HS18060425-05	1	10 (mL)	10 (mL)	1
HS18060425-08	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129262	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060425-01	18CPTMW04SW_060718	07 Jun 2018 08:20		11 Jun 2018 15:42	12 Jun 2018 18:02	1
HS18060425-02	18CPTMW04_060718	07 Jun 2018 09:10		11 Jun 2018 15:42	13 Jun 2018 12:10	10
HS18060425-03	18CPTMW04_060718_a	07 Jun 2018 09:10		11 Jun 2018 15:42	13 Jun 2018 12:30	10
HS18060425-04	18CPTMW06_060718	07 Jun 2018 10:10		11 Jun 2018 15:42	13 Jun 2018 12:50	5
HS18060425-07	18WW08_060718	07 Jun 2018 12:45		11 Jun 2018 15:42	12 Jun 2018 19:25	1
HS18060425-08	18WW09_060718	07 Jun 2018 13:40		11 Jun 2018 15:42	12 Jun 2018 19:45	1
Batch ID 129290	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060425-01	18CPTMW04SW_060718	07 Jun 2018 08:20		12 Jun 2018 11:00	13 Jun 2018 13:11	1
HS18060425-05	MW22_060718	07 Jun 2018 11:00		12 Jun 2018 11:00	13 Jun 2018 16:08	10
HS18060425-05	MW22_060718	07 Jun 2018 11:00		12 Jun 2018 11:00	13 Jun 2018 13:13	1
HS18060425-08	18WW09_060718	07 Jun 2018 13:40		12 Jun 2018 11:00	13 Jun 2018 14:22	1
HS18060425-08	18WW09_060718	07 Jun 2018 13:40		12 Jun 2018 11:00	13 Jun 2018 13:26	1
Batch ID 129423	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060425-01	18CPTMW04SW_060718	07 Jun 2018 08:20		15 Jun 2018 08:36	15 Jun 2018 13:04	1
HS18060425-05	MW22_060718	07 Jun 2018 11:00		15 Jun 2018 08:36	15 Jun 2018 12:49	1
HS18060425-08	18WW09_060718	07 Jun 2018 13:40		15 Jun 2018 08:36	15 Jun 2018 13:09	1
Batch ID R317765	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060425-05	MW22_060718	07 Jun 2018 11:00			11 Jun 2018 13:13	1
Batch ID R317791	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060425-09	Trip Blank ALS-051618-51	07 Jun 2018 00:00			11 Jun 2018 23:50	1
Batch ID R317791	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060425-01	18CPTMW04SW_060718	07 Jun 2018 08:20			12 Jun 2018 06:48	1
HS18060425-02	18CPTMW04_060718	07 Jun 2018 09:10			12 Jun 2018 07:13	1
HS18060425-03	18CPTMW04_060718_a	07 Jun 2018 09:10			12 Jun 2018 07:37	1
HS18060425-06	MW18_060718	07 Jun 2018 11:55			12 Jun 2018 08:02	1
HS18060425-07	18WW08_060718	07 Jun 2018 12:45			12 Jun 2018 08:27	1
Batch ID R317857	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060425-02	18CPTMW04_060718	07 Jun 2018 09:10			12 Jun 2018 19:17	10
HS18060425-03	18CPTMW04_060718_a	07 Jun 2018 09:10			12 Jun 2018 19:44	10
Batch ID R317886	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060425-04	18CPTMW06_060718	07 Jun 2018 10:10			13 Jun 2018 05:47	1
HS18060425-05	MW22_060718	07 Jun 2018 11:00			13 Jun 2018 07:03	5
HS18060425-06	MW18_060718	07 Jun 2018 11:55			13 Jun 2018 06:11	1
HS18060425-07	18WW08_060718	07 Jun 2018 12:45			13 Jun 2018 06:36	1

Revision:1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318532	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060425-01	18CPTMW04SW_060718	07 Jun 2018 08:20			25 Jun 2018 09:39	1
HS18060425-02	18CPTMW04_060718	07 Jun 2018 09:10			25 Jun 2018 09:39	1
HS18060425-03	18CPTMW04_060718_a	07 Jun 2018 09:10			25 Jun 2018 09:39	1
HS18060425-04	18CPTMW06_060718	07 Jun 2018 10:10			25 Jun 2018 09:39	1
HS18060425-05	MW22_060718	07 Jun 2018 11:00			25 Jun 2018 09:39	1
HS18060425-06	MW18_060718	07 Jun 2018 11:55			25 Jun 2018 09:39	1
HS18060425-07	18WW08_060718	07 Jun 2018 12:45			25 Jun 2018 09:39	1
HS18060425-08	18WW09_060718	07 Jun 2018 13:40			25 Jun 2018 09:39	1

Revision:1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129290** Units: **mg/L** Analysis Date: **13-Jun-2018 12:59**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599057** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004852	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01545	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.05673	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129290** Units: **mg/L** Analysis Date: **13-Jun-2018 13:00**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4599058** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.0965	0.0100	0.1	0	96.5	80 - 120				
Antimony	0.05107	0.00200	0.05	0	102	80 - 120				
Arsenic	0.04684	0.00200	0.05	0	93.7	80 - 120				
Barium	0.04582	0.00400	0.05	0	91.6	80 - 120				
Beryllium	0.04837	0.00200	0.05	0	96.7	80 - 120				
Cadmium	0.04654	0.00200	0.05	0	93.1	80 - 120				
Calcium	4.684	0.500	5	0	93.7	80 - 120				
Chromium	0.04987	0.00400	0.05	0	99.7	80 - 120				
Cobalt	0.05057	0.00500	0.05	0	101	80 - 120				
Copper	0.05082	0.00200	0.05	0	102	80 - 120				
Iron	4.967	0.200	5	0	99.3	80 - 120				
Magnesium	4.393	0.200	5	0	87.9	80 - 120				
Manganese	0.0496	0.00500	0.05	0	99.2	80 - 120				
Nickel	0.05056	0.00200	0.05	0	101	80 - 120				
Potassium	4.614	0.200	5	0	92.3	80 - 120				
Selenium	0.04802	0.00200	0.05	0	96.0	80 - 120				
Silver	0.04722	0.00200	0.05	0	94.4	80 - 120				
Sodium	4.975	0.200	5	0	99.5	80 - 120				
Thallium	0.04184	0.00200	0.05	0	83.7	80 - 120				
Vanadium	0.0471	0.00500	0.05	0	94.2	80 - 120				
Zinc	0.05041	0.00400	0.05	0	101	80 - 120				

LCS Sample ID: **LCS-129290** Units: **mg/L** Analysis Date: **13-Jun-2018 14:14**
Client ID: Run ID: **ICPMS05_317864** SeqNo: **4607527** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0504	0.00200	0.05	0	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060425-05MS** Units: **mg/L** Analysis Date: **13-Jun-2018 13:17**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4599066** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.107	0.0100	0.1	0.01388	93.2	80 - 120				
Antimony	0.0508	0.00200	0.05	-0.000122	102	80 - 120				
Arsenic	0.04927	0.00200	0.05	0.000914	96.7	80 - 120				
Barium	1.103	0.00400	0.05	1.001	204	80 - 120				SO
Beryllium	0.05509	0.00200	0.05	-0.000002	110	80 - 120				
Cadmium	0.04899	0.00200	0.05	0.001283	95.4	80 - 120				
Calcium	110.9	0.500	5	107.1	75.2	80 - 120				SO
Chromium	0.2159	0.00400	0.05	0.1811	69.6	80 - 120				S
Cobalt	0.05472	0.00500	0.05	0.005309	98.8	80 - 120				
Copper	0.05143	0.00200	0.05	0.003655	95.5	80 - 120				
Iron	5.74	0.200	5	0.8723	97.4	80 - 120				
Magnesium	36.92	0.200	5	31.86	101	80 - 120				O
Manganese	0.1232	0.00500	0.05	0.07445	97.5	80 - 120				
Nickel	0.3699	0.00200	0.05	0.3205	98.7	80 - 120				O
Potassium	6.972	0.200	5	2.259	94.3	80 - 120				
Selenium	0.04795	0.00200	0.05	0.001043	93.8	80 - 120				
Silver	0.04517	0.00200	0.05	0.000004	90.3	80 - 120				
Sodium	396.4	0.200	5	385.5	219	80 - 120				SEO
Thallium	0.04353	0.00200	0.05	0.000014	87.0	80 - 120				
Vanadium	0.05274	0.00500	0.05	0.002425	101	80 - 120				
Zinc	0.06201	0.00400	0.05	0.01255	98.9	80 - 120				

MS Sample ID: **HS18060425-05MS** Units: **mg/L** Analysis Date: **13-Jun-2018 14:16**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4603336** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04461	0.00200	0.05	0.000074	89.1	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060425-05MSD** Units: **mg/L** Analysis Date: **13-Jun-2018 13:22**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4599069** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1051	0.0100	0.1	0.01388	91.2	80 - 120	0.1008	4.22	20	
Antimony	0.05005	0.00200	0.05	-0.000122	100	80 - 120	0.04901	2.1	20	
Arsenic	0.04804	0.00200	0.05	0.000914	94.3	80 - 120	0.04842	0.771	20	
Barium	1.087	0.00400	0.05	1.001	172	80 - 120	1.058	2.71	20	SO
Beryllium	0.053	0.00200	0.05	-0.000002	106	80 - 120	0.05999	12.4	20	
Cadmium	0.0472	0.00200	0.05	0.001283	91.8	80 - 120	0.04907	3.88	20	
Calcium	109.8	0.500	5	107.1	53.8	80 - 120	110.8	0.89	20	SO
Chromium	0.1971	0.00400	0.05	0.1811	32.1	80 - 120	0.212	7.29	20	S
Cobalt	0.05359	0.00500	0.05	0.005309	96.6	80 - 120	0.05475	2.14	20	
Copper	0.05061	0.00200	0.05	0.003655	93.9	80 - 120	0.05126	1.28	20	
Iron	5.642	0.200	5	0.8723	95.4	80 - 120	5.72	1.36	20	
Magnesium	35.14	0.200	5	31.86	65.7	80 - 120	33.23	5.6	20	SO
Manganese	0.122	0.00500	0.05	0.07445	95.0	80 - 120	0.1208	0.913	20	
Nickel	0.3697	0.00200	0.05	0.3205	98.3	80 - 120	0.3727	0.828	20	O
Potassium	6.771	0.200	5	2.259	90.2	80 - 120	6.859	1.28	20	
Selenium	0.04763	0.00200	0.05	0.001043	93.2	80 - 120	0.0504	5.66	20	
Silver	0.04524	0.00200	0.05	0.000004	90.5	80 - 120	0.04616	1.99	20	
Sodium	390.2	0.200	5	385.5	94.8	80 - 120	392.2	0.505	20	EO
Thallium	0.04066	0.00200	0.05	0.000014	81.3	80 - 120	0.04508	10.3	20	
Vanadium	0.05075	0.00500	0.05	0.002425	96.6	80 - 120	0.05002	1.45	20	
Zinc	0.0603	0.00400	0.05	0.01255	95.5	80 - 120	0.06194	2.69	20	

MSD Sample ID: **HS18060425-05MSD** Units: **mg/L** Analysis Date: **13-Jun-2018 14:18**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4603337** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04266	0.00200	0.05	0.000074	85.2	80 - 120	0.04461	4.47	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129290 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060425-05PDS** Units: **mg/L** Analysis Date: **13-Jun-2018 13:24**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4599070** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1042	0.0100	0.1	0.01388	90.3	75 - 125				
Antimony	0.08976	0.00200	0.1	-0.000122	89.9	75 - 125				
Arsenic	0.09501	0.00200	0.1	0.000914	94.1	75 - 125				
Barium	1.035	0.00400	0.1	1.001	34.3	75 - 125				SO
Beryllium	0.106	0.00200	0.1	-0.000002	106	75 - 125				
Cadmium	0.09231	0.00200	0.1	0.001283	91.0	75 - 125				
Calcium	103.7	0.500	10	107.1	-34.4	75 - 125				SO
Chromium	0.262	0.00400	0.1	0.1811	80.9	75 - 125				
Cobalt	0.1008	0.00500	0.1	0.005309	95.5	75 - 125				
Copper	0.09622	0.00200	0.1	0.003655	92.6	75 - 125				
Iron	10.21	0.200	10	0.8723	93.4	75 - 125				
Manganese	0.1608	0.00500	0.1	0.07445	86.3	75 - 125				
Potassium	11.1	0.200	10	2.259	88.4	75 - 125				
Selenium	0.0938	0.00200	0.1	0.001043	92.8	75 - 125				
Silver	0.08871	0.00200	0.1	0.000004	88.7	75 - 125				
Thallium	0.09138	0.00200	0.1	0.000014	91.4	75 - 125				
Vanadium	0.09743	0.00500	0.1	0.002425	95.0	75 - 125				
Zinc	0.1073	0.00400	0.1	0.01255	94.7	75 - 125				

PDS Sample ID: **HS18060425-05PDS** Units: **mg/L** Analysis Date: **13-Jun-2018 14:20**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4603338** PrepDate: **12-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.08691	0.00200	0.1	0.000074	86.8	75 - 125				

PDS Sample ID: **HS18060425-05PDS** Units: **mg/L** Analysis Date: **13-Jun-2018 16:12**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4607700** PrepDate: **12-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Magnesium	125.8	2.00	100	32.54	93.2	75 - 125				
Sodium	469.2	2.00	100	378.1	91.1	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129290 **Instrument:** ICPMS05 **Method:** SW6020

SD Sample ID: **HS18060425-05SD** Units: **mg/L** Analysis Date: **13-Jun-2018 13:15**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4599065** PrepDate: **12-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02764	0.0500					0.01388	0	10	J
Antimony	0.00500	0.0100					-0.000122	0	10	U
Arsenic	0.00500	0.0100					0.000914	0	10	U
Barium	0.9958	0.0200					1.001	0.494	10	
Beryllium	0.00500	0.0100					-0.000002	0	10	U
Cadmium	0.001243	0.0100					0.001283	0	10	J
Calcium	106.4	2.50					107.1	0.63	10	
Chromium	0.1757	0.0200					0.1811	2.99	10	
Cobalt	0.005519	0.0250					0.005309	0	10	J
Copper	0.0100	0.0100					0.003655	0	10	U
Iron	0.8731	1.00					0.8723	0	10	J
Lead	0.00500	0.0100					0.000074	0	10	U
Manganese	0.07318	0.0250					0.07445	1.7	10	
Nickel	0.3236	0.0100					0.3205	0.967	10	
Potassium	2.071	1.00					2.259	8.32	10	
Selenium	0.0100	0.0100					0.001043	0	10	U
Silver	0.00500	0.0100					0.000004	0	10	U
Sodium	385.8	1.00					385.5	0.086	10	
Thallium	0.00500	0.0100					0.000014	0	10	U
Vanadium	0.009362	0.0250					0.002425	0	10	J
Zinc	0.01449	0.0200					0.01255	0	10	J

SD Sample ID: **HS18060425-05SD** Units: **mg/L** Analysis Date: **13-Jun-2018 16:10**
Client ID: **MW22_060718** Run ID: **ICPMS05_317864** SeqNo: **4607699** PrepDate: **12-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Magnesium	31.1	10.0					32.54	4.4	10	

The following samples were analyzed in this batch: HS18060425-01 HS18060425-05 HS18060425-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129423 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129423** Units: **mg/L** Analysis Date: **15-Jun-2018 12:40**
Client ID: Run ID: **HG03_318037** SeqNo: **4611333** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129423** Units: **mg/L** Analysis Date: **15-Jun-2018 12:42**
Client ID: Run ID: **HG03_318037** SeqNo: **4611334** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00481	0.000200	0.005	0	96.2	80 - 120				

MS Sample ID: **HS18060425-05MS** Units: **mg/L** Analysis Date: **15-Jun-2018 12:50**
Client ID: **MW22_060718** Run ID: **HG03_318037** SeqNo: **4611339** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00465	0.000200	0.005	0.000005	92.9	75 - 125				

MSD Sample ID: **HS18060425-05MSD** Units: **mg/L** Analysis Date: **15-Jun-2018 12:52**
Client ID: **MW22_060718** Run ID: **HG03_318037** SeqNo: **4611340** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00465	0.000200	0.005	0.000005	92.9	75 - 125	0.00465	0	20	

The following samples were analyzed in this batch: HS18060425-01 HS18060425-05 HS18060425-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: 129262 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129262** Units: **ug/L** Analysis Date: **12-Jun-2018 14:57**
Client ID: Run ID: **SV-5_317937** SeqNo: **4608593** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.09698*	*0*	*0.08*	*0*	*121*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.05382*	*0*	*0.08*	*0*	*67.3*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04298*	*0*	*0.08*	*0*	*53.7*	*40 - 140*				

LCS Sample ID: **LCS-129262** Units: **ug/L** Analysis Date: **12-Jun-2018 15:17**
Client ID: Run ID: **SV-5_317937** SeqNo: **4608594** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.04247	0.010	0.08	0	53.1	40 - 140				
Surr: 2-Fluorobiphenyl	*0.07214*	*0*	*0.08*	*0*	*90.2*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.0536*	*0*	*0.08*	*0*	*67.0*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.03722*	*0*	*0.08*	*0*	*46.5*	*40 - 140*				

LCSD Sample ID: **LCSD-129262** Units: **ug/L** Analysis Date: **12-Jun-2018 15:38**
Client ID: Run ID: **SV-5_317937** SeqNo: **4608595** PrepDate: **11-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.04608	0.010	0.08	0	57.6	40 - 140	0.04247	8.16	20	
Surr: 2-Fluorobiphenyl	*0.1299*	*0*	*0.08*	*0*	*162*	*40 - 140*	*0.07214*	*57.1*	*20*	SR
Surr: 4-Terphenyl-d14	*0.05436*	*0*	*0.08*	*0*	*68.0*	*40 - 140*	*0.0536*	*1.41*	*20*	
Surr: Nitrobenzene-d5	*0.0797*	*0*	*0.08*	*0*	*99.6*	*40 - 140*	*0.03722*	*72.7*	*20*	R

The following samples were analyzed in this batch: HS18060425-01 HS18060425-02 HS18060425-03 HS18060425-04 HS18060425-07 HS18060425-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317765** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **MBLK-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 11:56**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317765** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **MBLK-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 11:56**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.95*	*1.0*	*50*	*0*	*83.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.08*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*55.89*	*1.0*	*50*	*0*	*112*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 10:41**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.47	1.0	50	0	88.9	78 - 124				
1,1,1-Trichloroethane	42.41	1.0	50	0	84.8	74 - 131				
1,1,2,2-Tetrachloroethane	41.08	1.0	50	0	82.2	71 - 121				
1,1,2-Trichloroethane	44.55	1.0	50	0	89.1	80 - 119				
1,1-Dichloroethane	44.32	1.0	50	0	88.6	77 - 125				
1,1-Dichloroethene	41.04	1.0	50	0	82.1	71 - 131				
1,1-Dichloropropene	39.7	1.0	50	0	79.4	78 - 125				
1,2,3-Trichlorobenzene	41.72	1.0	50	0	83.4	69 - 129				
1,2,3-Trichloropropane	42.52	1.0	50	0	85.0	73 - 122				
1,2,4-Trichlorobenzene	41.74	1.0	50	0	83.5	69 - 130				
1,2,4-Trimethylbenzene	38.58	1.0	50	0	77.2	76 - 124				
1,2-Dibromo-3-chloropropane	44.48	1.0	50	0	89.0	62 - 128				
1,2-Dibromoethane	46.52	1.0	50	0	93.0	77 - 121				
1,2-Dichlorobenzene	41.21	1.0	50	0	82.4	80 - 119				
1,2-Dichloroethane	46.23	1.0	50	0	92.5	73 - 128				
1,2-Dichloropropane	43.53	1.0	50	0	87.1	78 - 122				
1,3,5-Trimethylbenzene	46.26	1.0	50	0	92.5	75 - 124				
1,3-Dichlorobenzene	41.14	1.0	50	0	82.3	80 - 119				
1,3-Dichloropropane	44.8	1.0	50	0	89.6	80 - 119				
1,4-Dichlorobenzene	41.5	1.0	50	0	83.0	79 - 118				
2,2-Dichloropropane	42.66	1.0	50	0	85.3	60 - 139				
2-Butanone	96.07	2.0	100	0	96.1	56 - 143				
2-Chlorotoluene	46.16	1.0	50	0	92.3	79 - 122				
2-Hexanone	93.31	2.0	100	0	93.3	57 - 139				
4-Chlorotoluene	46.34	1.0	50	0	92.7	78 - 122				
4-Isopropyltoluene	38.65	1.0	50	0	77.3	77 - 127				
4-Methyl-2-pentanone	91.96	2.0	100	0	92.0	67 - 130				
Acetone	95.96	2.0	100	0	96.0	39 - 160				
Benzene	43.03	1.0	50	0	86.1	79 - 120				
Bromobenzene	40.35	1.0	50	0	80.7	80 - 120				
Bromochloromethane	47	1.0	50	0	94.0	78 - 123				
Bromodichloromethane	45.61	1.0	50	0	91.2	79 - 125				
Bromoform	47.15	1.0	50	0	94.3	66 - 130				
Bromomethane	45.86	1.0	50	0	91.7	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317765 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 10:41**
Client ID: Run ID: **VOA2_317765** SeqNo: **4596445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	85.51	2.0	100	0	85.5	64 - 133				
Carbon tetrachloride	45.55	1.0	50	0	91.1	72 - 136				
Chlorobenzene	42.9	1.0	50	0	85.8	82 - 118				
Chloroethane	49.27	1.0	50	0	98.5	60 - 138				
Chloroform	42.83	1.0	50	0	85.7	79 - 124				
Chloromethane	38.58	1.0	50	0	77.2	50 - 139				
cis-1,2-Dichloroethene	44.33	1.0	50	0	88.7	78 - 123				
cis-1,3-Dichloropropene	47.65	1.0	50	0	95.3	75 - 124				
Dibromochloromethane	45.88	1.0	50	0	91.8	74 - 126				
Dibromomethane	48.7	1.0	50	0	97.4	79 - 123				
Dichlorodifluoromethane	43.65	1.0	50	0	87.3	32 - 152				
Ethylbenzene	41.4	1.0	50	0	82.8	79 - 121				
Hexachlorobutadiene	38.41	1.0	50	0	76.8	66 - 134				
Isopropylbenzene	41.53	1.0	50	0	83.1	72 - 131				
m,p-Xylene	81.88	2.0	100	0	81.9	80 - 121				
Methylene chloride	41.7	2.0	50	0	83.4	74 - 124				
Naphthalene	45.21	1.0	50	0	90.4	61 - 128				
n-Butylbenzene	41.35	1.0	50	0	82.7	75 - 128				
n-Propylbenzene	45.23	1.0	50	0	90.5	76 - 126				
o-Xylene	42.49	1.0	50	0	85.0	78 - 122				
sec-Butylbenzene	39.7	1.0	50	0	79.4	77 - 126				
Styrene	44.74	1.0	50	0	89.5	78 - 123				
tert-Butylbenzene	44.35	1.0	50	0	88.7	78 - 124				
Tetrachloroethene	40.27	1.0	50	0	80.5	74 - 129				
Toluene	41.42	1.0	50	0	82.8	80 - 121				
trans-1,2-Dichloroethene	43.86	1.0	50	0	87.7	75 - 124				
trans-1,3-Dichloropropene	49.49	1.0	50	0	99.0	73 - 127				
Trichlorofluoromethane	41.14	1.0	50	0	82.3	65 - 141				
Vinyl chloride	42.43	1.0	50	0	84.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*42.53*	*1.0*	*50*	*0*	*85.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.24*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.05*	*1.0*	*50*	*0*	*96.1*	*80 - 119*				
Surr: Toluene-d8	*53.64*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317765** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060425-05MS** Units: **ug/L** Analysis Date: **11-Jun-2018 15:24**
Client ID: **MW22_060718** Run ID: **VOA2_317765** SeqNo: **4596454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.93	1.0	50	0	87.9	78 - 124				
1,1,1-Trichloroethane	42.93	1.0	50	0	85.9	74 - 131				
1,1,2,2-Tetrachloroethane	39.98	1.0	50	0	80.0	71 - 121				
1,1,2-Trichloroethane	43.23	1.0	50	0	86.5	80 - 119				
1,1-Dichloroethane	43.07	1.0	50	0	86.1	77 - 125				
1,1-Dichloroethene	40.9	1.0	50	0	81.8	71 - 131				
1,1-Dichloropropene	39.89	1.0	50	0	79.8	78 - 125				
1,2,3-Trichlorobenzene	40.3	1.0	50	0	80.6	69 - 129				
1,2,3-Trichloropropane	41.79	1.0	50	0	83.6	73 - 122				
1,2,4-Trichlorobenzene	39.47	1.0	50	0	78.9	69 - 130				
1,2,4-Trimethylbenzene	37.9	1.0	50	0	75.8	76 - 124				S
1,2-Dibromo-3-chloropropane	45.17	1.0	50	0	90.3	62 - 128				
1,2-Dibromoethane	45.28	1.0	50	0	90.6	77 - 121				
1,2-Dichlorobenzene	39.89	1.0	50	0	79.8	80 - 119				S
1,2-Dichloroethane	48.69	1.0	50	4.653	88.1	73 - 128				
1,2-Dichloropropane	42.49	1.0	50	0	85.0	78 - 122				
1,3,5-Trimethylbenzene	45.64	1.0	50	0	91.3	75 - 124				
1,3-Dichlorobenzene	39.68	1.0	50	0	79.4	80 - 119				S
1,3-Dichloropropane	43.85	1.0	50	0	87.7	80 - 119				
1,4-Dichlorobenzene	39.48	1.0	50	0	79.0	79 - 118				S
2,2-Dichloropropane	40.48	1.0	50	0	81.0	60 - 139				
2-Butanone	101.4	2.0	100	0	101	56 - 143				
2-Chlorotoluene	44.65	1.0	50	0	89.3	79 - 122				
2-Hexanone	105.1	2.0	100	0	105	57 - 139				
4-Chlorotoluene	45.17	1.0	50	0	90.3	78 - 122				
4-Isopropyltoluene	38.3	1.0	50	0	76.6	77 - 127				S
4-Methyl-2-pentanone	95.38	2.0	100	0	95.4	67 - 130				
Acetone	91.57	2.0	100	0	91.6	39 - 160				
Benzene	42.11	1.0	50	0.2869	83.7	79 - 120				
Bromobenzene	38.37	1.0	50	0	76.7	80 - 120				S
Bromochloromethane	45.62	1.0	50	0	91.2	78 - 123				
Bromodichloromethane	44.24	1.0	50	0	88.5	79 - 125				
Bromoform	45.84	1.0	50	0	91.7	66 - 130				
Bromomethane	39.22	1.0	50	0	78.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317765** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060425-05MS** Units: **ug/L** Analysis Date: **11-Jun-2018 15:24**
Client ID: **MW22_060718** Run ID: **VOA2_317765** SeqNo: **4596454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	84.49	2.0	100	0	84.5	64 - 133				
Carbon tetrachloride	45.38	1.0	50	0	90.8	72 - 136				
Chlorobenzene	41.93	1.0	50	0	83.9	82 - 118				
Chloroethane	45.24	1.0	50	0	90.5	60 - 138				
Chloroform	44.29	1.0	50	2.642	83.3	79 - 124				
Chloromethane	34.69	1.0	50	0	69.4	50 - 139				
cis-1,2-Dichloroethene	46.47	1.0	50	3.033	86.9	78 - 123				
cis-1,3-Dichloropropene	45.28	1.0	50	0	90.6	75 - 124				
Dibromochloromethane	44.65	1.0	50	0	89.3	74 - 126				
Dibromomethane	46.83	1.0	50	0	93.7	79 - 123				
Dichlorodifluoromethane	31.69	1.0	50	0	63.4	32 - 152				
Ethylbenzene	41.92	1.0	50	0	83.8	79 - 121				
Hexachlorobutadiene	37.55	1.0	50	0	75.1	66 - 134				
Isopropylbenzene	42.23	1.0	50	0	84.5	72 - 131				
m,p-Xylene	82.06	2.0	100	0	82.1	80 - 121				
Methylene chloride	40.47	2.0	50	0	80.9	74 - 124				
Naphthalene	43.22	1.0	50	0	86.4	61 - 128				
n-Butylbenzene	40.44	1.0	50	0	80.9	75 - 128				
n-Propylbenzene	45.44	1.0	50	0	90.9	76 - 126				
o-Xylene	42.15	1.0	50	0	84.3	78 - 122				
sec-Butylbenzene	38.23	1.0	50	0	76.5	77 - 126				S
Styrene	43.35	1.0	50	0	86.7	78 - 123				
tert-Butylbenzene	44.62	1.0	50	0	89.2	78 - 124				
Tetrachloroethene	41.38	1.0	50	0	82.8	74 - 129				
Toluene	40.95	1.0	50	0	81.9	80 - 121				
trans-1,2-Dichloroethene	41.96	1.0	50	0	83.9	75 - 124				
trans-1,3-Dichloropropene	47.02	1.0	50	0	94.0	73 - 127				
Trichlorofluoromethane	40.05	1.0	50	0	80.1	65 - 141				
Vinyl chloride	40.28	1.0	50	0	80.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.24*	*1.0*	*50*	*0*	*86.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.38*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*47.69*	*1.0*	*50*	*0*	*95.4*	*80 - 119*				
Surr: Toluene-d8	*53.41*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317765 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS18060425-05MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 15:50**
Client ID: **MW22_060718** Run ID: **VOA2_317765** SeqNo: **4596455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.32	1.0	50	0	86.6	78 - 124	43.93	1.41	20	
1,1,1-Trichloroethane	42.25	1.0	50	0	84.5	74 - 131	42.93	1.6	20	
1,1,2,2-Tetrachloroethane	40.91	1.0	50	0	81.8	71 - 121	39.98	2.3	20	
1,1,2-Trichloroethane	43.38	1.0	50	0	86.8	80 - 119	43.23	0.345	20	
1,1-Dichloroethane	42.58	1.0	50	0	85.2	77 - 125	43.07	1.14	20	
1,1-Dichloroethene	39.53	1.0	50	0	79.1	71 - 131	40.9	3.4	20	
1,1-Dichloropropene	39.19	1.0	50	0	78.4	78 - 125	39.89	1.76	20	
1,2,3-Trichlorobenzene	42.19	1.0	50	0	84.4	69 - 129	40.3	4.58	20	
1,2,3-Trichloropropane	42.24	1.0	50	0	84.5	73 - 122	41.79	1.08	20	
1,2,4-Trichlorobenzene	40.97	1.0	50	0	81.9	69 - 130	39.47	3.73	20	
1,2,4-Trimethylbenzene	38.26	1.0	50	0	76.5	76 - 124	37.9	0.926	20	
1,2-Dibromo-3-chloropropane	47.66	1.0	50	0	95.3	62 - 128	45.17	5.36	20	
1,2-Dibromoethane	45.03	1.0	50	0	90.1	77 - 121	45.28	0.564	20	
1,2-Dichlorobenzene	40.02	1.0	50	0	80.0	80 - 119	39.89	0.341	20	
1,2-Dichloroethane	49.11	1.0	50	4.653	88.9	73 - 128	48.69	0.862	20	
1,2-Dichloropropane	41.69	1.0	50	0	83.4	78 - 122	42.49	1.9	20	
1,3,5-Trimethylbenzene	45.55	1.0	50	0	91.1	75 - 124	45.64	0.196	20	
1,3-Dichlorobenzene	39.74	1.0	50	0	79.5	80 - 119	39.68	0.16	20	S
1,3-Dichloropropane	43.23	1.0	50	0	86.5	80 - 119	43.85	1.42	20	
1,4-Dichlorobenzene	40.14	1.0	50	0	80.3	79 - 118	39.48	1.66	20	
2,2-Dichloropropane	40.05	1.0	50	0	80.1	60 - 139	40.48	1.06	20	
2-Butanone	101.8	2.0	100	0	102	56 - 143	101.4	0.369	20	
2-Chlorotoluene	45.25	1.0	50	0	90.5	79 - 122	44.65	1.34	20	
2-Hexanone	107.1	2.0	100	0	107	57 - 139	105.1	1.89	20	
4-Chlorotoluene	45.51	1.0	50	0	91.0	78 - 122	45.17	0.741	20	
4-Isopropyltoluene	38.58	1.0	50	0	77.2	77 - 127	38.3	0.739	20	
4-Methyl-2-pentanone	97.45	2.0	100	0	97.5	67 - 130	95.38	2.15	20	
Acetone	94.43	2.0	100	0	94.4	39 - 160	91.57	3.07	20	
Benzene	41.53	1.0	50	0.2869	82.5	79 - 120	42.11	1.39	20	
Bromobenzene	39.4	1.0	50	0	78.8	80 - 120	38.37	2.64	20	S
Bromochloromethane	45.73	1.0	50	0	91.5	78 - 123	45.62	0.245	20	
Bromodichloromethane	43.63	1.0	50	0	87.3	79 - 125	44.24	1.39	20	
Bromoform	46.15	1.0	50	0	92.3	66 - 130	45.84	0.691	20	
Bromomethane	39.47	1.0	50	0	78.9	53 - 141	39.22	0.623	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317765 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS18060425-05MSD** Units: **ug/L** Analysis Date: **11-Jun-2018 15:50**
Client ID: **MW22_060718** Run ID: **VOA2_317765** SeqNo: **4596455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	83.96	2.0	100	0	84.0	64 - 133	84.49	0.624	20	
Carbon tetrachloride	44.43	1.0	50	0	88.9	72 - 136	45.38	2.11	20	
Chlorobenzene	41.47	1.0	50	0	82.9	82 - 118	41.93	1.09	20	
Chloroethane	43.01	1.0	50	0	86.0	60 - 138	45.24	5.04	20	
Chloroform	43.9	1.0	50	2.642	82.5	79 - 124	44.29	0.88	20	
Chloromethane	33.97	1.0	50	0	67.9	50 - 139	34.69	2.09	20	
cis-1,2-Dichloroethene	45.81	1.0	50	3.033	85.6	78 - 123	46.47	1.42	20	
cis-1,3-Dichloropropene	45.4	1.0	50	0	90.8	75 - 124	45.28	0.26	20	
Dibromochloromethane	44.22	1.0	50	0	88.4	74 - 126	44.65	0.969	20	
Dibromomethane	47.06	1.0	50	0	94.1	79 - 123	46.83	0.491	20	
Dichlorodifluoromethane	30.37	1.0	50	0	60.7	32 - 152	31.69	4.24	20	
Ethylbenzene	40.95	1.0	50	0	81.9	79 - 121	41.92	2.34	20	
Hexachlorobutadiene	38.55	1.0	50	0	77.1	66 - 134	37.55	2.61	20	
Isopropylbenzene	41.66	1.0	50	0	83.3	72 - 131	42.23	1.36	20	
m,p-Xylene	81.38	2.0	100	0	81.4	80 - 121	82.06	0.832	20	
Methylene chloride	39.9	2.0	50	0	79.8	74 - 124	40.47	1.43	20	
Naphthalene	46.17	1.0	50	0	92.3	61 - 128	43.22	6.6	20	
n-Butylbenzene	40.86	1.0	50	0	81.7	75 - 128	40.44	1.03	20	
n-Propylbenzene	45.28	1.0	50	0	90.6	76 - 126	45.44	0.354	20	
o-Xylene	41.34	1.0	50	0	82.7	78 - 122	42.15	1.94	20	
sec-Butylbenzene	38.27	1.0	50	0	76.5	77 - 126	38.23	0.0876	20	S
Styrene	43	1.0	50	0	86.0	78 - 123	43.35	0.794	20	
tert-Butylbenzene	44.28	1.0	50	0	88.6	78 - 124	44.62	0.776	20	
Tetrachloroethene	40.43	1.0	50	0	80.9	74 - 129	41.38	2.32	20	
Toluene	40.39	1.0	50	0	80.8	80 - 121	40.95	1.36	20	
trans-1,2-Dichloroethene	42.68	1.0	50	0	85.4	75 - 124	41.96	1.7	20	
trans-1,3-Dichloropropene	46.12	1.0	50	0	92.2	73 - 127	47.02	1.94	20	
Trichlorofluoromethane	38.67	1.0	50	0	77.3	65 - 141	40.05	3.52	20	
Vinyl chloride	39.81	1.0	50	0	79.6	58 - 137	40.28	1.16	20	
Surr: 1,2-Dichloroethane-d4	*43.76*	*1.0*	*50*	*0*	*87.5*	*81 - 118*	*43.24*	*1.18*	*20*	
Surr: 4-Bromofluorobenzene	*52.22*	*1.0*	*50*	*0*	*104*	*85 - 114*	*52.38*	*0.307*	*20*	
Surr: Dibromofluoromethane	*47.91*	*1.0*	*50*	*0*	*95.8*	*80 - 119*	*47.69*	*0.453*	*20*	
Surr: Toluene-d8	*53.6*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.41*	*0.351*	*20*	

The following samples were analyzed in this batch: HS18060425-05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317791** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 23:25**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597053** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317791** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 23:25**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597053** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.6*	*1.0*	*50*	*0*	*83.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.65*	*1.0*	*50*	*0*	*99.3*	*85 - 114*				
Surr: Dibromofluoromethane	*50.64*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*53.07*	*1.0*	*50*	*0*	*106*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317791 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 22:35**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.01	1.0	50	0	90.0	78 - 124				
1,1,1-Trichloroethane	45.09	1.0	50	0	90.2	74 - 131				
1,1,2,2-Tetrachloroethane	40.96	1.0	50	0	81.9	71 - 121				
1,1,2-Trichloroethane	45.27	1.0	50	0	90.5	80 - 119				
1,1-Dichloroethane	45.22	1.0	50	0	90.4	77 - 125				
1,1-Dichloroethene	45.71	1.0	50	0	91.4	71 - 131				
1,1-Dichloropropene	42.4	1.0	50	0	84.8	78 - 125				
1,2,3-Trichlorobenzene	43.83	1.0	50	0	87.7	69 - 129				
1,2,3-Trichloropropane	43.53	1.0	50	0	87.1	73 - 122				
1,2,4-Trichlorobenzene	43.93	1.0	50	0	87.9	69 - 130				
1,2,4-Trimethylbenzene	39.84	1.0	50	0	79.7	76 - 124				
1,2-Dibromo-3-chloropropane	45.55	1.0	50	0	91.1	62 - 128				
1,2-Dibromoethane	47.05	1.0	50	0	94.1	77 - 121				
1,2-Dichlorobenzene	42.16	1.0	50	0	84.3	80 - 119				
1,2-Dichloroethane	48.13	1.0	50	0	96.3	73 - 128				
1,2-Dichloropropane	43.56	1.0	50	0	87.1	78 - 122				
1,3,5-Trimethylbenzene	47.78	1.0	50	0	95.6	75 - 124				
1,3-Dichlorobenzene	41.61	1.0	50	0	83.2	80 - 119				
1,3-Dichloropropane	45.25	1.0	50	0	90.5	80 - 119				
1,4-Dichlorobenzene	42.67	1.0	50	0	85.3	79 - 118				
2,2-Dichloropropane	39.39	1.0	50	0	78.8	60 - 139				
2-Butanone	98.4	2.0	100	0	98.4	56 - 143				
2-Chlorotoluene	47.16	1.0	50	0	94.3	79 - 122				
2-Hexanone	93.81	2.0	100	0	93.8	57 - 139				
4-Chlorotoluene	46.96	1.0	50	0	93.9	78 - 122				
4-Isopropyltoluene	41.17	1.0	50	0	82.3	77 - 127				
4-Methyl-2-pentanone	92.9	2.0	100	0	92.9	67 - 130				
Acetone	96.7	2.0	100	0	96.7	39 - 160				
Benzene	43.35	1.0	50	0	86.7	79 - 120				
Bromobenzene	40.63	1.0	50	0	81.3	80 - 120				
Bromochloromethane	47.68	1.0	50	0	95.4	78 - 123				
Bromodichloromethane	45.5	1.0	50	0	91.0	79 - 125				
Bromoform	47.06	1.0	50	0	94.1	66 - 130				
Bromomethane	42.9	1.0	50	0	85.8	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317791** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-180611** Units: **ug/L** Analysis Date: **11-Jun-2018 22:35**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	88.75	2.0	100	0	88.8	64 - 133				
Carbon tetrachloride	48.73	1.0	50	0	97.5	72 - 136				
Chlorobenzene	43.84	1.0	50	0	87.7	82 - 118				
Chloroethane	46.53	1.0	50	0	93.1	60 - 138				
Chloroform	44.02	1.0	50	0	88.0	79 - 124				
Chloromethane	42.4	1.0	50	0	84.8	50 - 139				
cis-1,2-Dichloroethene	46.12	1.0	50	0	92.2	78 - 123				
cis-1,3-Dichloropropene	46.95	1.0	50	0	93.9	75 - 124				
Dibromochloromethane	46.52	1.0	50	0	93.0	74 - 126				
Dibromomethane	49.09	1.0	50	0	98.2	79 - 123				
Dichlorodifluoromethane	44.04	1.0	50	0	88.1	32 - 152				
Ethylbenzene	43.63	1.0	50	0	87.3	79 - 121				
Hexachlorobutadiene	41.99	1.0	50	0	84.0	66 - 134				
Isopropylbenzene	43.98	1.0	50	0	88.0	72 - 131				
m,p-Xylene	84.93	2.0	100	0	84.9	80 - 121				
Methylene chloride	44.47	2.0	50	0	88.9	74 - 124				
Naphthalene	47.38	1.0	50	0	94.8	61 - 128				
n-Butylbenzene	44	1.0	50	0	88.0	75 - 128				
n-Propylbenzene	47.53	1.0	50	0	95.1	76 - 126				
o-Xylene	43.57	1.0	50	0	87.1	78 - 122				
sec-Butylbenzene	41.2	1.0	50	0	82.4	77 - 126				
Styrene	45.15	1.0	50	0	90.3	78 - 123				
tert-Butylbenzene	47.18	1.0	50	0	94.4	78 - 124				
Tetrachloroethene	42.33	1.0	50	0	84.7	74 - 129				
Toluene	42.27	1.0	50	0	84.5	80 - 121				
trans-1,2-Dichloroethene	45.26	1.0	50	0	90.5	75 - 124				
trans-1,3-Dichloropropene	49.83	1.0	50	0	99.7	73 - 127				
Trichloroethene	46.1	1.0	50	0	92.2	79 - 123				
Trichlorofluoromethane	45.49	1.0	50	0	91.0	65 - 141				
Vinyl chloride	43.32	1.0	50	0	86.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.44*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.05*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.33*	*1.0*	*50*	*0*	*96.7*	*80 - 119*				
Surr: Toluene-d8	*50.55*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317791 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18060400-08MS** Units: **ug/L** Analysis Date: **12-Jun-2018 01:53**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597059** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.12	1.0	50	0	86.2	78 - 124				
1,1,1-Trichloroethane	44.77	1.0	50	0	89.5	74 - 131				
1,1,2,2-Tetrachloroethane	37.89	1.0	50	0	75.8	71 - 121				
1,1,2-Trichloroethane	42.05	1.0	50	0	84.1	80 - 119				
1,1-Dichloroethane	43.48	1.0	50	0	87.0	77 - 125				
1,1-Dichloroethene	44.46	1.0	50	0	88.9	71 - 131				
1,1-Dichloropropene	42.33	1.0	50	0	84.7	78 - 125				
1,2,3-Trichlorobenzene	40.22	1.0	50	0	80.4	69 - 129				
1,2,3-Trichloropropane	39.25	1.0	50	0	78.5	73 - 122				
1,2,4-Trichlorobenzene	39.96	1.0	50	0	79.9	69 - 130				
1,2,4-Trimethylbenzene	38.58	1.0	50	0	77.2	76 - 124				
1,2-Dibromo-3-chloropropane	42.08	1.0	50	0	84.2	62 - 128				
1,2-Dibromoethane	43.35	1.0	50	0	86.7	77 - 121				
1,2-Dichlorobenzene	39.9	1.0	50	0	79.8	80 - 119				S
1,2-Dichloroethane	52.45	1.0	50	9.315	86.3	73 - 128				
1,2-Dichloropropane	41.79	1.0	50	0	83.6	78 - 122				
1,3,5-Trimethylbenzene	46.76	1.0	50	0	93.5	75 - 124				
1,3-Dichlorobenzene	40.12	1.0	50	0	80.2	80 - 119				
1,3-Dichloropropane	42.47	1.0	50	0	84.9	80 - 119				
1,4-Dichlorobenzene	40.21	1.0	50	0	80.4	79 - 118				
2,2-Dichloropropane	32.87	1.0	50	0	65.7	60 - 139				
2-Butanone	91.22	2.0	100	0	91.2	56 - 143				
2-Chlorotoluene	45.77	1.0	50	0	91.5	79 - 122				
2-Hexanone	88.46	2.0	100	0	88.5	57 - 139				
4-Chlorotoluene	45.32	1.0	50	0	90.6	78 - 122				
4-Isopropyltoluene	40.57	1.0	50	0	81.1	77 - 127				
4-Methyl-2-pentanone	88.4	2.0	100	0	88.4	67 - 130				
Acetone	91.82	2.0	100	0	91.8	39 - 160				
Benzene	42.52	1.0	50	0	85.0	79 - 120				
Bromobenzene	38.69	1.0	50	0	77.4	80 - 120				S
Bromochloromethane	45.6	1.0	50	0	91.2	78 - 123				
Bromodichloromethane	44.3	1.0	50	0	88.6	79 - 125				
Bromoform	44.32	1.0	50	0	88.6	66 - 130				
Bromomethane	46.5	1.0	50	0	93.0	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317791** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060400-08MS** Units: **ug/L** Analysis Date: **12-Jun-2018 01:53**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597059** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	89.86	2.0	100	0	89.9	64 - 133				
Carbon tetrachloride	50.35	1.0	50	0	101	72 - 136				
Chlorobenzene	41.94	1.0	50	0	83.9	82 - 118				
Chloroethane	46.85	1.0	50	0	93.7	60 - 138				
Chloroform	42.14	1.0	50	0	84.3	79 - 124				
Chloromethane	41.58	1.0	50	0	83.2	50 - 139				
cis-1,2-Dichloroethene	43.98	1.0	50	0	88.0	78 - 123				
cis-1,3-Dichloropropene	43.62	1.0	50	0	87.2	75 - 124				
Dibromochloromethane	43.37	1.0	50	0	86.7	74 - 126				
Dibromomethane	46.46	1.0	50	0	92.9	79 - 123				
Dichlorodifluoromethane	38.8	1.0	50	0	77.6	32 - 152				
Ethylbenzene	42.58	1.0	50	0	85.2	79 - 121				
Hexachlorobutadiene	41.64	1.0	50	0	83.3	66 - 134				
Isopropylbenzene	44.29	1.0	50	0	88.6	72 - 131				
m,p-Xylene	83.9	2.0	100	0	83.9	80 - 121				
Methylene chloride	41.03	2.0	50	0	82.1	74 - 124				
Naphthalene	42.4	1.0	50	0	84.8	61 - 128				
n-Butylbenzene	43.4	1.0	50	0	86.8	75 - 128				
n-Propylbenzene	46.97	1.0	50	0	93.9	76 - 126				
o-Xylene	42.55	1.0	50	0	85.1	78 - 122				
sec-Butylbenzene	40.79	1.0	50	0	81.6	77 - 126				
Styrene	43.71	1.0	50	0	87.4	78 - 123				
tert-Butylbenzene	47.06	1.0	50	0	94.1	78 - 124				
Tetrachloroethene	42.88	1.0	50	0	85.8	74 - 129				
Toluene	41.69	1.0	50	0	83.4	80 - 121				
trans-1,2-Dichloroethene	44.58	1.0	50	0	89.2	75 - 124				
trans-1,3-Dichloropropene	45.42	1.0	50	0	90.8	73 - 127				
Trichloroethene	45.5	1.0	50	0	91.0	79 - 123				
Trichlorofluoromethane	46.28	1.0	50	0	92.6	65 - 141				
Vinyl chloride	43.55	1.0	50	0	87.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.48*	*1.0*	*50*	*0*	*87.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.51*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.04*	*1.0*	*50*	*0*	*96.1*	*80 - 119*				
Surr: Toluene-d8	*50.74*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317791 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060400-08MSD** Units: **ug/L** Analysis Date: **12-Jun-2018 02:18**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597060** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	42.6	1.0	50	0	85.2	78 - 124	43.12	1.2	20	
1,1,1-Trichloroethane	43.44	1.0	50	0	86.9	74 - 131	44.77	3	20	
1,1,2,2-Tetrachloroethane	38.04	1.0	50	0	76.1	71 - 121	37.89	0.39	20	
1,1,2-Trichloroethane	41.35	1.0	50	0	82.7	80 - 119	42.05	1.69	20	
1,1-Dichloroethane	42.53	1.0	50	0	85.1	77 - 125	43.48	2.21	20	
1,1-Dichloroethene	44.62	1.0	50	0	89.2	71 - 131	44.46	0.365	20	
1,1-Dichloropropene	41.68	1.0	50	0	83.4	78 - 125	42.33	1.54	20	
1,2,3-Trichlorobenzene	40.86	1.0	50	0	81.7	69 - 129	40.22	1.58	20	
1,2,3-Trichloropropane	39.42	1.0	50	0	78.8	73 - 122	39.25	0.419	20	
1,2,4-Trichlorobenzene	40.33	1.0	50	0	80.7	69 - 130	39.96	0.926	20	
1,2,4-Trimethylbenzene	38.53	1.0	50	0	77.1	76 - 124	38.58	0.118	20	
1,2-Dibromo-3-chloropropane	41.49	1.0	50	0	83.0	62 - 128	42.08	1.43	20	
1,2-Dibromoethane	42.91	1.0	50	0	85.8	77 - 121	43.35	1.02	20	
1,2-Dichlorobenzene	39.54	1.0	50	0	79.1	80 - 119	39.9	0.912	20	S
1,2-Dichloroethane	52.91	1.0	50	9.315	87.2	73 - 128	52.45	0.879	20	
1,2-Dichloropropane	40.83	1.0	50	0	81.7	78 - 122	41.79	2.34	20	
1,3,5-Trimethylbenzene	46.87	1.0	50	0	93.7	75 - 124	46.76	0.237	20	
1,3-Dichlorobenzene	39.38	1.0	50	0	78.8	80 - 119	40.12	1.87	20	S
1,3-Dichloropropane	42.02	1.0	50	0	84.0	80 - 119	42.47	1.07	20	
1,4-Dichlorobenzene	39.94	1.0	50	0	79.9	79 - 118	40.21	0.682	20	
2,2-Dichloropropane	31.84	1.0	50	0	63.7	60 - 139	32.87	3.17	20	
2-Butanone	89.97	2.0	100	0	90.0	56 - 143	91.22	1.38	20	
2-Chlorotoluene	45.19	1.0	50	0	90.4	79 - 122	45.77	1.26	20	
2-Hexanone	87.64	2.0	100	0	87.6	57 - 139	88.46	0.938	20	
4-Chlorotoluene	45.67	1.0	50	0	91.3	78 - 122	45.32	0.78	20	
4-Isopropyltoluene	40.19	1.0	50	0	80.4	77 - 127	40.57	0.923	20	
4-Methyl-2-pentanone	87.72	2.0	100	0	87.7	67 - 130	88.4	0.775	20	
Acetone	90.55	2.0	100	0	90.6	39 - 160	91.82	1.39	20	
Benzene	41.35	1.0	50	0	82.7	79 - 120	42.52	2.79	20	
Bromobenzene	38.31	1.0	50	0	76.6	80 - 120	38.69	0.986	20	S
Bromochloromethane	44.08	1.0	50	0	88.2	78 - 123	45.6	3.38	20	
Bromodichloromethane	43.1	1.0	50	0	86.2	79 - 125	44.3	2.74	20	
Bromoform	43.42	1.0	50	0	86.8	66 - 130	44.32	2.05	20	
Bromomethane	43	1.0	50	0	86.0	53 - 141	46.5	7.82	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317791 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060400-08MSD** Units: **ug/L** Analysis Date: **12-Jun-2018 02:18**
Client ID: Run ID: **VOA2_317791** SeqNo: **4597060** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	87.25	2.0	100	0	87.2	64 - 133	89.86	2.95	20	
Carbon tetrachloride	47.2	1.0	50	0	94.4	72 - 136	50.35	6.46	20	
Chlorobenzene	40.94	1.0	50	0	81.9	82 - 118	41.94	2.41	20	S
Chloroethane	47.53	1.0	50	0	95.1	60 - 138	46.85	1.44	20	
Chloroform	41.67	1.0	50	0	83.3	79 - 124	42.14	1.13	20	
Chloromethane	39.66	1.0	50	0	79.3	50 - 139	41.58	4.73	20	
cis-1,2-Dichloroethene	42.47	1.0	50	0	84.9	78 - 123	43.98	3.49	20	
cis-1,3-Dichloropropene	42.37	1.0	50	0	84.7	75 - 124	43.62	2.92	20	
Dibromochloromethane	42.71	1.0	50	0	85.4	74 - 126	43.37	1.54	20	
Dibromomethane	45.45	1.0	50	0	90.9	79 - 123	46.46	2.2	20	
Dichlorodifluoromethane	36.6	1.0	50	0	73.2	32 - 152	38.8	5.84	20	
Ethylbenzene	41.65	1.0	50	0	83.3	79 - 121	42.58	2.21	20	
Hexachlorobutadiene	40.72	1.0	50	0	81.4	66 - 134	41.64	2.25	20	
Isopropylbenzene	42.75	1.0	50	0	85.5	72 - 131	44.29	3.55	20	
m,p-Xylene	81.9	2.0	100	0	81.9	80 - 121	83.9	2.41	20	
Methylene chloride	40.51	2.0	50	0	81.0	74 - 124	41.03	1.27	20	
Naphthalene	43.63	1.0	50	0	87.3	61 - 128	42.4	2.84	20	
n-Butylbenzene	42.05	1.0	50	0	84.1	75 - 128	43.4	3.17	20	
n-Propylbenzene	46.38	1.0	50	0	92.8	76 - 126	46.97	1.27	20	
o-Xylene	41.19	1.0	50	0	82.4	78 - 122	42.55	3.23	20	
sec-Butylbenzene	40.12	1.0	50	0	80.2	77 - 126	40.79	1.67	20	
Styrene	42.67	1.0	50	0	85.3	78 - 123	43.71	2.42	20	
tert-Butylbenzene	46.53	1.0	50	0	93.1	78 - 124	47.06	1.13	20	
Tetrachloroethene	41.91	1.0	50	0	83.8	74 - 129	42.88	2.3	20	
Toluene	40.59	1.0	50	0	81.2	80 - 121	41.69	2.67	20	
trans-1,2-Dichloroethene	43.28	1.0	50	0	86.6	75 - 124	44.58	2.97	20	
trans-1,3-Dichloropropene	44.1	1.0	50	0	88.2	73 - 127	45.42	2.96	20	
Trichloroethene	44.47	1.0	50	0	88.9	79 - 123	45.5	2.27	20	
Trichlorofluoromethane	44.54	1.0	50	0	89.1	65 - 141	46.28	3.85	20	
Vinyl chloride	42.56	1.0	50	0	85.1	58 - 137	43.55	2.32	20	
Surr: 1,2-Dichloroethane-d4	*43.39*	*1.0*	*50*	*0*	*86.8*	*81 - 118*	*43.48*	*0.202*	*20*	
Surr: 4-Bromofluorobenzene	*52.33*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.51*	*0.354*	*20*	
Surr: Dibromofluoromethane	*47.75*	*1.0*	*50*	*0*	*95.5*	*80 - 119*	*48.04*	*0.621*	*20*	
Surr: Toluene-d8	*50.38*	*1.0*	*50*	*0*	*101*	*89 - 112*	*50.74*	*0.71*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317791 **Instrument:** VOA2 **Method:** SW8260

The following samples were analyzed in this batch:

HS18060425-01	HS18060425-02	HS18060425-03	HS18060425-06
HS18060425-07	HS18060425-09		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:49**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598292** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.54*	*1.0*	*50*	*0*	*85.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.85*	*1.0*	*50*	*0*	*99.7*	*85 - 114*				
Surr: Dibromofluoromethane	*50.93*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*52.91*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 11:00**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598291** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	45.92	1.0	50	0	91.8	79 - 123				
Surr: 1,2-Dichloroethane-d4	*43.77*	*1.0*	*50*	*0*	*87.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.36*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.26*	*1.0*	*50*	*0*	*96.5*	*80 - 119*				
Surr: Toluene-d8	*53.83*	*1.0*	*50*	*0*	*108*	*89 - 112*				

MS Sample ID: **HS18060400-04MS** Units: **ug/L** Analysis Date: **12-Jun-2018 13:58**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	44.31	1.0	50	0	88.6	79 - 123				
Surr: 1,2-Dichloroethane-d4	*43.62*	*1.0*	*50*	*0*	*87.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.02*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.97*	*1.0*	*50*	*0*	*95.9*	*80 - 119*				
Surr: Toluene-d8	*53.69*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317857 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060400-04MSD** Units: **ug/L** Analysis Date: **12-Jun-2018 14:24**
Client ID: Run ID: **VOA2_317857** SeqNo: **4598298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	43.8	1.0	50	0	87.6	79 - 123	44.31	1.17	20	
Surr: 1,2-Dichloroethane-d4	*44.76*	*1.0*	*50*	*0*	*89.5*	*81 - 118*	*43.62*	*2.58*	*20*	
Surr: 4-Bromofluorobenzene	*52.44*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.02*	*0.802*	*20*	
Surr: Dibromofluoromethane	*47.19*	*1.0*	*50*	*0*	*94.4*	*80 - 119*	*47.97*	*1.63*	*20*	
Surr: Toluene-d8	*53.68*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.69*	*0.0217*	*20*	

The following samples were analyzed in this batch: HS18060425-02 HS18060425-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317886** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180612** Units: **ug/L** Analysis Date: **13-Jun-2018 00:01**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598845** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317886 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180612** Units: **ug/L** Analysis Date: **13-Jun-2018 00:01**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598845** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.24*	*1.0*	*50*	*0*	*86.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.16*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*51.22*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*53.51*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: **R317886** **Instrument:** **VOA2** **Method:** **SW8260**

LCS Sample ID: **VLCSW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 22:46**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598868** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.82	1.0	50	0	93.6	77 - 118				
1,1,1-Trichloroethane	44.3	1.0	50	0	88.6	70 - 130				
1,1,2,2-Tetrachloroethane	43.61	1.0	50	0	87.2	70 - 120				
1,1,2-Trichloroethane	46.47	1.0	50	0	92.9	77 - 113				
1,1-Dichloroethane	45.83	1.0	50	0	91.7	71 - 122				
1,1-Dichloroethene	44.83	1.0	50	0	89.7	70 - 130				
1,1-Dichloropropene	41.69	1.0	50	0	83.4	78 - 118				
1,2,3-Trichlorobenzene	46.1	1.0	50	0	92.2	70 - 130				
1,2,3-Trichloropropane	45.39	1.0	50	0	90.8	70 - 127				
1,2,4-Trichlorobenzene	43.87	1.0	50	0	87.7	77 - 126				
1,2,4-Trimethylbenzene	40.01	1.0	50	0	80.0	73 - 121				
1,2-Dibromo-3-chloropropane	51.09	1.0	50	0	102	70 - 130				
1,2-Dibromoethane	49.16	1.0	50	0	98.3	76 - 123				
1,2-Dichlorobenzene	42.79	1.0	50	0	85.6	77 - 113				
1,2-Dichloroethane	50.29	1.0	50	0	101	70 - 124				
1,2-Dichloropropane	45.39	1.0	50	0	90.8	72 - 119				
1,3,5-Trimethylbenzene	46.83	1.0	50	0	93.7	75 - 118				
1,3-Dichlorobenzene	42.39	1.0	50	0	84.8	78 - 118				
1,3-Dichloropropane	47.52	1.0	50	0	95.0	75 - 116				
1,4-Dichlorobenzene	42.39	1.0	50	0	84.8	79 - 113				
2,2-Dichloropropane	38.92	1.0	50	0	77.8	70 - 130				
2-Butanone	109.8	2.0	100	0	110	70 - 130				
2-Chlorotoluene	47.08	1.0	50	0	94.2	70 - 128				
2-Hexanone	115.7	2.0	100	0	116	70 - 130				
4-Chlorotoluene	47.37	1.0	50	0	94.7	74 - 126				
4-Isopropyltoluene	39.89	1.0	50	0	79.8	74 - 126				
4-Methyl-2-pentanone	103	2.0	100	0	103	70 - 130				
Acetone	111.6	2.0	100	0	112	70 - 130				
Benzene	45.31	1.0	50	0	90.6	74 - 120				
Bromobenzene	41.47	1.0	50	0	82.9	78 - 113				
Bromochloromethane	49.5	1.0	50	0	99.0	76 - 124				
Bromodichloromethane	47.88	1.0	50	0	95.8	74 - 122				
Bromoform	50.33	1.0	50	0	101	73 - 128				
Bromomethane	47.21	1.0	50	0	94.4	70 - 130				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317886 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180612** Units: **ug/L** Analysis Date: **12-Jun-2018 22:46**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598868** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	89.15	2.0	100	0	89.2	70 - 130				
Carbon tetrachloride	48.5	1.0	50	0	97.0	71 - 125				
Chlorobenzene	45.16	1.0	50	0	90.3	76 - 113				
Chloroethane	48.1	1.0	50	0	96.2	70 - 130				
Chloroform	45.31	1.0	50	0	90.6	71 - 121				
Chloromethane	43.1	1.0	50	0	86.2	70 - 129				
cis-1,2-Dichloroethene	46.84	1.0	50	0	93.7	75 - 122				
cis-1,3-Dichloropropene	49.51	1.0	50	0	99.0	73 - 127				
Dibromochloromethane	48.72	1.0	50	0	97.4	77 - 122				
Dibromomethane	51.95	1.0	50	0	104	78 - 121				
Dichlorodifluoromethane	43.02	1.0	50	0	86.0	70 - 130				
Ethylbenzene	43.49	1.0	50	0	87.0	77 - 117				
Hexachlorobutadiene	40.13	1.0	50	0	80.3	70 - 130				
Isopropylbenzene	43.43	1.0	50	0	86.9	73 - 127				
m,p-Xylene	85.3	2.0	100	0	85.3	77 - 122				
Methylene chloride	43.81	2.0	50	0	87.6	70 - 127				
Naphthalene	50.44	1.0	50	0	101	70 - 130				
n-Butylbenzene	42.56	1.0	50	0	85.1	72 - 130				
n-Propylbenzene	46.49	1.0	50	0	93.0	73 - 124				
o-Xylene	43.94	1.0	50	0	87.9	75 - 119				
sec-Butylbenzene	39.46	1.0	50	0	78.9	73 - 128				
Styrene	46.46	1.0	50	0	92.9	72 - 126				
tert-Butylbenzene	45.75	1.0	50	0	91.5	73 - 124				
Tetrachloroethene	41.79	1.0	50	0	83.6	76 - 119				
Toluene	42.73	1.0	50	0	85.5	77 - 118				
trans-1,2-Dichloroethene	45.87	1.0	50	0	91.7	72 - 127				
trans-1,3-Dichloropropene	52.38	1.0	50	0	105	77 - 119				
Trichloroethene	46.01	1.0	50	0	92.0	77 - 121				
Trichlorofluoromethane	44.64	1.0	50	0	89.3	70 - 130				
Vinyl chloride	43.82	1.0	50	0	87.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*43.82*	*1.0*	*50*	*0*	*87.6*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*52.18*	*1.0*	*50*	*0*	*104*	*82 - 115*				
Surr: Dibromofluoromethane	*48.17*	*1.0*	*50*	*0*	*96.3*	*73 - 126*				
Surr: Toluene-d8	*50.57*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317886 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060444-06MS** Units: **ug/L** Analysis Date: **13-Jun-2018 01:40**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	42.31	1.0	50	0	84.6	78 - 124				
1,1,1-Trichloroethane	44.15	1.0	50	0	88.3	74 - 131				
1,1,2,2-Tetrachloroethane	38.7	1.0	50	0	77.4	71 - 121				
1,1,2-Trichloroethane	41.56	1.0	50	0	83.1	80 - 119				
1,1-Dichloroethane	43.05	1.0	50	0	86.1	77 - 125				
1,1-Dichloroethene	45.19	1.0	50	0	90.4	71 - 131				
1,1-Dichloropropene	41.86	1.0	50	0	83.7	78 - 125				
1,2,3-Trichlorobenzene	40.13	1.0	50	0	80.3	69 - 129				
1,2,3-Trichloropropane	39.32	1.0	50	0	78.6	73 - 122				
1,2,4-Trichlorobenzene	39.66	1.0	50	0	79.3	69 - 130				
1,2,4-Trimethylbenzene	37.61	1.0	50	0	75.2	76 - 124				S
1,2-Dibromo-3-chloropropane	42.7	1.0	50	0	85.4	62 - 128				
1,2-Dibromoethane	43.05	1.0	50	0	86.1	77 - 121				
1,2-Dichlorobenzene	39.12	1.0	50	0	78.2	80 - 119				S
1,2-Dichloroethane	44.67	1.0	50	0	89.3	73 - 128				
1,2-Dichloropropane	40.75	1.0	50	0	81.5	78 - 122				
1,3,5-Trimethylbenzene	46.25	1.0	50	0	92.5	75 - 124				
1,3-Dichlorobenzene	39.09	1.0	50	0	78.2	80 - 119				S
1,3-Dichloropropane	41.62	1.0	50	0	83.2	80 - 119				
1,4-Dichlorobenzene	39.44	1.0	50	0	78.9	79 - 118				S
2,2-Dichloropropane	34.54	1.0	50	0	69.1	60 - 139				
2-Butanone	93.62	2.0	100	0	93.6	56 - 143				
2-Chlorotoluene	44.88	1.0	50	0	89.8	79 - 122				
2-Hexanone	96.38	2.0	100	0	96.4	57 - 139				
4-Chlorotoluene	45.23	1.0	50	0	90.5	78 - 122				
4-Isopropyltoluene	40.01	1.0	50	0	80.0	77 - 127				
4-Methyl-2-pentanone	89.27	2.0	100	0	89.3	67 - 130				
Acetone	94.36	2.0	100	0	94.4	39 - 160				
Benzene	41.78	1.0	50	0	83.6	79 - 120				
Bromobenzene	37.83	1.0	50	0	75.7	80 - 120				S
Bromochloromethane	44.17	1.0	50	0	88.3	78 - 123				
Bromodichloromethane	42.78	1.0	50	0	85.6	79 - 125				
Bromoform	44.39	1.0	50	0	88.8	66 - 130				
Bromomethane	46.57	1.0	50	0	93.1	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317886 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060444-06MS** Units: **ug/L** Analysis Date: **13-Jun-2018 01:40**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	88.13	2.0	100	0	88.1	64 - 133				
Carbon tetrachloride	48.43	1.0	50	0	96.9	72 - 136				
Chlorobenzene	41.02	1.0	50	0	82.0	82 - 118				
Chloroethane	47	1.0	50	0	94.0	60 - 138				
Chloroform	41.59	1.0	50	0	83.2	79 - 124				
Chloromethane	36.64	1.0	50	0	73.3	50 - 139				
cis-1,2-Dichloroethene	43.19	1.0	50	0	86.4	78 - 123				
cis-1,3-Dichloropropene	42.69	1.0	50	0	85.4	75 - 124				
Dibromochloromethane	42.78	1.0	50	0	85.6	74 - 126				
Dibromomethane	45.62	1.0	50	0	91.2	79 - 123				
Dichlorodifluoromethane	36.9	1.0	50	0	73.8	32 - 152				
Ethylbenzene	41.92	1.0	50	0	83.8	79 - 121				
Hexachlorobutadiene	39.97	1.0	50	0	79.9	66 - 134				
Isopropylbenzene	43.33	1.0	50	0	86.7	72 - 131				
m,p-Xylene	81.58	2.0	100	0	81.6	80 - 121				
Methylene chloride	40.4	2.0	50	0	80.8	74 - 124				
Naphthalene	42.88	1.0	50	0	85.8	61 - 128				
n-Butylbenzene	42.43	1.0	50	0	84.9	75 - 128				
n-Propylbenzene	46.17	1.0	50	0	92.3	76 - 126				
o-Xylene	41.62	1.0	50	0	83.2	78 - 122				
sec-Butylbenzene	40.09	1.0	50	0	80.2	77 - 126				
Styrene	9.009	1.0	50	0	18.0	78 - 123				S
tert-Butylbenzene	46.32	1.0	50	0	92.6	78 - 124				
Tetrachloroethene	41.89	1.0	50	0	83.8	74 - 129				
Toluene	40.65	1.0	50	0	81.3	80 - 121				
trans-1,2-Dichloroethene	43.7	1.0	50	0	87.4	75 - 124				
trans-1,3-Dichloropropene	44.46	1.0	50	0	88.9	73 - 127				
Trichloroethene	44	1.0	50	0	88.0	79 - 123				
Trichlorofluoromethane	45.81	1.0	50	0	91.6	65 - 141				
Vinyl chloride	44.46	1.0	50	0	88.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.18*	*1.0*	*50*	*0*	*88.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.86*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*47.73*	*1.0*	*50*	*0*	*95.5*	*80 - 119*				
Surr: Toluene-d8	*50.72*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317886 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060444-06MSD** Units: **ug/L** Analysis Date: **13-Jun-2018 02:05**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598849** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	42.12	1.0	50	0	84.2	78 - 124	42.31	0.451	20	
1,1,1-Trichloroethane	42.89	1.0	50	0	85.8	74 - 131	44.15	2.9	20	
1,1,2,2-Tetrachloroethane	38.47	1.0	50	0	76.9	71 - 121	38.7	0.592	20	
1,1,2-Trichloroethane	40.78	1.0	50	0	81.6	80 - 119	41.56	1.89	20	
1,1-Dichloroethane	41.75	1.0	50	0	83.5	77 - 125	43.05	3.06	20	
1,1-Dichloroethene	44.05	1.0	50	0	88.1	71 - 131	45.19	2.54	20	
1,1-Dichloropropene	41.44	1.0	50	0	82.9	78 - 125	41.86	1.01	20	
1,2,3-Trichlorobenzene	40.89	1.0	50	0	81.8	69 - 129	40.13	1.87	20	
1,2,3-Trichloropropane	39.4	1.0	50	0	78.8	73 - 122	39.32	0.191	20	
1,2,4-Trichlorobenzene	40.34	1.0	50	0	80.7	69 - 130	39.66	1.69	20	
1,2,4-Trimethylbenzene	38.15	1.0	50	0	76.3	76 - 124	37.61	1.42	20	
1,2-Dibromo-3-chloropropane	42.88	1.0	50	0	85.8	62 - 128	42.7	0.414	20	
1,2-Dibromoethane	42.7	1.0	50	0	85.4	77 - 121	43.05	0.814	20	
1,2-Dichlorobenzene	38.97	1.0	50	0	77.9	80 - 119	39.12	0.367	20	S
1,2-Dichloroethane	43.08	1.0	50	0	86.2	73 - 128	44.67	3.64	20	
1,2-Dichloropropane	40.86	1.0	50	0	81.7	78 - 122	40.75	0.27	20	
1,3,5-Trimethylbenzene	45.95	1.0	50	0	91.9	75 - 124	46.25	0.655	20	
1,3-Dichlorobenzene	39.09	1.0	50	0	78.2	80 - 119	39.09	0.00147	20	S
1,3-Dichloropropane	41.56	1.0	50	0	83.1	80 - 119	41.62	0.137	20	
1,4-Dichlorobenzene	39.18	1.0	50	0	78.4	79 - 118	39.44	0.681	20	S
2,2-Dichloropropane	32.82	1.0	50	0	65.6	60 - 139	34.54	5.11	20	
2-Butanone	91.73	2.0	100	0	91.7	56 - 143	93.62	2.04	20	
2-Chlorotoluene	44.7	1.0	50	0	89.4	79 - 122	44.88	0.397	20	
2-Hexanone	95.36	2.0	100	0	95.4	57 - 139	96.38	1.06	20	
4-Chlorotoluene	44.61	1.0	50	0	89.2	78 - 122	45.23	1.36	20	
4-Isopropyltoluene	39.63	1.0	50	0	79.3	77 - 127	40.01	0.972	20	
4-Methyl-2-pentanone	88.35	2.0	100	0	88.3	67 - 130	89.27	1.04	20	
Acetone	93.74	2.0	100	0	93.7	39 - 160	94.36	0.658	20	
Benzene	41.04	1.0	50	0	82.1	79 - 120	41.78	1.79	20	
Bromobenzene	37.77	1.0	50	0	75.5	80 - 120	37.83	0.158	20	S
Bromochloromethane	43.07	1.0	50	0	86.1	78 - 123	44.17	2.52	20	
Bromodichloromethane	42.83	1.0	50	0	85.7	79 - 125	42.78	0.134	20	
Bromoform	44.15	1.0	50	0	88.3	66 - 130	44.39	0.551	20	
Bromomethane	41.46	1.0	50	0	82.9	53 - 141	46.57	11.6	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317886 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060444-06MSD** Units: **ug/L** Analysis Date: **13-Jun-2018 02:05**
Client ID: Run ID: **VOA2_317886** SeqNo: **4598849** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	85.16	2.0	100	0	85.2	64 - 133	88.13	3.44	20	
Carbon tetrachloride	47.28	1.0	50	0	94.6	72 - 136	48.43	2.39	20	
Chlorobenzene	40.69	1.0	50	0	81.4	82 - 118	41.02	0.813	20	S
Chloroethane	42.36	1.0	50	0	84.7	60 - 138	47	10.4	20	
Chloroform	40.82	1.0	50	0	81.6	79 - 124	41.59	1.86	20	
Chloromethane	36.2	1.0	50	0	72.4	50 - 139	36.64	1.2	20	
cis-1,2-Dichloroethene	41.85	1.0	50	0	83.7	78 - 123	43.19	3.15	20	
cis-1,3-Dichloropropene	42.3	1.0	50	0	84.6	75 - 124	42.69	0.928	20	
Dibromochloromethane	42.02	1.0	50	0	84.0	74 - 126	42.78	1.77	20	
Dibromomethane	44.83	1.0	50	0	89.7	79 - 123	45.62	1.75	20	
Dichlorodifluoromethane	36.51	1.0	50	0	73.0	32 - 152	36.9	1.05	20	
Ethylbenzene	41.02	1.0	50	0	82.0	79 - 121	41.92	2.18	20	
Hexachlorobutadiene	40.16	1.0	50	0	80.3	66 - 134	39.97	0.49	20	
Isopropylbenzene	42.24	1.0	50	0	84.5	72 - 131	43.33	2.55	20	
m,p-Xylene	80.22	2.0	100	0	80.2	80 - 121	81.58	1.68	20	
Methylene chloride	38.19	2.0	50	0	76.4	74 - 124	40.4	5.61	20	
Naphthalene	43.4	1.0	50	0	86.8	61 - 128	42.88	1.21	20	
n-Butylbenzene	41.78	1.0	50	0	83.6	75 - 128	42.43	1.55	20	
n-Propylbenzene	45.88	1.0	50	0	91.8	76 - 126	46.17	0.638	20	
o-Xylene	40.75	1.0	50	0	81.5	78 - 122	41.62	2.11	20	
sec-Butylbenzene	39.89	1.0	50	0	79.8	77 - 126	40.09	0.496	20	
Styrene	8.633	1.0	50	0	17.3	78 - 123	9.009	4.27	20	S
tert-Butylbenzene	45.45	1.0	50	0	90.9	78 - 124	46.32	1.88	20	
Tetrachloroethene	41.04	1.0	50	0	82.1	74 - 129	41.89	2.04	20	
Toluene	40.03	1.0	50	0	80.1	80 - 121	40.65	1.54	20	
trans-1,2-Dichloroethene	43.1	1.0	50	0	86.2	75 - 124	43.7	1.38	20	
trans-1,3-Dichloropropene	44.11	1.0	50	0	88.2	73 - 127	44.46	0.779	20	
Trichloroethene	43.31	1.0	50	0	86.6	79 - 123	44	1.6	20	
Trichlorofluoromethane	44.47	1.0	50	0	88.9	65 - 141	45.81	2.98	20	
Vinyl chloride	42.15	1.0	50	0	84.3	58 - 137	44.46	5.34	20	
Surr: 1,2-Dichloroethane-d4	*43.41*	*1.0*	*50*	*0*	*86.8*	*81 - 118*	*44.18*	*1.77*	*20*	
Surr: 4-Bromofluorobenzene	*51.55*	*1.0*	*50*	*0*	*103*	*85 - 114*	*52.86*	*2.51*	*20*	
Surr: Dibromofluoromethane	*47.76*	*1.0*	*50*	*0*	*95.5*	*80 - 119*	*47.73*	*0.0647*	*20*	
Surr: Toluene-d8	*50.78*	*1.0*	*50*	*0*	*102*	*89 - 112*	*50.72*	*0.12*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060425

QC BATCH REPORT

Batch ID: R317886 **Instrument:** VOA2 **Method:** SW8260

The following samples were analyzed in this batch:

HS18060425-04	HS18060425-05	HS18060425-06	HS18060425-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060425**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 25-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 25-Jun-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18060425

Date/Time Received: **08-Jun-2018 08:30**
Received by: **JRM**

Checklist completed by: *Raegen Giga* eSignature — 8-Jun-2018 Date

Reviewed by: *RJ Modashia* eSignature — 11-Jun-2018 Date

Matrices: **GW**

Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☐	☑	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s): 1.5c/1.1c uc/c | IR 30

Cooler(s)/Kit(s): 42640

Date/Time sample(s) sent to storage: 06/08/2018 16:25

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes: Sample ID 18CPTMW04_060718 - 1 x HCL Vial received Broken

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate

Page: ____ of ____

Project/Phase No: NWO1312.0150

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

HS18060425

Bhate Environmental Associates, Inc.
LHAAP 18 24

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5)

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
18CPTMW04SW_060718		6/7/18	0820	-	N		WG	6	X	X	X	X										
18CPTMW04_060718		6/7/18	0910	-	N		WG	5	X	X		X										
18CPTMW04_060718_a		6/7/18	0910	-	FD		WG	5	X	X		X										
18CPTMW06_060718		6/7/18	1010		N		WG	5	X	X		X										
MW22_060718		6/7/18	1100		N		WG	5	X	X	X											
MW22_060718_MS		6/7/18	1100	-	MS		WG	5	X	X	X											
MW22_060718_SD		6/7/18	1100	-	SD		WG	5	X	X	X											
MW18_060718		6/7/18	1155	-	N		WG	4	X	X												
18WW08_060718		6/7/18	1245	-	N		WG	5	X	X		X										
18WW09_060718		6/7/18	1340	-	N		WG	3		X	X	X										
TripBlank		6/7/18		-	TB		W	2	X													

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
Scott Beesinger	6/7/18	1430	1. J. M	6/8/18	08:30
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

Analytical Lab: ALS 10450 Stanolift Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

$2640 $30

7376 9752 9237

RETURNS MON – SAT
PRIORITY OVERNIGHT

77099

TX – US

ALS
10450 Stancliff Rd., S[redacted]
Houston, Texas 77
Tel. +1 281 530 56
Fax. +1 281 530 58

CUST
Date: 6/7/19
Name: Scott B
Company: BHAT

ODY SEAL
Time: 1430
Seal Broken By:
Date: JUN 0 8 20

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1815995; 1816211

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2102 (216868)

General Set Information: There were sixteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions.
1815995004/05; 1816211002/03/05-07/09 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605574) was less than 1/2 the CRDL. The recovery for the LCS (605575) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on samples 1816211006/07 (Client ID: MW22-060718). The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L. The Matrix Spike and duplicate (MS/MSD) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected. The MS/MSD relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 18JUND11/27.

Thomas Bosch June 20, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 20, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1816211**
Project ID: HS18060425 060718
Purchase Order: HS18060425
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
18CPTMW04SW_060718	1816211001	06/07/18	06/09/18	
18CPTMW04_060718	1816211002	06/07/18	06/09/18	
18CPTMW04_060718-a	1816211003	06/07/18	06/09/18	
18CPTMW06_060718	1816211004	06/07/18	06/09/18	
MW22_060718	1816211005	06/07/18	06/09/18	
MW18_060718	1816211008	06/07/18	06/09/18	
18WW08_060718	1816211009	06/07/18	06/09/18	
18WW09_060718	1816211010	06/07/18	06/09/18	

Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
MW22_060718MS	1816211006	06/07/18	06/09/18	
MW22_060718MSD	1816211007	06/07/18	06/09/18	

***Client QC is reported as part of the Quality Control results report, if requested.**

ANALYTICAL REPORT

Workorder: 34-1816211
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **18CPTMW04SW_060718** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211001 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2102 (HBN: 216868) | **Percent Solid:** NA
Analyzed: 06/18/2018 13:51 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18CPTMW04_060718** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211002 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2102 (HBN: 216868) | **Percent Solid:** NA
Analyzed: 06/18/2018 14:05 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**410**	10	20	40	10	

Sample ID: **18CPTMW04_060718-a** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211003 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2102 (HBN: 216868) | **Percent Solid:** NA
Analyzed: 06/18/2018 14:48 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**430**	10	20	40	10	

Sample ID: **18CPTMW06_060718** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211004 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2102 (HBN: 216868) | **Percent Solid:** NA
Analyzed: 06/18/2018 15:02 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1816211
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW22_060718** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211005 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 15:16
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**66**	10	20	40	10	

Sample ID: **MW18_060718** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211008 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 16:03
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18WW08_060718** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211009 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 16:17
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**130**	10	20	40	10	

Sample ID: **18WW09_060718** | Sampling Site: NA | Collected: 06/07/2018
Lab ID: 1816211010 | Media: 125 mL Nalgene | Received: 06/09/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2102 (HBN: 216868)
Analyzed: 06/18/2018 16:31
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1816211
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Comments

Workorder: 1816211

Samples 1816211002/03/05-07/09 were analyzed and reported at 1:10 dilutions. The reporting limits have been adjusted accordingly.

Quality Control: EPA 6850, DoD QSM - (HBN: 216868)

The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/20/2018 13:46	/S/ Stephen Brose 06/20/2018 17:02

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1816211
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816211

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850, DoD QSM
Batch: ELMS/2102 (HBN: 216868)
Analyzed By: Thomas Bosch

Blank

LMB: 605574
Analyzed: 06/18/2018 11:27
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605575
Analyzed: 06/18/2018 11:41
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.95	5.00	99.0	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1816211005
Analyzed: 06/18/2018 15:16
Dilution: 10
Units: ug/L

MS: 1816211006
Analyzed: 06/18/2018 15:34
Dilution: 10
Units: ug/L

MSD: 1816211007
Analyzed: 06/18/2018 15:49
Dilution: 10
Units: ug/L

Analyte	Result	Result	Target	% Rec		QC Limits		Result	% Rec		RPD	QC Limits	
Perchlorate	66.0	129	50	#	127	78.8	123.8	132	#	132	2.08	0.0	20.0

Continuing Calibration Verification

CCV: 605571
Analyzed: 06/18/2018 10:44
Units: ug/L
Criteria: ± 15%

CCV: 605576
Analyzed: 06/18/2018 14:20
Units: ug/L
Criteria: ± 15%

CCV: 605578
Analyzed: 06/18/2018 17:00
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.2	25.0	101	25.9	25.0	104	26.5	25.0	106

CCV: 605825
Analyzed: 06/19/2018 08:37
Units: ug/L
Criteria: ± 15%

CCV: 605826
Analyzed: 06/19/2018 09:05
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.9	25.0	104	25.4	25.0	102

Interference Check Sample

ICSA: 605573
Analyzed: 06/18/2018 11:12
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.957	1.00	95.7

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816211

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850, DoD QSM
Batch: ELMS/2102 (HBN: 216868)
Analyzed By: Thomas Bosch

Limit of Detection Verification

LODV: 605572				**LODV:** 605577			**LODV:** 605579		
Analyzed: 06/18/2018 10:58				**Analyzed:** 06/18/2018 14:34			**Analyzed:** 06/18/2018 17:14		
Units: ug/L				**Units:** ug/L			**Units:** ug/L		
Criteria: ± 50%				**Criteria:** ± 50%			**Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.910	1.00	91.0	1.04	1.00	104	1.12	1.00	112

Comments

The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/20/2018 13:46	06/20/2018 17:01

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ⬢ - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698/#2

1816211

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9258

1816211

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18060425
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060425-01**	**18CPTMW04SW_060718**	**Groundwater**	**07 Jun 2018 08:20**
	SUB_Perch-6850			18 Jun 2018
2.	**HS18060425-02**	**18CPTMW04_060718**	**Groundwater**	**07 Jun 2018 09:10**
	SUB_Perch-6850			18 Jun 2018
3.	**HS18060425-03**	**18CPTMW04_060718_a**	**Groundwater**	**07 Jun 2018 09:10**
	SUB_Perch-6850			18 Jun 2018
4.	**HS18060425-04**	**18CPTMW06_060718**	**Groundwater**	**07 Jun 2018 10:10**
	SUB_Perch-6850			18 Jun 2018
5.	**HS18060425-05**	**MW22_060718**	**Groundwater**	**07 Jun 2018 11:00** MS/MSD
	SUB_Perch-6850			18 Jun 2018
6.	**HS18060425-06**	**MW18_060718**	**Groundwater**	**07 Jun 2018 11:55**
	SUB_Perch-6850			18 Jun 2018
7.	**HS18060425-07**	**18WW08_060718**	**Groundwater**	**07 Jun 2018 12:45**
	SUB_Perch-6850			18 Jun 2018
8.	**HS18060425-08**	**18WW09_060718**	**Groundwater**	**07 Jun 2018 13:40**
	SUB_Perch-6850			18 Jun 2018

Subcontract Chain of Custody

COC ID: 9258

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
*****Sample # 5 Designated MS/MSD******

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	
Received By:	[illegible]	Date/Time:	6/9/18 1910
Cooler ID(s):	8599	Temperature(s):	2°

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060425	Split:	Workorder ID: 1816211	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Requested Analysis: EPA 6850, DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/07/2018 08:20	18CPTMW04SW_060718	1816211001		Water	A	1	A
2	06/07/2018 09:10	18CPTMW04_060718	1816211002		Water	A	1	A
3	06/07/2018 09:10	18CPTMW04_060718-a	1816211003		Water	A	1	A
4	06/07/2018 10:10	18CPTMW06_060718	1816211004		Water	A	1	A
5	06/07/2018 11:00	MW22_060718	1816211005		Water	A	1	A
6	06/07/2018 11:00	MW22_060718MS	1816211006	MS	Water	A	1	A
7	06/07/2018 11:00	MW22_060718MSD	1816211007	MSD	Water	A	1	A
8	06/07/2018 11:55	MW18_060718	1816211008		Water	A	1	A
9	06/07/2018 12:45	18WW08_060718	1816211009		Water	A	1	A
10	06/07/2018 13:40	18WW09_060718	1816211010		Water	A	1	A

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ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/09/2018 09:10	ALS Sample Receiving	Sample Login
Julie Warath	6/11/18 1330	16C	Storage
R.331	6.18.18/07:55	T.Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston
Project/Task/Site: 1816211
Date/Time of Receipt: 6/9/18 1910
Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included 6/9/18
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:						
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8599	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Meredith Edwards (Signature) Meredith E Edwards (Printed Name) 6/9/18 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc Revised 01/01/2018

Must Deliver Next Business Day
Time and Tempature Sensitive!

1
12:00 A
9348
06.09

ALS

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 08JUN18
ACTWGT: 11.55 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060425 - RJ

FedEx
Express
E

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 4380 9529 9348

XO BTFA

84123
UT-US SLC

546C1/4BE5/53C1

Batch Worklist

Batch: ELMS/ 2103 **Created:** 6/19/2018 09:21 **Instrument:** LCMS04 **HBN:** 217008

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1816481 [ENV_LVL4]
Workorder: 1816548 [ENV_LVL4]
Workorder: 1817040 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	605869	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
2	605870	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
3	605871	ICS for HBN 217008 [ELMS/2103]				ICS	3		E6850..D3Q	5311		6/26/2018	6/19/2018
4	605872	LMB for HBN 217008 [ELMS/2103]				LMB	3		E6850Q413Q	5311		6/26/2018	6/19/2018
5	605873	LCS for HBN 217008 [ELMS/2103]				LCS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
6	1816481001	MW23_061118				SAMPLE	3	1816481001-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
7	1816481002	18CPTMW035_061118				SAMPLE	3	1816481002-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
8	605908	18CPTMW035_06..(1816481002MS)				MS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
9	605909	18CPTMW035_0...(1816481002MSD)				MSD	3		E6850Q413Q	5311		6/26/2018	6/19/2018
10	1816481003	MW1_061118				SAMPLE	3	1816481003-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
11	1816481004	MW1_061118-a				SAMPLE	3	1816481004-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
12	1816481005	MW10_061118				SAMPLE	3	1816481005-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
13	1816481006	18CPIMW18_061118				SAMPLE	3	1816481006-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
14	1816481007	18WW22_061118				SAMPLE	3	1816481007-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
15	1816481008	C03_061118				SAMPLE	3	1816481008-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
16	605876	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
17	605877	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
18	1816548001	MW14_061218				SAMPLE	3	1816548001-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
19	1816548002	18CPTMW19_061218				SAMPLE	3	1816548002-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
20	1816548003	18CPTMW19SW_061218				SAMPLE	3	1816548003-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
21	1816548004	18WW03_061218				SAMPLE	3	1816548004-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
22	1816548005	18WW03_061218-a				SAMPLE	3	1816548005-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
23	1817040001	LH18/24-SP650_061818				SAMPLE	3	1817040001-A	E6850Q41.3	5480	7/16/2018	7/3/2018	6/19/2018
24	605878	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
25	605879	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1816481 (001-08); 1816548 (001-05); 1817040 (001)
ELMS Batch/HBN ID: 2103 (217008)
Prep Date: 06/19/2018 Analysis Date: 06/19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605873; Target = 5.0µg/L. ASTM type II water was used for LMB 605872.

MS/MSD: MS/MSD was performed on sample 1816481002 (Client ID: 18CPTMW035_061118). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1816481001/1816548001 – 10,000; 1816481003/04 – 100. Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 19JUND15/23/25.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\217008-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

ALS Work Order #'s & Sample #( )'s: 1815995 (001-08); 1816211 (001-10)
ELMS Batch/HBN ID: 2102 (216868)
Prep Date: 06/18/2018 Analysis Date: 06/18,19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.s & 18JUN18B.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605575; Target = 5.0µg/L. ASTM type II water was used for LMB 605574.

MS/MSD: MS/MSD was performed on samples 1815995006/06 (Client ID: MW22_060718). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815995004/05; 1816211002/03/05-07/09 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 18JUND11/27.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216868-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

ALS

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK	Description - Perchlorate ISTD Stock

Standard:	23118	Created By:	Thomas Bosch	Amount:	1 mL
MFG:	Cambridge Isotope	Create Date:	04/04/2014 03:04PM	Expires:	02/27/2024
MFG Lot:	SDDG-013	Verified By:	Thomas Bosch	Usable:	Yes
Part ID:	OLM-7310-S	Verify Date:	02/05/2009 12:02AM	Lab Lot:	CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O	Description - ASTM Type II Water

Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED Reference Material Producer
ANAB ACCREDITED Testing Laboratory

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 02, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060552**

Revision: **1**

Laboratory Results for: **LHAAP 18/24**

Dear Marcia,

ALS Environmental received 9 sample(s) on Jun 12, 2018 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Work Order: HS18060552

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060552-01	MW23_061118	Groundwater		11-Jun-2018 08:10	12-Jun-2018 10:30	☐
HS18060552-02	18CPTMW03SW_061118	Groundwater		11-Jun-2018 09:05	12-Jun-2018 10:30	☐
HS18060552-03	MW1_061118	Groundwater		11-Jun-2018 09:55	12-Jun-2018 10:30	☐
HS18060552-04	MW1_061118_a	Groundwater		11-Jun-2018 09:55	12-Jun-2018 10:30	☐
HS18060552-05	MW10_061118	Groundwater		11-Jun-2018 10:50	12-Jun-2018 10:30	☐
HS18060552-06	18CPTMW18_061118	Groundwater		11-Jun-2018 11:50	12-Jun-2018 10:30	☐
HS18060552-07	18WW22_061118	Groundwater		11-Jun-2018 12:45	12-Jun-2018 10:30	☐
HS18060552-08	C03_061118	Groundwater		11-Jun-2018 13:45	12-Jun-2018 10:30	☐
HS18060552-09	Trip Blank	Water	ALS 051618-57	11-Jun-2018 00:00	12-Jun-2018 10:30	☐

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Work Order: HS18060552

CASE NARRATIVE

Work Order Comments

- Revision 1: sample #2 changed to 18CPTMW03SW_061118 from 18CPTMW035W_061118

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129393

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R318107

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470

Batch ID: 129449

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129430

Sample ID: 18CPTMW035W_061118 (HS18060552-02MS)

- Magnesium failed in the MS but passed in the MSD and PDS.

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Barium, Manganese, Potassium, and Sodium.

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW23_061118
Collection Date: 11-Jun-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,2-Dichloroethane	**58**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 20:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 20:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 20:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 20:13
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 20:13
Benzene	**0.81**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 20:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 20:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW23_061118
Collection Date: 11-Jun-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**5.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 20:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
cis-1,2-Dichloroethene	**9.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 20:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 20:13
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 20:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 20:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
trans-1,2-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 20:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Trichloroethene	**1,500**		**5.0**	**12**	**25**	**ug/L**	25	16-Jun-2018 20:40
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 20:13
Surr: 1,2-Dichloroethane-d4	*84.5*			**0**	*81-118*	*%REC*	*25*	*16-Jun-2018 20:40*
Surr: 1,2-Dichloroethane-d4	*86.6*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 20:13*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 20:13*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*16-Jun-2018 20:40*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*25*	*16-Jun-2018 20:40*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 20:13*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*25*	*16-Jun-2018 20:40*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 20:13*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW03SW_061118
Collection Date: 11-Jun-2018 09:05

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,2-Dichloroethane	**2.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 15:42
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 15:42
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 15:42
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 15:42
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 15:42
Benzene	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 15:42
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 15:42
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW03SW_061118
Collection Date: 11-Jun-2018 09:05

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
cis-1,2-Dichloroethene	**4.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 15:42
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 15:42
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 15:42
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 15:42
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
trans-1,2-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 15:42
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Trichloroethene	**28**		**0.20**	**0.50**	**1.0**	**ug/L**	1	16-Jun-2018 15:42
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 15:42
Surr: 1,2-Dichloroethane-d4	*88.0*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 15:42*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 15:42*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 15:42*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 15:42*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.48**		**0.010**	**0.010**	**0.010**	**ug/L**	1	15-Jun-2018 15:13
Surr: 2-Fluorobiphenyl	*95.3*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:13*
Surr: 4-Terphenyl-d14	*97.0*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:13*
Surr: Nitrobenzene-d5	*60.5*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW03SW_061118
Collection Date: 11-Jun-2018 09:05

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0131**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:19
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:19
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:19
Barium	**0.564**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:19
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:19
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:19
Calcium	**44.2**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:19
Chromium	**0.00748**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:19
Cobalt	**0.00104**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:19
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	19-Jun-2018 19:19
Iron	**6.15**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:19
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:19
Magnesium	**18.8**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:19
Manganese	**0.287**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:19
Nickel	**0.00461**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:19
Potassium	**165**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:19
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:19
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:19
Sodium	**250**		**0.140**	**1.00**	**2.00**	**mg/L**	10	20-Jun-2018 12:11
Thallium	**0.000295**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:19
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:19
Zinc	**0.00617**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:19
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 15:40
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW1_061118
Collection Date: 11-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,1,1-Trichloroethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,1-Dichloroethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,1-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,1-Dichloropropene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2,3-Trichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2,3-Trichloropropane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2,4-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2-Dibromo-3-chloropropane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2-Dibromoethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2-Dichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,2-Dichloroethane	**240**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 21:07
1,2-Dichloropropane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,3,5-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,3-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,3-Dichloropropane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
1,4-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
2,2-Dichloropropane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
2-Butanone	10	U	5.0	10	20	ug/L	10	16-Jun-2018 21:07
2-Chlorotoluene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
2-Hexanone	10	U	10	10	20	ug/L	10	16-Jun-2018 21:07
4-Chlorotoluene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
4-Isopropyltoluene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
4-Methyl-2-pentanone	10	U	7.0	10	20	ug/L	10	16-Jun-2018 21:07
Acetone	10	U	4.0	10	20	ug/L	10	16-Jun-2018 21:07
Benzene	**2.8**	J	**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 21:07
Bromobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Bromochloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Bromodichloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Bromoform	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Bromomethane	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Carbon disulfide	10	U	6.0	10	20	ug/L	10	16-Jun-2018 21:07
Carbon tetrachloride	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Chlorobenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Chloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW1_061118
Collection Date: 11-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**9.3**	J	**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 21:07
Chloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
cis-1,2-Dichloroethene	**1,900**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 21:07
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Dibromochloromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Dibromomethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Dichlorodifluoromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Ethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Hexachlorobutadiene	5.0	U	10	5.0	10	ug/L	10	16-Jun-2018 21:07
Isopropylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
m,p-Xylene	10	U	5.0	10	20	ug/L	10	16-Jun-2018 21:07
Methylene chloride	10	U	4.0	10	20	ug/L	10	16-Jun-2018 21:07
n-Butylbenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 21:07
n-Propylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Naphthalene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
o-Xylene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
sec-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Styrene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
tert-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Tetrachloroethene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Toluene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
trans-1,2-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
trans-1,3-Dichloropropene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Trichloroethene	**5,900**		**20**	**50**	**100**	**ug/L**	100	16-Jun-2018 21:34
Trichlorofluoromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Vinyl chloride	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 21:07
Surr: 1,2-Dichloroethane-d4	*87.3*			**0**	*81-118*	*%REC*	*100*	*16-Jun-2018 21:34*
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*81-118*	*%REC*	*10*	*16-Jun-2018 21:07*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*100*	*16-Jun-2018 21:34*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*10*	*16-Jun-2018 21:07*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*10*	*16-Jun-2018 21:07*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*100*	*16-Jun-2018 21:34*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*100*	*16-Jun-2018 21:34*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*16-Jun-2018 21:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW1_061118
Collection Date: 11-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0481**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:33
Antimony	**0.00102**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:33
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:33
Barium	**1.09**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:33
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:33
Cadmium	**0.000510**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:33
Calcium	**38.1**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:33
Chromium	**1.60**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:33
Cobalt	**0.0353**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:33
Copper	**0.0101**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	19-Jun-2018 19:33
Iron	**11.1**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:33
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:33
Magnesium	**31.1**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:33
Manganese	**1.51**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:33
Nickel	**1.31**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:33
Potassium	**3.06**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:33
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:33
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:33
Sodium	**244**		**0.140**	**1.00**	**2.00**	**mg/L**	10	20-Jun-2018 12:17
Thallium	**0.000289**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:33
Vanadium	**0.00273**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:33
Zinc	**0.00879**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:33
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 15:42
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW1_061118_a
Collection Date: 11-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,1,1-Trichloroethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,1-Dichloroethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,1-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,1-Dichloropropene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2,3-Trichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2,3-Trichloropropane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2,4-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2-Dibromo-3-chloropropane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2-Dibromoethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2-Dichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,2-Dichloroethane	**240**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:02
1,2-Dichloropropane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,3,5-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,3-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,3-Dichloropropane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
1,4-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
2,2-Dichloropropane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
2-Butanone	10	U	5.0	10	20	ug/L	10	16-Jun-2018 22:02
2-Chlorotoluene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
2-Hexanone	10	U	10	10	20	ug/L	10	16-Jun-2018 22:02
4-Chlorotoluene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
4-Isopropyltoluene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
4-Methyl-2-pentanone	10	U	7.0	10	20	ug/L	10	16-Jun-2018 22:02
Acetone	10	U	4.0	10	20	ug/L	10	16-Jun-2018 22:02
Benzene	**3.0**	J	**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:02
Bromobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Bromochloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Bromodichloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Bromoform	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Bromomethane	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Carbon disulfide	10	U	6.0	10	20	ug/L	10	16-Jun-2018 22:02
Carbon tetrachloride	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Chlorobenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Chloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW1_061118_a
Collection Date: 11-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**8.5**	J	**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:02
Chloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
cis-1,2-Dichloroethene	**1,900**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:02
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Dibromochloromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Dibromomethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Dichlorodifluoromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Ethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Hexachlorobutadiene	5.0	U	10	5.0	10	ug/L	10	16-Jun-2018 22:02
Isopropylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
m,p-Xylene	10	U	5.0	10	20	ug/L	10	16-Jun-2018 22:02
Methylene chloride	10	U	4.0	10	20	ug/L	10	16-Jun-2018 22:02
n-Butylbenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:02
n-Propylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Naphthalene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
o-Xylene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
sec-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Styrene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
tert-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Tetrachloroethene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Toluene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
trans-1,2-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
trans-1,3-Dichloropropene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Trichloroethene	**6,100**		**20**	**50**	**100**	**ug/L**	100	16-Jun-2018 22:29
Trichlorofluoromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Vinyl chloride	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:02
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*100*	*16-Jun-2018 22:29*
Surr: 1,2-Dichloroethane-d4	*86.3*			**0**	*81-118*	*%REC*	*10*	*16-Jun-2018 22:02*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*100*	*16-Jun-2018 22:29*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*16-Jun-2018 22:02*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*10*	*16-Jun-2018 22:02*
Surr: Dibromofluoromethane	*100.0*			**0**	*80-119*	*%REC*	*100*	*16-Jun-2018 22:29*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*16-Jun-2018 22:02*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*100*	*16-Jun-2018 22:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW1_061118_a
Collection Date: 11-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0444**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:35
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:35
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:35
Barium	**1.12**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:35
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:35
Cadmium	**0.000461**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:35
Calcium	**37.5**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:35
Chromium	**1.63**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:35
Cobalt	**0.0322**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:35
Copper	**0.0103**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	19-Jun-2018 19:35
Iron	**9.74**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:35
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:35
Magnesium	**32.7**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:35
Manganese	**1.47**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:35
Nickel	**1.18**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:35
Potassium	**3.03**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:35
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:35
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:35
Sodium	**243**		**0.140**	**1.00**	**2.00**	**mg/L**	10	20-Jun-2018 12:23
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:35
Vanadium	**0.00270**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:35
Zinc	**0.00847**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:35
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 15:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW10_061118
Collection Date: 11-Jun-2018 10:50

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 16:56
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 16:56
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 16:56
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 16:56
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 16:56
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW10_061118
Collection Date: 11-Jun-2018 10:50

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 16:56
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 16:56
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 16:56
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 16:56
Surr: 1,2-Dichloroethane-d4	*86.4*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 16:56*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 16:56*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 16:56*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 16:56*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 15:34
Surr: 2-Fluorobiphenyl	*111*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:34*
Surr: 4-Terphenyl-d14	*89.6*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:34*
Surr: Nitrobenzene-d5	*56.6*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:34*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW18_061118
Collection Date: 11-Jun-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 17:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 17:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 17:21
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 17:21
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 17:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW18_061118
Collection Date: 11-Jun-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 17:21
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 17:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:21
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 17:21*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 17:21*
Surr: Dibromofluoromethane	*105*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 17:21*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 17:21*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 15:54
Surr: 2-Fluorobiphenyl	*109*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:54*
Surr: 4-Terphenyl-d14	*97.4*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:54*
Surr: Nitrobenzene-d5	*75.0*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 15:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW18_061118
Collection Date: 11-Jun-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0252**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:37
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:37
Arsenic	**0.00145**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:37
Barium	**0.665**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:37
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:37
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:37
Calcium	**292**		**0.340**	**1.00**	**5.00**	**mg/L**	10	20-Jun-2018 12:25
Chromium	**0.00831**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:37
Cobalt	**0.0150**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:37
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	19-Jun-2018 19:37
Iron	**1.02**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:37
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:37
Magnesium	**182**		**0.100**	**1.00**	**2.00**	**mg/L**	10	20-Jun-2018 12:25
Manganese	**2.06**		**0.00700**	**0.0100**	**0.0500**	**mg/L**	10	20-Jun-2018 12:25
Nickel	**0.0131**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:37
Potassium	**4.87**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:37
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:37
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:37
Sodium	**737**		**0.140**	**1.00**	**2.00**	**mg/L**	10	20-Jun-2018 12:25
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:37
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:37
Zinc	**0.0131**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:37
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 15:45
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18WW22_061118
Collection Date: 11-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 17:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 17:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 17:45
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 17:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 17:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18WW22_061118
Collection Date: 11-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 17:45
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 17:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 17:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 17:45
Surr: 1,2-Dichloroethane-d4	*87.1*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 17:45*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 17:45*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 17:45*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 17:45*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 16:15
Surr: 2-Fluorobiphenyl	*84.0*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 16:15*
Surr: 4-Terphenyl-d14	*112*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 16:15*
Surr: Nitrobenzene-d5	*56.3*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 16:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18WW22_061118
Collection Date: 11-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.433**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:39
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:39
Arsenic	**0.00182**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:39
Barium	**0.179**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:39
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:39
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:39
Calcium	**53.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:39
Chromium	**0.0303**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:39
Cobalt	**0.000415**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:39
Copper	**0.00135**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	19-Jun-2018 19:39
Iron	**0.0590**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:39
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:39
Magnesium	**1.29**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:39
Manganese	**0.00264**	J	**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:39
Nickel	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:39
Potassium	**6.20**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:39
Selenium	**0.00164**	J	**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	19-Jun-2018 19:39
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:39
Sodium	**56.6**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:39
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:39
Vanadium	**0.0285**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:39
Zinc	0.00250	U	0.00200	0.00250	0.00400	mg/L	1	19-Jun-2018 19:39
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 15:47
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: C03_061118
Collection Date: 11-Jun-2018 13:45

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 18:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 18:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 18:10
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 18:10
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 18:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: C03_061118
Collection Date: 11-Jun-2018 13:45

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 18:10
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 18:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:10
Surr: 1,2-Dichloroethane-d4	*87.2*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 18:10*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 18:10*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 18:10*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 18:10*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 16:35
Surr: 2-Fluorobiphenyl	*115*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 16:35*
Surr: 4-Terphenyl-d14	*84.8*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 16:35*
Surr: Nitrobenzene-d5	*52.8*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 16:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: C03_061118
Collection Date: 11-Jun-2018 13:45

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.00810**	J	**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:41
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:41
Arsenic	**0.00168**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:41
Barium	**1.44**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:41
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:41
Cadmium	**0.000303**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:41
Calcium	**51.2**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:41
Chromium	0.00100	U	0.000400	0.00100	0.00400	mg/L	1	19-Jun-2018 19:41
Cobalt	**0.000367**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:41
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	19-Jun-2018 19:41
Iron	**81.7**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:41
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:41
Magnesium	**30.1**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:41
Manganese	**1.48**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:41
Nickel	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:41
Potassium	**3.28**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:41
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:41
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:41
Sodium	**149**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:41
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:41
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:41
Zinc	**0.00764**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:41
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 15-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	15-Jun-2018 15:52
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: Trip Blank
Collection Date: 11-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 14:28
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 14:28
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 14:28
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 14:28
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 14:28
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: Trip Blank
Collection Date: 11-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060552
Lab ID:HS18060552-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 14:28
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 14:28
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:28
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:28
Surr: 1,2-Dichloroethane-d4	*86.9*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 14:28*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 14:28*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 14:28*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 14:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp

Date: 02-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

Batch ID: 129393 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060552-02	1	1000	1 (mL)	0.001
HS18060552-05	1	1000	1 (mL)	0.001
HS18060552-06	1	1000	1 (mL)	0.001
HS18060552-07	1	1000	1 (mL)	0.001
HS18060552-08	1	1000	1 (mL)	0.001

Batch ID: 129430 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060552-02	1	10	10 (mL)	1
HS18060552-03	1	10	10 (mL)	1
HS18060552-04	1	10	10 (mL)	1
HS18060552-06	1	10	10 (mL)	1
HS18060552-07	1	10	10 (mL)	1
HS18060552-08	1	10	10 (mL)	1

Batch ID: 129449 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060552-02	1	10 (mL)	10 (mL)	1
HS18060552-03	1	10 (mL)	10 (mL)	1
HS18060552-04	1	10 (mL)	10 (mL)	1
HS18060552-06	1	10 (mL)	10 (mL)	1
HS18060552-07	1	10 (mL)	10 (mL)	1
HS18060552-08	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129393	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060552-02	18CPTMW03SW_061118	11 Jun 2018 09:05		14 Jun 2018 14:42	15 Jun 2018 15:13	1
HS18060552-05	MW10_061118	11 Jun 2018 10:50		14 Jun 2018 14:42	15 Jun 2018 15:34	1
HS18060552-06	18CPTMW18_061118	11 Jun 2018 11:50		14 Jun 2018 14:42	15 Jun 2018 15:54	1
HS18060552-07	18WW22_061118	11 Jun 2018 12:45		14 Jun 2018 14:42	15 Jun 2018 16:15	1
HS18060552-08	C03_061118	11 Jun 2018 13:45		14 Jun 2018 14:42	15 Jun 2018 16:35	1
Batch ID 129430	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060552-02	18CPTMW03SW_061118	11 Jun 2018 09:05		15 Jun 2018 12:00	20 Jun 2018 12:11	10
HS18060552-02	18CPTMW03SW_061118	11 Jun 2018 09:05		15 Jun 2018 12:00	19 Jun 2018 19:19	1
HS18060552-03	MW1_061118	11 Jun 2018 09:55		15 Jun 2018 12:00	20 Jun 2018 12:17	10
HS18060552-03	MW1_061118	11 Jun 2018 09:55		15 Jun 2018 12:00	19 Jun 2018 19:33	1
HS18060552-04	MW1_061118_a	11 Jun 2018 09:55		15 Jun 2018 12:00	20 Jun 2018 12:23	10
HS18060552-04	MW1_061118_a	11 Jun 2018 09:55		15 Jun 2018 12:00	19 Jun 2018 19:35	1
HS18060552-06	18CPTMW18_061118	11 Jun 2018 11:50		15 Jun 2018 12:00	20 Jun 2018 12:25	10
HS18060552-06	18CPTMW18_061118	11 Jun 2018 11:50		15 Jun 2018 12:00	19 Jun 2018 19:37	1
HS18060552-07	18WW22_061118	11 Jun 2018 12:45		15 Jun 2018 12:00	19 Jun 2018 19:39	1
HS18060552-08	C03_061118	11 Jun 2018 13:45		15 Jun 2018 12:00	19 Jun 2018 19:41	1
Batch ID 129449	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060552-02	18CPTMW03SW_061118	11 Jun 2018 09:05		15 Jun 2018 12:32	15 Jun 2018 15:40	1
HS18060552-03	MW1_061118	11 Jun 2018 09:55		15 Jun 2018 12:32	15 Jun 2018 15:42	1
HS18060552-04	MW1_061118_a	11 Jun 2018 09:55		15 Jun 2018 12:32	15 Jun 2018 15:44	1
HS18060552-06	18CPTMW18_061118	11 Jun 2018 11:50		15 Jun 2018 12:32	15 Jun 2018 15:45	1
HS18060552-07	18WW22_061118	11 Jun 2018 12:45		15 Jun 2018 12:32	15 Jun 2018 15:47	1
HS18060552-08	C03_061118	11 Jun 2018 13:45		15 Jun 2018 12:32	15 Jun 2018 15:52	1
Batch ID R318107	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060552-09	Trip Blank	11 Jun 2018 00:00			16 Jun 2018 14:28	1
Batch ID R318107	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060552-01	MW23_061118	11 Jun 2018 08:10			16 Jun 2018 20:40	25
HS18060552-01	MW23_061118	11 Jun 2018 08:10			16 Jun 2018 20:13	1
HS18060552-02	18CPTMW03SW_061118	11 Jun 2018 09:05			16 Jun 2018 15:42	1
HS18060552-03	MW1_061118	11 Jun 2018 09:55			16 Jun 2018 21:34	100
HS18060552-03	MW1_061118	11 Jun 2018 09:55			16 Jun 2018 21:07	10
HS18060552-04	MW1_061118_a	11 Jun 2018 09:55			16 Jun 2018 22:29	100
HS18060552-04	MW1_061118_a	11 Jun 2018 09:55			16 Jun 2018 22:02	10
HS18060552-05	MW10_061118	11 Jun 2018 10:50			16 Jun 2018 16:56	1
HS18060552-06	18CPTMW18_061118	11 Jun 2018 11:50			16 Jun 2018 17:21	1
HS18060552-07	18WW22_061118	11 Jun 2018 12:45			16 Jun 2018 17:45	1
HS18060552-08	C03_061118	11 Jun 2018 13:45			16 Jun 2018 18:10	1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318810	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060552-01	MW23_061118	11 Jun 2018 08:10			28 Jun 2018 09:16	1
HS18060552-02	18CPTMW03SW_061118	11 Jun 2018 09:05			28 Jun 2018 09:16	1
HS18060552-03	MW1_061118	11 Jun 2018 09:55			28 Jun 2018 09:16	1
HS18060552-04	MW1_061118_a	11 Jun 2018 09:55			28 Jun 2018 09:16	1
HS18060552-05	MW10_061118	11 Jun 2018 10:50			28 Jun 2018 09:16	1
HS18060552-06	18CPTMW18_061118	11 Jun 2018 11:50			28 Jun 2018 09:16	1
HS18060552-07	18WW22_061118	11 Jun 2018 12:45			28 Jun 2018 09:16	1
HS18060552-08	C03_061118	11 Jun 2018 13:45			28 Jun 2018 09:16	1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129430** Units: **mg/L** Analysis Date: **19-Jun-2018 19:15**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615990** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.00344	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01229	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.04754	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129430** Units: **mg/L** Analysis Date: **19-Jun-2018 19:17**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615991** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09908	0.0100	0.1	0	99.1	80 - 120				
Antimony	0.04748	0.00200	0.05	0	95.0	80 - 120				
Arsenic	0.04769	0.00200	0.05	0	95.4	80 - 120				
Barium	0.0471	0.00400	0.05	0	94.2	80 - 120				
Beryllium	0.04958	0.00200	0.05	0	99.2	80 - 120				
Cadmium	0.04777	0.00200	0.05	0	95.5	80 - 120				
Calcium	4.677	0.500	5	0	93.5	80 - 120				
Chromium	0.04811	0.00400	0.05	0	96.2	80 - 120				
Cobalt	0.04815	0.00500	0.05	0	96.3	80 - 120				
Copper	0.04811	0.00200	0.05	0	96.2	80 - 120				
Iron	4.622	0.200	5	0	92.4	80 - 120				
Lead	0.04806	0.00200	0.05	0	96.1	80 - 120				
Magnesium	4.685	0.200	5	0	93.7	80 - 120				
Manganese	0.04624	0.00500	0.05	0	92.5	80 - 120				
Nickel	0.04821	0.00200	0.05	0	96.4	80 - 120				
Potassium	4.669	0.200	5	0	93.4	80 - 120				
Selenium	0.04998	0.00200	0.05	0	100.0	80 - 120				
Silver	0.04916	0.00200	0.05	0	98.3	80 - 120				
Sodium	4.751	0.200	5	0	95.0	80 - 120				
Thallium	0.04577	0.00200	0.05	0	91.5	80 - 120				
Vanadium	0.04485	0.00500	0.05	0	89.7	80 - 120				
Zinc	0.04978	0.00400	0.05	0	99.6	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **129430** **Instrument:** **ICPMS05** **Method:** **SW6020**

MS Sample ID: **HS18060552-02MS** Units: **mg/L** Analysis Date: **19-Jun-2018 19:23**
Client ID: **18CPTMW03SW_061118** Run ID: **ICPMS05_318268** SeqNo: **4615994** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1133	0.0100	0.1	0.01309	100	80 - 120				
Antimony	0.04514	0.00200	0.05	0.000386	89.5	80 - 120				
Arsenic	0.04689	0.00200	0.05	0.00027	93.2	80 - 120				
Barium	0.6185	0.00400	0.05	0.5637	110	80 - 120				O
Beryllium	0.0561	0.00200	0.05	0.000001	112	80 - 120				
Cadmium	0.04781	0.00200	0.05	0.000067	95.5	80 - 120				
Calcium	49.12	0.500	5	44.18	98.6	80 - 120				O
Chromium	0.05209	0.00400	0.05	0.007476	89.2	80 - 120				
Cobalt	0.04542	0.00500	0.05	0.001036	88.8	80 - 120				
Copper	0.0452	0.00200	0.05	0.000618	89.2	80 - 120				
Iron	10.28	0.200	5	6.152	82.6	80 - 120				
Lead	0.04585	0.00200	0.05	0.000239	91.2	80 - 120				
Magnesium	22.11	0.200	5	18.8	66.2	80 - 120				S
Manganese	0.3142	0.00500	0.05	0.2867	54.9	80 - 120				SO
Nickel	0.04947	0.00200	0.05	0.004612	89.7	80 - 120				
Potassium	161	0.200	5	165.1	-81.2	80 - 120				SO
Selenium	0.04716	0.00200	0.05	0.000447	93.4	80 - 120				
Silver	0.04415	0.00200	0.05	0.00002	88.3	80 - 120				
Sodium	235.6	0.200	5	237.9	-45.1	80 - 120				SEO
Thallium	0.04268	0.00200	0.05	0.000295	84.8	80 - 120				
Vanadium	0.04394	0.00500	0.05	-0.002147	92.2	80 - 120				
Zinc	0.05207	0.00400	0.05	0.006173	91.8	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **129430** **Instrument:** **ICPMS05** **Method:** **SW6020**

MSD Sample ID: **HS18060552-02MSD** Units: **mg/L** Analysis Date: **19-Jun-2018 19:29**
Client ID: **18CPTMW03SW_061118** Run ID: **ICPMS05_318268** SeqNo: **4615997** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1107	0.0100	0.1	0.01309	97.7	80 - 120	0.1133	2.32	20	
Antimony	0.04607	0.00200	0.05	0.000386	91.4	80 - 120	0.04514	2.04	20	
Arsenic	0.04699	0.00200	0.05	0.00027	93.4	80 - 120	0.04689	0.209	20	
Barium	0.6284	0.00400	0.05	0.5637	129	80 - 120	0.6185	1.59	20	SO
Beryllium	0.055	0.00200	0.05	0.000001	110	80 - 120	0.0561	1.97	20	
Cadmium	0.04592	0.00200	0.05	0.000067	91.7	80 - 120	0.04781	4.04	20	
Calcium	49.59	0.500	5	44.18	108	80 - 120	49.12	0.968	20	O
Chromium	0.05316	0.00400	0.05	0.007476	91.4	80 - 120	0.05209	2.04	20	
Cobalt	0.04595	0.00500	0.05	0.001036	89.8	80 - 120	0.04542	1.17	20	
Copper	0.04646	0.00200	0.05	0.000618	91.7	80 - 120	0.0452	2.76	20	
Iron	10.65	0.200	5	6.152	90.0	80 - 120	10.28	3.51	20	
Lead	0.04498	0.00200	0.05	0.000239	89.5	80 - 120	0.04585	1.9	20	
Magnesium	23.32	0.200	5	18.8	90.3	80 - 120	22.11	5.31	20	
Manganese	0.3402	0.00500	0.05	0.2867	107	80 - 120	0.3142	7.97	20	O
Nickel	0.05002	0.00200	0.05	0.004612	90.8	80 - 120	0.04947	1.11	20	
Potassium	166.5	0.200	5	165.1	28.0	80 - 120	161	3.33	20	SO
Selenium	0.04896	0.00200	0.05	0.000447	97.0	80 - 120	0.04716	3.76	20	
Silver	0.04294	0.00200	0.05	0.00002	85.8	80 - 120	0.04415	2.77	20	
Sodium	239.8	0.200	5	237.9	39.4	80 - 120	235.6	1.78	20	SEO
Thallium	0.04335	0.00200	0.05	0.000295	86.1	80 - 120	0.04268	1.55	20	
Vanadium	0.04427	0.00500	0.05	-0.002147	92.8	80 - 120	0.04394	0.766	20	
Zinc	0.05065	0.00400	0.05	0.006173	89.0	80 - 120	0.05207	2.77	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060552-02PDS** Units: **mg/L** Analysis Date: **19-Jun-2018 19:31**
Client ID: **18CPTMW03SW_061118** Run ID: **ICPMS05_318268** SeqNo: **4615998** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1107	0.0100	0.1	0.01309	97.6	75 - 125				
Antimony	0.08617	0.00200	0.1	0.000386	85.8	75 - 125				
Arsenic	0.09531	0.00200	0.1	0.00027	95.0	75 - 125				
Barium	0.6704	0.00400	0.1	0.5637	107	75 - 125				O
Beryllium	0.1066	0.00200	0.1	0.000001	107	75 - 125				
Cadmium	0.09185	0.00200	0.1	0.000067	91.8	75 - 125				
Calcium	55.46	0.500	10	44.18	113	75 - 125				O
Chromium	0.09771	0.00400	0.1	0.007476	90.2	75 - 125				
Cobalt	0.0909	0.00500	0.1	0.001036	89.9	75 - 125				
Copper	0.08973	0.00200	0.1	0.000618	89.1	75 - 125				
Iron	14.99	0.200	10	6.152	88.4	75 - 125				
Lead	0.09103	0.00200	0.1	0.000239	90.8	75 - 125				
Magnesium	27.34	0.200	10	18.8	85.4	75 - 125				
Manganese	0.3629	0.00500	0.1	0.2867	76.2	75 - 125				
Nickel	0.0933	0.00200	0.1	0.004612	88.7	75 - 125				
Potassium	173.8	0.200	10	165.1	87.2	75 - 125				O
Selenium	0.09757	0.00200	0.1	0.000447	97.1	75 - 125				
Silver	0.08545	0.00200	0.1	0.00002	85.4	75 - 125				
Thallium	0.09531	0.00200	0.1	0.000295	95.0	75 - 125				
Vanadium	0.09151	0.00500	0.1	-0.002147	93.7	75 - 125				
Zinc	0.09629	0.00400	0.1	0.006173	90.1	75 - 125				

PDS Sample ID: **HS18060552-02PDS** Units: **mg/L** Analysis Date: **20-Jun-2018 12:15**
Client ID: **18CPTMW03SW_061118** Run ID: **ICPMS05_318286** SeqNo: **4617332** PrepDate: **15-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	344.5	2.00	100	250	94.5	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060552-02SD** Units: **mg/L** Analysis Date: **19-Jun-2018 19:21**
Client ID: **18CPTMW03SW_061118** Run ID: **ICPMS05_318268** SeqNo: **4615993** PrepDate: **15-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02093	0.0500					0.01309	0	10	J
Antimony	0.00500	0.0100					0.000386	0	10	U
Arsenic	0.00500	0.0100					0.00027	0	10	U
Barium	0.5647	0.0200					0.5637	0.191	10	
Beryllium	0.00500	0.0100					0.000001	0	10	U
Cadmium	0.00500	0.0100					0.000067	0	10	U
Calcium	44.87	2.50					44.18	1.54	10	
Chromium	0.007043	0.0200					0.007476	0	10	J
Cobalt	0.001066	0.0250					0.001036	0	10	J
Copper	0.0100	0.0100					0.000618	0	10	U
Iron	6.404	1.00					6.152	4.1	10	
Lead	0.00500	0.0100					0.000239	0	10	U
Magnesium	19.33	1.00					18.8	2.83	10	
Manganese	0.2961	0.0250					0.2867	3.27	10	
Nickel	0.003962	0.0100					0.004612	0	10	J
Potassium	169.5	1.00					165.1	2.69	10	
Selenium	0.0100	0.0100					0.000447	0	10	U
Silver	0.00500	0.0100					0.00002	0	10	U
Thallium	0.00500	0.0100					0.000295	0	10	U
Vanadium	0.00500	0.0250					-0.002147	0	10	U
Zinc	0.01549	0.0200					0.006173	0	10	J

SD Sample ID: **HS18060552-02SD** Units: **mg/L** Analysis Date: **20-Jun-2018 12:13**
Client ID: **18CPTMW03SW_061118** Run ID: **ICPMS05_318286** SeqNo: **4617331** PrepDate: **15-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	257.5	10.0					250	2.98	10	

The following samples were analyzed in this batch: HS18060552-02 HS18060552-03 HS18060552-04 HS18060552-06 HS18060552-07 HS18060552-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: 129449 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129449** Units: **mg/L** Analysis Date: **15-Jun-2018 15:26**
Client ID: Run ID: **HG03_318037** SeqNo: **4611869** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129449** Units: **mg/L** Analysis Date: **15-Jun-2018 15:33**
Client ID: Run ID: **HG03_318037** SeqNo: **4611870** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00465	0.000200	0.005	0	93.0	80 - 120				

MS Sample ID: **HS18060635-13MS** Units: **mg/L** Analysis Date: **15-Jun-2018 15:37**
Client ID: Run ID: **HG03_318037** SeqNo: **4611872** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00478	0.000200	0.005	-0.000002	95.6	75 - 125				

MSD Sample ID: **HS18060635-13MSD** Units: **mg/L** Analysis Date: **15-Jun-2018 15:38**
Client ID: Run ID: **HG03_318037** SeqNo: **4611873** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00472	0.000200	0.005	-0.000002	94.4	75 - 125	0.00478	1.26	20	

The following samples were analyzed in this batch: HS18060552-02 HS18060552-03 HS18060552-04 HS18060552-06 HS18060552-07 HS18060552-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: 129393 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 11:19**
Client ID: Run ID: **SV-5_318066** SeqNo: **4611403** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.06985*	*0*	*0.08*	*0*	*87.3*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06625*	*0*	*0.08*	*0*	*82.8*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0366*	*0*	*0.08*	*0*	*45.8*	*40 - 140*				

MBLK Sample ID: **MBLK-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:11**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617667** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.08692*	*0*	*0.08*	*0*	*109*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06387*	*0*	*0.08*	*0*	*79.8*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04854*	*0*	*0.08*	*0*	*60.7*	*40 - 140*				

LCS Sample ID: **LCS-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:32**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617668** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08513	0.010	0.08	0	106	40 - 140				
Surr: 2-Fluorobiphenyl	*0.09458*	*0*	*0.08*	*0*	*118*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06339*	*0*	*0.08*	*0*	*79.2*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05764*	*0*	*0.08*	*0*	*72.1*	*40 - 140*				

LCSD Sample ID: **LCSD-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:53**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617669** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07415	0.010	0.08	0	92.7	40 - 140	0.08513	13.8	20	
Surr: 2-Fluorobiphenyl	*0.09534*	*0*	*0.08*	*0*	*119*	*40 - 140*	*0.09458*	*0.809*	*20*	
Surr: 4-Terphenyl-d14	*0.06376*	*0*	*0.08*	*0*	*79.7*	*40 - 140*	*0.06339*	*0.584*	*20*	
Surr: Nitrobenzene-d5	*0.04763*	*0*	*0.08*	*0*	*59.5*	*40 - 140*	*0.05764*	*19*	*20*	

The following samples were analyzed in this batch: HS18060552-02 HS18060552-05 HS18060552-06 HS18060552-07 HS18060552-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **R318107** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 14:03**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **R318107** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 14:03**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.46*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.63*	*1.0*	*50*	*0*	*99.3*	*85 - 114*				
Surr: Dibromofluoromethane	*50.9*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*53.1*	*1.0*	*50*	*0*	*106*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 13:13**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.44	1.0	50	0	92.9	78 - 124				
1,1,1-Trichloroethane	45.27	1.0	50	0	90.5	74 - 131				
1,1,2,2-Tetrachloroethane	44.85	1.0	50	0	89.7	71 - 121				
1,1,2-Trichloroethane	46	1.0	50	0	92.0	80 - 119				
1,1-Dichloroethane	47.19	1.0	50	0	94.4	77 - 125				
1,1-Dichloroethene	46.84	1.0	50	0	93.7	71 - 131				
1,1-Dichloropropene	42.26	1.0	50	0	84.5	78 - 125				
1,2,3-Trichlorobenzene	48.61	1.0	50	0	97.2	69 - 129				
1,2,3-Trichloropropane	46.74	1.0	50	0	93.5	73 - 122				
1,2,4-Trichlorobenzene	47.07	1.0	50	0	94.1	69 - 130				
1,2,4-Trimethylbenzene	41.9	1.0	50	0	83.8	76 - 124				
1,2-Dibromo-3-chloropropane	50.93	1.0	50	0	102	62 - 128				
1,2-Dibromoethane	48.72	1.0	50	0	97.4	77 - 121				
1,2-Dichlorobenzene	44	1.0	50	0	88.0	80 - 119				
1,2-Dichloroethane	49.4	1.0	50	0	98.8	73 - 128				
1,2-Dichloropropane	45.49	1.0	50	0	91.0	78 - 122				
1,3,5-Trimethylbenzene	49.88	1.0	50	0	99.8	75 - 124				
1,3-Dichlorobenzene	43.47	1.0	50	0	86.9	80 - 119				
1,3-Dichloropropane	47.12	1.0	50	0	94.2	80 - 119				
1,4-Dichlorobenzene	43.92	1.0	50	0	87.8	79 - 118				
2,2-Dichloropropane	44.28	1.0	50	0	88.6	60 - 139				
2-Butanone	112	2.0	100	0	112	56 - 143				
2-Chlorotoluene	49.1	1.0	50	0	98.2	79 - 122				
2-Hexanone	115	2.0	100	0	115	57 - 139				
4-Chlorotoluene	48.98	1.0	50	0	98.0	78 - 122				
4-Isopropyltoluene	43.49	1.0	50	0	87.0	77 - 127				
4-Methyl-2-pentanone	101.9	2.0	100	0	102	67 - 130				
Acetone	109.4	2.0	100	0	109	39 - 160				
Benzene	44.98	1.0	50	0	90.0	79 - 120				
Bromobenzene	41.37	1.0	50	0	82.7	80 - 120				
Bromochloromethane	50.03	1.0	50	0	100	78 - 123				
Bromodichloromethane	47.94	1.0	50	0	95.9	79 - 125				
Bromoform	49.12	1.0	50	0	98.2	66 - 130				
Bromomethane	44.37	1.0	50	0	88.7	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 13:13**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	91.03	2.0	100	0	91.0	64 - 133				
Carbon tetrachloride	51.2	1.0	50	0	102	72 - 136				
Chlorobenzene	44.67	1.0	50	0	89.3	82 - 118				
Chloroethane	49.73	1.0	50	0	99.5	60 - 138				
Chloroform	45.1	1.0	50	0	90.2	79 - 124				
Chloromethane	40.06	1.0	50	0	80.1	50 - 139				
cis-1,2-Dichloroethene	46.59	1.0	50	0	93.2	78 - 123				
cis-1,3-Dichloropropene	49.93	1.0	50	0	99.9	75 - 124				
Dibromochloromethane	46.35	1.0	50	0	92.7	74 - 126				
Dibromomethane	51.47	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	49.18	1.0	50	0	98.4	32 - 152				
Ethylbenzene	44	1.0	50	0	88.0	79 - 121				
Hexachlorobutadiene	47.6	1.0	50	0	95.2	66 - 134				
Isopropylbenzene	44.77	1.0	50	0	89.5	72 - 131				
m,p-Xylene	87.15	2.0	100	0	87.1	80 - 121				
Methylene chloride	44.39	2.0	50	0	88.8	74 - 124				
Naphthalene	50.85	1.0	50	0	102	61 - 128				
n-Butylbenzene	46.75	1.0	50	0	93.5	75 - 128				
n-Propylbenzene	48.94	1.0	50	0	97.9	76 - 126				
o-Xylene	44.62	1.0	50	0	89.2	78 - 122				
sec-Butylbenzene	42.98	1.0	50	0	86.0	77 - 126				
Styrene	46.17	1.0	50	0	92.3	78 - 123				
tert-Butylbenzene	49.66	1.0	50	0	99.3	78 - 124				
Tetrachloroethene	43.31	1.0	50	0	86.6	74 - 129				
Toluene	42.79	1.0	50	0	85.6	80 - 121				
trans-1,2-Dichloroethene	46.62	1.0	50	0	93.2	75 - 124				
trans-1,3-Dichloropropene	52.86	1.0	50	0	106	73 - 127				
Trichloroethene	45.86	1.0	50	0	91.7	79 - 123				
Trichlorofluoromethane	47.13	1.0	50	0	94.3	65 - 141				
Vinyl chloride	45.67	1.0	50	0	91.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.96*	*1.0*	*50*	*0*	*87.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.88*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.27*	*1.0*	*50*	*0*	*96.5*	*80 - 119*				
Surr: Toluene-d8	*50.22*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **R318107** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060552-02MS** Units: **ug/L** Analysis Date: **16-Jun-2018 16:07**
Client ID: **18CPTMW03SW_061118** Run ID: **VOA2_318107** SeqNo: **4612346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.64	1.0	50	0	95.3	78 - 124				
1,1,1-Trichloroethane	50.03	1.0	50	0	100	74 - 131				
1,1,2,2-Tetrachloroethane	44.34	1.0	50	0	88.7	71 - 121				
1,1,2-Trichloroethane	46.18	1.0	50	0	92.4	80 - 119				
1,1-Dichloroethane	49.77	1.0	50	0	99.5	77 - 125				
1,1-Dichloroethene	51.65	1.0	50	0	103	71 - 131				
1,1-Dichloropropene	45.99	1.0	50	0	92.0	78 - 125				
1,2,3-Trichlorobenzene	46.97	1.0	50	0	93.9	69 - 129				
1,2,3-Trichloropropane	44.54	1.0	50	0	89.1	73 - 122				
1,2,4-Trichlorobenzene	45.77	1.0	50	0	91.5	69 - 130				
1,2,4-Trimethylbenzene	43.03	1.0	50	0	86.1	76 - 124				
1,2-Dibromo-3-chloropropane	49.55	1.0	50	0	99.1	62 - 128				
1,2-Dibromoethane	48.46	1.0	50	0	96.9	77 - 121				
1,2-Dichlorobenzene	44.65	1.0	50	0	89.3	80 - 119				
1,2-Dichloroethane	52.96	1.0	50	2.898	100	73 - 128				
1,2-Dichloropropane	46.37	1.0	50	0	92.7	78 - 122				
1,3,5-Trimethylbenzene	53.17	1.0	50	0	106	75 - 124				
1,3-Dichlorobenzene	44.09	1.0	50	0	88.2	80 - 119				
1,3-Dichloropropane	47.53	1.0	50	0	95.1	80 - 119				
1,4-Dichlorobenzene	44.45	1.0	50	0	88.9	79 - 118				
2,2-Dichloropropane	44.2	1.0	50	0	88.4	60 - 139				
2-Butanone	106.4	2.0	100	0	106	56 - 143				
2-Chlorotoluene	51.57	1.0	50	0	103	79 - 122				
2-Hexanone	105.9	2.0	100	0	106	57 - 139				
4-Chlorotoluene	51.51	1.0	50	0	103	78 - 122				
4-Isopropyltoluene	46.51	1.0	50	0	93.0	77 - 127				
4-Methyl-2-pentanone	102	2.0	100	0	102	67 - 130				
Acetone	107.6	2.0	100	0	108	39 - 160				
Benzene	47.85	1.0	50	1.392	92.9	79 - 120				
Bromobenzene	42.35	1.0	50	0	84.7	80 - 120				
Bromochloromethane	50.82	1.0	50	0	102	78 - 123				
Bromodichloromethane	48.8	1.0	50	0	97.6	79 - 125				
Bromoform	48.81	1.0	50	0	97.6	66 - 130				
Bromomethane	47.94	1.0	50	0	95.9	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **R318107** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060552-02MS** Units: **ug/L** Analysis Date: **16-Jun-2018 16:07**
Client ID: **18CPTMW03SW_061118** Run ID: **VOA2_318107** SeqNo: **4612346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	99.66	2.0	100	0	99.7	64 - 133				
Carbon tetrachloride	56.54	1.0	50	0	113	72 - 136				
Chlorobenzene	46.12	1.0	50	0	92.2	82 - 118				
Chloroethane	55.9	1.0	50	0	112	60 - 138				
Chloroform	47.1	1.0	50	0	94.2	79 - 124				
Chloromethane	41.93	1.0	50	0	83.9	50 - 139				
cis-1,2-Dichloroethene	53.71	1.0	50	4.893	97.6	78 - 123				
cis-1,3-Dichloropropene	49.27	1.0	50	0	98.5	75 - 124				
Dibromochloromethane	47.12	1.0	50	0	94.2	74 - 126				
Dibromomethane	51.29	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	53.26	1.0	50	0	107	32 - 152				
Ethylbenzene	47.13	1.0	50	0	94.3	79 - 121				
Hexachlorobutadiene	48.73	1.0	50	0	97.5	66 - 134				
Isopropylbenzene	48.83	1.0	50	0	97.7	72 - 131				
m,p-Xylene	91.79	2.0	100	0	91.8	80 - 121				
Methylene chloride	45.7	2.0	50	0	91.4	74 - 124				
Naphthalene	47.91	1.0	50	0	95.8	61 - 128				
n-Butylbenzene	49.14	1.0	50	0	98.3	75 - 128				
n-Propylbenzene	52.99	1.0	50	0	106	76 - 126				
o-Xylene	46.67	1.0	50	0	93.3	78 - 122				
sec-Butylbenzene	46.67	1.0	50	0	93.3	77 - 126				
Styrene	46.81	1.0	50	0	93.6	78 - 123				
tert-Butylbenzene	54.01	1.0	50	0	108	78 - 124				
Tetrachloroethene	47.4	1.0	50	0	94.8	74 - 129				
Toluene	45.57	1.0	50	0	91.1	80 - 121				
trans-1,2-Dichloroethene	50.44	1.0	50	1.38	98.1	75 - 124				
trans-1,3-Dichloropropene	50.63	1.0	50	0	101	73 - 127				
Trichloroethene	74.7	1.0	50	27.8	93.8	79 - 123				
Trichlorofluoromethane	53.01	1.0	50	0	106	65 - 141				
Vinyl chloride	51.48	1.0	50	0	103	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.82*	*1.0*	*50*	*0*	*89.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.65*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.31*	*1.0*	*50*	*0*	*96.6*	*80 - 119*				
Surr: Toluene-d8	*50.79*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **R318107** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS18060552-02MSD** Units: **ug/L** Analysis Date: **16-Jun-2018 16:32**
Client ID: **18CPTMW03SW_061118** Run ID: **VOA2_318107** SeqNo: **4612347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.67	1.0	50	0	93.3	78 - 124	47.64	2.06	20	
1,1,1-Trichloroethane	48.77	1.0	50	0	97.5	74 - 131	50.03	2.56	20	
1,1,2,2-Tetrachloroethane	44.16	1.0	50	0	88.3	71 - 121	44.34	0.407	20	
1,1,2-Trichloroethane	45.95	1.0	50	0	91.9	80 - 119	46.18	0.494	20	
1,1-Dichloroethane	48.75	1.0	50	0	97.5	77 - 125	49.77	2.07	20	
1,1-Dichloroethene	50.6	1.0	50	0	101	71 - 131	51.65	2.05	20	
1,1-Dichloropropene	44.65	1.0	50	0	89.3	78 - 125	45.99	2.95	20	
1,2,3-Trichlorobenzene	46.54	1.0	50	0	93.1	69 - 129	46.97	0.921	20	
1,2,3-Trichloropropane	43.14	1.0	50	0	86.3	73 - 122	44.54	3.19	20	
1,2,4-Trichlorobenzene	45.63	1.0	50	0	91.3	69 - 130	45.77	0.305	20	
1,2,4-Trimethylbenzene	42.68	1.0	50	0	85.4	76 - 124	43.03	0.802	20	
1,2-Dibromo-3-chloropropane	48.11	1.0	50	0	96.2	62 - 128	49.55	2.95	20	
1,2-Dibromoethane	47.48	1.0	50	0	95.0	77 - 121	48.46	2.04	20	
1,2-Dichlorobenzene	43.93	1.0	50	0	87.9	80 - 119	44.65	1.61	20	
1,2-Dichloroethane	50.55	1.0	50	2.898	95.3	73 - 128	52.96	4.66	20	
1,2-Dichloropropane	45.79	1.0	50	0	91.6	78 - 122	46.37	1.27	20	
1,3,5-Trimethylbenzene	52.46	1.0	50	0	105	75 - 124	53.17	1.35	20	
1,3-Dichlorobenzene	43.72	1.0	50	0	87.4	80 - 119	44.09	0.852	20	
1,3-Dichloropropane	46.38	1.0	50	0	92.8	80 - 119	47.53	2.46	20	
1,4-Dichlorobenzene	44.25	1.0	50	0	88.5	79 - 118	44.45	0.466	20	
2,2-Dichloropropane	42.03	1.0	50	0	84.1	60 - 139	44.2	5.03	20	
2-Butanone	104.5	2.0	100	0	105	56 - 143	106.4	1.76	20	
2-Chlorotoluene	51.49	1.0	50	0	103	79 - 122	51.57	0.156	20	
2-Hexanone	102.5	2.0	100	0	103	57 - 139	105.9	3.25	20	
4-Chlorotoluene	50.44	1.0	50	0	101	78 - 122	51.51	2.09	20	
4-Isopropyltoluene	45.45	1.0	50	0	90.9	77 - 127	46.51	2.3	20	
4-Methyl-2-pentanone	99.52	2.0	100	0	99.5	67 - 130	102	2.48	20	
Acetone	105.1	2.0	100	0	105	39 - 160	107.6	2.37	20	
Benzene	46.8	1.0	50	1.392	90.8	79 - 120	47.85	2.22	20	
Bromobenzene	42.2	1.0	50	0	84.4	80 - 120	42.35	0.361	20	
Bromochloromethane	50.52	1.0	50	0	101	78 - 123	50.82	0.582	20	
Bromodichloromethane	48.09	1.0	50	0	96.2	79 - 125	48.8	1.48	20	
Bromoform	48.4	1.0	50	0	96.8	66 - 130	48.81	0.837	20	
Bromomethane	46.09	1.0	50	0	92.2	53 - 141	47.94	3.94	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: **R318107** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS18060552-02MSD** Units: **ug/L** Analysis Date: **16-Jun-2018 16:32**
Client ID: **18CPTMW03SW_061118** Run ID: **VOA2_318107** SeqNo: **4612347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	96.61	2.0	100	0	96.6	64 - 133	99.66	3.1	20	
Carbon tetrachloride	54.64	1.0	50	0	109	72 - 136	56.54	3.43	20	
Chlorobenzene	45.44	1.0	50	0	90.9	82 - 118	46.12	1.48	20	
Chloroethane	54.33	1.0	50	0	109	60 - 138	55.9	2.86	20	
Chloroform	46.57	1.0	50	0	93.1	79 - 124	47.1	1.14	20	
Chloromethane	40.94	1.0	50	0	81.9	50 - 139	41.93	2.38	20	
cis-1,2-Dichloroethene	52.35	1.0	50	4.893	94.9	78 - 123	53.71	2.57	20	
cis-1,3-Dichloropropene	48.04	1.0	50	0	96.1	75 - 124	49.27	2.52	20	
Dibromochloromethane	46.74	1.0	50	0	93.5	74 - 126	47.12	0.8	20	
Dibromomethane	50.46	1.0	50	0	101	79 - 123	51.29	1.63	20	
Dichlorodifluoromethane	51.34	1.0	50	0	103	32 - 152	53.26	3.67	20	
Ethylbenzene	46.08	1.0	50	0	92.2	79 - 121	47.13	2.25	20	
Hexachlorobutadiene	48.71	1.0	50	0	97.4	66 - 134	48.73	0.0412	20	
Isopropylbenzene	47.36	1.0	50	0	94.7	72 - 131	48.83	3.07	20	
m,p-Xylene	89.53	2.0	100	0	89.5	80 - 121	91.79	2.5	20	
Methylene chloride	43.97	2.0	50	0	87.9	74 - 124	45.7	3.85	20	
Naphthalene	48.56	1.0	50	0	97.1	61 - 128	47.91	1.35	20	
n-Butylbenzene	48.29	1.0	50	0	96.6	75 - 128	49.14	1.74	20	
n-Propylbenzene	52.03	1.0	50	0	104	76 - 126	52.99	1.82	20	
o-Xylene	45.37	1.0	50	0	90.7	78 - 122	46.67	2.84	20	
sec-Butylbenzene	46.18	1.0	50	0	92.4	77 - 126	46.67	1.04	20	
Styrene	45.97	1.0	50	0	91.9	78 - 123	46.81	1.83	20	
tert-Butylbenzene	52.39	1.0	50	0	105	78 - 124	54.01	3.05	20	
Tetrachloroethene	45.79	1.0	50	0	91.6	74 - 129	47.4	3.46	20	
Toluene	44.46	1.0	50	0	88.9	80 - 121	45.57	2.46	20	
trans-1,2-Dichloroethene	49.67	1.0	50	1.38	96.6	75 - 124	50.44	1.53	20	
trans-1,3-Dichloropropene	49.31	1.0	50	0	98.6	73 - 127	50.63	2.64	20	
Trichloroethene	73.15	1.0	50	27.8	90.7	79 - 123	74.7	2.1	20	
Trichlorofluoromethane	52.06	1.0	50	0	104	65 - 141	53.01	1.82	20	
Vinyl chloride	49.23	1.0	50	0	98.5	58 - 137	51.48	4.49	20	
Surr: 1,2-Dichloroethane-d4	*44.41*	*1.0*	*50*	*0*	*88.8*	*81 - 118*	*44.82*	*0.93*	*20*	
Surr: 4-Bromofluorobenzene	*52.42*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.65*	*0.448*	*20*	
Surr: Dibromofluoromethane	*48.34*	*1.0*	*50*	*0*	*96.7*	*80 - 119*	*48.31*	*0.0698*	*20*	
Surr: Toluene-d8	*50.76*	*1.0*	*50*	*0*	*102*	*89 - 112*	*50.79*	*0.0466*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060552

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060552-01	HS18060552-02	HS18060552-03	HS18060552-04
HS18060552-05	HS18060552-06	HS18060552-07	HS18060552-08
HS18060552-09			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 02-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: **HS18060552**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 02-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 02-Jul-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**12-Jun-2018 10:30**
Work Order:	HS18060552	Received by:	**JRM**

Checklist completed by:	*Jared R. Makan* (eSignature)	12-Jun-2018 (Date)	Reviewed by: *RJ Modashia* (eSignature)	12-Jun-2018 (Date)

Matrices:

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.8c/2.4c UC/C	IR30	
Cooler(s)/Kit(s):	43953		
Date/Time sample(s) sent to storage:	06/12/2018 16:15		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00900451

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) / Quality Assurance Samples (6)

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
MW23_061118		6/11/18	0810	-	N		WG	4	X	X						
18CPTMW03SW_061118		6/11/18	0905	-	N		WG	6	X	X	X	X				
MW1_061118		6/11/18	0955	-	N		WG	5	X	X	X					
MW1_061118_a		6/11/18	0955		FD		WG	5	X	X	X					
MW10_061118		6/11/18	1050		N		WG	5	X	X		X				
18CPTMW18_061118		6/11/18	1150	-	N		WG	6	X	X	X	X				
18WW22_061118		6/11/18	1245	-	N		WG	6	X	X	X	X				
CO3_061118		6/11/18	1345	-	N		WG	6	X	X	X	X				
TRIP BLANK		6/11/18		-	TB		[illegible]	2	X							
				-												
				-												

HS18060552
Bhate Environmental Associates. Inc.
LHAAP 18/24

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/11/18	1430	1. JM	6/12/18	10:30
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

Method of Shipment: _____

Fed _____ Ex _____ Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Codes 43953 12.30
Temp 2-8 0F-0.4

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

43953

CUSTODY SEAL

Date: 6/11/18 Time: 1430
Name: Scott Beeringer
Company: BHAS

Seal Broken By: SM
Date: 06/12/18

43953

JUN 12 2018

DWS – ID

J4616879804

43953

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DATE OF SHIPMENT

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DELIVERY

010191120 6/14 RRD United Parcel Service, Louisville, KY

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1816481; 1816548; 1817040

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2103 (217008)

General Set Information: There were fourteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 1816481001/1816548001 – 10,000; 1816481003/04 – 100. Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605872) was less than 1/2 the CRDL. The recovery for the LCS (605873) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1816481002 (Client ID: 18CPTMW035_061118). The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 19JUND15/23/25.

Thomas Bosch June 21, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 29, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1816481**
Project ID: HS18060552 061118
Purchase Order: HS18060552
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
MW23_061118	1816481001	06/11/18	06/13/18	
18CPTMW03SW_061118	1816481002	06/11/18	06/13/18	
MW1_061118	1816481003	06/11/18	06/13/18	
MW1_061118_a	1816481004	06/11/18	06/13/18	
MW10_061118	1816481005	06/11/18	06/13/18	
18CPTMW18_061118	1816481006	06/11/18	06/13/18	
18WW22_061118	1816481007	06/11/18	06/13/18	
C03_061118	1816481008	06/11/18	06/13/18	

ANALYTICAL REPORT

Workorder: 34-1816481
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW23_061118** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481001 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 11:06
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**91000**	10000	20000	40000	10000	

Sample ID: **18CPTMW03SW_061118** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481002 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 11:21
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**62**	1.0	2.0	4.0	1	

Sample ID: **MW1_061118** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481003 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 12:03
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**5900**	100	200	400	100	

Sample ID: **MW1_061118_a** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481004 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 12:17
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**6000**	100	200	400	100	

ANALYTICAL REPORT

Workorder: 34-1816481
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW10_061118** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481005 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 12:31
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18CPTMW18_061118** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481006 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 12:45
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18WW22_061118** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481007 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 13:00
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **C03_061118** | Sampling Site: NA | Collected: 06/11/2018
Lab ID: 1816481008 | Media: 125 mL Nalgene | Received: 06/13/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2103 (HBN: 217008)
Analyzed: 06/19/2018 13:14
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**29**	1.0	2.0	4.0	1	

ANALYTICAL REPORT

Workorder: 34-1816481
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Comments

Workorder: 1816481

The following samples were analyzed and reported at various dilutions. 1816481001 – 10,000; 1816481003/04 – 10. The reporting limits have been adjusted accordingly.

Report amended to correct sample IDs per client request. No data was changed.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/20/2018 16:16	/S/ Stephen Brose 06/22/2018 08:16

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1816481
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816481

Limits: Client SOW/Contract Specified
Basis: DoD QSM

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: EPA 6850, DoD QSM
Batch: ELMS/2103 (HBN: 217008)
Analyzed By: Thomas Bosch

Blank

LMB: 605872
Analyzed: 06/19/2018 10:34
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605873
Analyzed: 06/19/2018 10:48
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.06	5.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1816481002
Analyzed: 06/19/2018 11:21
Dilution: 1
Units: ug/L

MS: 605908
Analyzed: 06/19/2018 11:35
Dilution: 1
Units: ug/L

MSD: 605909
Analyzed: 06/19/2018 11:49
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	62.0	66.5	5	96.9	78.8	123.8	66.2	90.7	0.469	0.0	20.0

Continuing Calibration Verification

CCV: 605869
Analyzed: 06/19/2018 09:51
Units: ug/L
Criteria: ± 15%

CCV: 605876
Analyzed: 06/19/2018 13:28
Units: ug/L
Criteria: ± 15%

CCV: 605878
Analyzed: 06/19/2018 15:52
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.1	25.0	101	25.1	25.0	100	23.7	25.0	94.8

Interference Check Sample

ICSA: 605871
Analyzed: 06/19/2018 10:20
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.922	1.00	92.2

Limit of Detection Verification

LODV: 605870
Analyzed: 06/19/2018 10:06
Units: ug/L
Criteria: ± 50%

LODV: 605877
Analyzed: 06/19/2018 13:42
Units: ug/L
Criteria: ± 50%

LODV: 605879
Analyzed: 06/19/2018 16:06
Units: ug/L
Criteria: ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.907	1.00	90.7	0.956	1.00	95.6	1.05	1.00	105

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816481

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2103 (HBN: 217008)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/20/2018 16:16	06/22/2018 08:16

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

W 1816481

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9269

1816481

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18060552
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060552-01**	**MW23_061118**	**Groundwater**	**11 Jun 2018 08:10**
	SUB_Perch-6850			20 Jun 2018
2.	**HS18060552-02**	**18CPTMW035_061118**	**Groundwater**	**11 Jun 2018 09:05**
	SUB_Perch-6850			20 Jun 2018
3.	**HS18060552-03**	**MW1_061118**	**Groundwater**	**11 Jun 2018 09:55**
	SUB_Perch-6850			20 Jun 2018
4.	**HS18060552-04**	**MW1_061118_a**	**Groundwater**	**11 Jun 2018 09:55**
	SUB_Perch-6850			20 Jun 2018
5.	**HS18060552-05**	**MW10_061118**	**Groundwater**	**11 Jun 2018 10:50**
	SUB_Perch-6850			20 Jun 2018
6.	**HS18060552-06**	**18CPIMW18_061118**	**Groundwater**	**11 Jun 2018 11:50**
	SUB_Perch-6850			20 Jun 2018
7.	**HS18060552-07**	**18WW22_061118**	**Groundwater**	**11 Jun 2018 12:45**
	SUB_Perch-6850			20 Jun 2018
8.	**HS18060552-08**	**C03_061118**	**Groundwater**	**11 Jun 2018 13:45**
	SUB_Perch-6850			20 Jun 2018

Subcontract Chain of Custody

COC ID: 9269

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By:	J. MAHONY	Date/Time:	6/12/18 18:00
Received By:	[illegible]	Date/Time:	06/13/2018 10:05
Cooler ID(s):		Temperature(s):	

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060552	Split:	Workorder ID: 1816481	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Requested Analysis: EPA 6850, DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/11/2018 08:10	MW23_061118	1816481001		Water	A	1	A
2	06/11/2018 09:05	18CPTMW035_061118	1816481002		Water	A	1	A
3	06/11/2018 09:55	MW1_061118	1816481003		Water	A	1	A
4	06/11/2018 09:55	MW1_061118-a	1816481004		Water	A	1	A
5	06/11/2018 10:50	MW10_061118	1816481005		Water	A	1	A
6	06/11/2018 11:50	18CPIMW18_061118	1816481006		Water	A	1	A
7	06/11/2018 12:45	18WW22_061118	1816481007		Water	A	1	A
8	06/11/2018 13:45	C03_061118	1816481008		Water	A	1	A
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Werath, Julie	06/13/2018 10:25	ALS Sample Receiving	Sample Login
Julie Werath	6/13/18 1600	5B	storage
R.33.1	6.18.18/16:10	T. Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: Houston ALS

Project/Task/Site: 1816481

Date/Time of Receipt: 06/13/2018 10:35

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8617	4 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) [signature] (Printed Name) 06/15/2018 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00900466

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 12JUN18
ACTWGT: 20.00 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

TO **PAUL POPE**
ALS LABORATORY GROUP
960 WEST LEVOY DRIVE

SALT LAKE CITY UT 84123
(800) 356-9135
REF: HS18060552 RJ

FedEx Express

E

J171016102001uv

WED - 13 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 0242

AX BTFA

84123
UT-US SLC

546C2/93DF/53C1

Part # 159469-434 RIT2 EXP 03/19 ©

Batch Worklist

Batch: ELMS/ 2103 **Created:** 6/19/2018 09:21 **Instrument:** LCMS04 **HBN:** 217008

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1816481 [ENV_LVL4]
Workorder: 1816548 [ENV_LVL4]
Workorder: 1817040 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	605869	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
2	605870	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
3	605871	ICS for HBN 217008 [ELMS/2103]				ICS	3		E6850..D3Q	5311		6/26/2018	6/19/2018
4	605872	LMB for HBN 217008 [ELMS/2103]				LMB	3		E6850Q413Q	5311		6/26/2018	6/19/2018
5	605873	LCS for HBN 217008 [ELMS/2103]				LCS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
6	1816481001	MW23_061118				SAMPLE	3	1816481001-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
7	1816481002	18CPTMW035_061118				SAMPLE	3	1816481002-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
8	605908	18CPTMW035_06..(1816481002MS)				MS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
9	605909	18CPTMW035_0...(1816481002MSD)				MSD	3		E6850Q413Q	5311		6/26/2018	6/19/2018
10	1816481003	MW1_061118				SAMPLE	3	1816481003-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
11	1816481004	MW1_061118-a				SAMPLE	3	1816481004-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
12	1816481005	MW10_061118				SAMPLE	3	1816481005-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
13	1816481006	18CPIMW18_061118				SAMPLE	3	1816481006-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
14	1816481007	18WW22_061118				SAMPLE	3	1816481007-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
15	1816481008	C03_061118				SAMPLE	3	1816481008-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
16	605876	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
17	605877	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
18	1816548001	MW14_061218				SAMPLE	3	1816548001-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
19	1816548002	18CPTMW19_061218				SAMPLE	3	1816548002-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
20	1816548003	18CPTMW19SW_061218				SAMPLE	3	1816548003-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
21	1816548004	18WW03_061218				SAMPLE	3	1816548004-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
22	1816548005	18WW03_061218-a				SAMPLE	3	1816548005-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
23	1817040001	LH18/24-SP650_061818				SAMPLE	3	1817040001-A	E6850Q41.3	5480	7/16/2018	7/3/2018	6/19/2018
24	605878	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
25	605879	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1816481 (001-08); 1816548 (001-05); 1817040 (001)
ELMS Batch/HBN ID: 2103 (217008)
Prep Date: 06/19/2018 Analysis Date: 06/19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605873; Target = 5.0µg/L. ASTM type II water was used for LMB 605872.

MS/MSD: MS/MSD was performed on sample 1816481002 (Client ID: 18CPTMW035_061118). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1816481001/1816548001 – 10,000; 1816481003/04 – 100. Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 19JUND15/23/25.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\217008-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

ALS Work Order #'s & Sample #( )'s: 1815995 (001-08); 1816211 (001-10)
ELMS Batch/HBN ID: 2102 (216868)
Prep Date: 06/18/2018 Analysis Date: 06/18,19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.s & 18JUN18B.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605575; Target = 5.0µg/L. ASTM type II water was used for LMB 605574.

MS/MSD: MS/MSD was performed on samples 1815995006/06 (Client ID: MW22_060718). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815995004/05; 1816211002/03/05-07/09 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 18JUND11/27.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216868-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

ALS

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK	Description - Perchlorate ISTD Stock

Standard:	23118	Created By:	Thomas Bosch	Amount:	1 mL
MFG:	Cambridge Isotope	Create Date:	04/04/2014 03:04PM	Expires:	02/27/2024
MFG Lot:	SDDG-013	Verified By:	Thomas Bosch	Usable:	Yes
Part ID:	OLM-7310-S	Verify Date:	02/05/2009 12:02AM	Lab Lot:	CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

ALS

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O	Description - ASTM Type II Water

Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED Reference Material Producer
ANAB ACCREDITED Testing Laboratory

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 28, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060613**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 7 sample(s) on Jun 13, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060613

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060613-01	MW14_061218	Groundwater		12-Jun-2018 08:40	13-Jun-2018 08:35	☐
HS18060613-02	AWD1_061218	Groundwater		12-Jun-2018 09:35	13-Jun-2018 08:35	☐
HS18060613-03	18CPTMW19_061218	Groundwater		12-Jun-2018 10:30	13-Jun-2018 08:35	☐
HS18060613-04	18CPTMW19SW_061218	Groundwater		12-Jun-2018 11:25	13-Jun-2018 08:35	☐
HS18060613-05	18WW03_061218	Groundwater		12-Jun-2018 12:25	13-Jun-2018 08:35	☐
HS18060613-06	18WW03_061218_a	Groundwater		12-Jun-2018 12:25	13-Jun-2018 08:35	☐
HS18060613-07	Trip Blank	Water	ALS-051618-54	12-Jun-2018 00:00	13-Jun-2018 08:35	☐

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060613

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129393

Sample ID: AWD1_061218 (HS18060613-02)

- The surrogate recoveries could not be determined due to dilution below the calibration range.
- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Sample ID: MW14_061218 (HS18060613-01)

- The surrogate recoveries could not be determined due to dilution below the calibration range.

GCMS Volatiles by Method SW8260

Batch ID: R318107

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470

Batch ID: 129503

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129430

Sample ID: HS18060552-02MS

- MS and MSD are for an unrelated sample

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW14_061218
Collection Date: 12-Jun-2018 08:40

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,1,1-Trichloroethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,1-Dichloroethane	**18**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:56
1,1-Dichloroethene	**75**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:56
1,1-Dichloropropene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2,3-Trichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2,3-Trichloropropane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2,4-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2-Dibromo-3-chloropropane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2-Dibromoethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2-Dichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,2-Dichloroethane	**50**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:56
1,2-Dichloropropane	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,3,5-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,3-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,3-Dichloropropane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
1,4-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
2,2-Dichloropropane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
2-Butanone	10	U	5.0	10	20	ug/L	10	16-Jun-2018 22:56
2-Chlorotoluene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
2-Hexanone	10	U	10	10	20	ug/L	10	16-Jun-2018 22:56
4-Chlorotoluene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
4-Isopropyltoluene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
4-Methyl-2-pentanone	10	U	7.0	10	20	ug/L	10	16-Jun-2018 22:56
Acetone	10	U	4.0	10	20	ug/L	10	16-Jun-2018 22:56
Benzene	**3.0**	J	**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:56
Bromobenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Bromochloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Bromodichloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Bromoform	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Bromomethane	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Carbon disulfide	10	U	6.0	10	20	ug/L	10	16-Jun-2018 22:56
Carbon tetrachloride	5.0	U	5.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Chlorobenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Chloroethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW14_061218
Collection Date: 12-Jun-2018 08:40

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Chloromethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
cis-1,2-Dichloroethene	**1,800**		**2.0**	**5.0**	**10**	**ug/L**	10	16-Jun-2018 22:56
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Dibromochloromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Dibromomethane	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Dichlorodifluoromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Ethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Hexachlorobutadiene	5.0	U	10	5.0	10	ug/L	10	16-Jun-2018 22:56
Isopropylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
m,p-Xylene	10	U	5.0	10	20	ug/L	10	16-Jun-2018 22:56
Methylene chloride	10	U	4.0	10	20	ug/L	10	16-Jun-2018 22:56
n-Butylbenzene	5.0	U	4.0	5.0	10	ug/L	10	16-Jun-2018 22:56
n-Propylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Naphthalene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
o-Xylene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
sec-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Styrene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
tert-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Tetrachloroethene	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Toluene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
trans-1,2-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
trans-1,3-Dichloropropene	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Trichloroethene	**7,300**		**20**	**50**	**100**	**ug/L**	100	16-Jun-2018 23:23
Trichlorofluoromethane	5.0	U	3.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Vinyl chloride	5.0	U	2.0	5.0	10	ug/L	10	16-Jun-2018 22:56
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*100*	*16-Jun-2018 23:23*
Surr: 1,2-Dichloroethane-d4	*88.5*			**0**	*81-118*	*%REC*	*10*	*16-Jun-2018 22:56*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*100*	*16-Jun-2018 23:23*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*10*	*16-Jun-2018 22:56*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*100*	*16-Jun-2018 23:23*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*10*	*16-Jun-2018 22:56*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*100*	*16-Jun-2018 23:23*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*16-Jun-2018 22:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24	WorkOrder:HS18060613	
Sample ID:	MW14_061218	Lab ID:HS18060613-01	
Collection Date:	12-Jun-2018 08:40	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	**120**		**10**	**10**	**10**	**ug/L**	1000	21-Jun-2018 14:30
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*1000*	*21-Jun-2018 14:30*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*1000*	*21-Jun-2018 14:30*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*1000*	*21-Jun-2018 14:30*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0347**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:43
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:43
Arsenic	**0.00498**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:43
Barium	**0.451**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:43
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:43
Cadmium	**0.000588**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:43
Calcium	**86.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:43
Chromium	**0.133**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:43
Cobalt	**0.0250**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:43
Copper	**0.00292**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	19-Jun-2018 19:43
Iron	**67.3**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:43
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:43
Magnesium	**36.9**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:43
Manganese	**2.53**		**0.00700**	**0.0100**	**0.0500**	**mg/L**	10	20-Jun-2018 12:27
Nickel	**0.292**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:43
Potassium	**21.2**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:43
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:43
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:43
Sodium	**275**		**0.140**	**1.00**	**2.00**	**mg/L**	10	20-Jun-2018 12:27
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:43
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:43
Zinc	**0.413**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:43
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 18-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	19-Jun-2018 13:38
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18 24	WorkOrder:HS18060613
Sample ID:	AWD1_061218	Lab ID:HS18060613-02
Collection Date:	12-Jun-2018 09:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	**8.3**		**1.0**	**1.0**	**1.0**	**ug/L**	100	19-Jun-2018 15:30
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*19-Jun-2018 15:30*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*19-Jun-2018 15:30*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*19-Jun-2018 15:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW19_061218
Collection Date: 12-Jun-2018 10:30

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 18:35
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 18:35
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 18:35
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 18:35
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 18:35
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW19_061218
Collection Date: 12-Jun-2018 10:30

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 18:35
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 18:35
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:35
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:35
Surr: 1,2-Dichloroethane-d4	*86.6*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 18:35*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 18:35*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 18:35*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 18:35*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 17:37
Surr: 2-Fluorobiphenyl	*118*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 17:37*
Surr: 4-Terphenyl-d14	*85.6*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 17:37*
Surr: Nitrobenzene-d5	*86.8*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 17:37*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW19SW_061218
Collection Date: 12-Jun-2018 11:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 18:59
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 18:59
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 18:59
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 18:59
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 18:59
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW19SW_061218
Collection Date: 12-Jun-2018 11:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 18:59
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 18:59
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 18:59
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 18:59
Surr: 1,2-Dichloroethane-d4	*85.0*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 18:59*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 18:59*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 18:59*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 18:59*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 17:58
Surr: 2-Fluorobiphenyl	*103*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 17:58*
Surr: 4-Terphenyl-d14	*80.9*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 17:58*
Surr: Nitrobenzene-d5	*46.7*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 17:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW19SW_061218
Collection Date: 12-Jun-2018 11:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.622**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:45
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:45
Arsenic	**0.00310**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:45
Barium	**0.164**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:45
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:45
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:45
Calcium	**11.2**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:45
Chromium	**0.00557**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:45
Cobalt	**0.00700**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:45
Copper	**0.00371**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	19-Jun-2018 19:45
Iron	**9.75**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:45
Lead	**0.000870**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:45
Magnesium	**5.44**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:45
Manganese	**0.391**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:45
Nickel	**0.00241**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:45
Potassium	**2.05**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:45
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:45
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:45
Sodium	**25.7**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:45
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:45
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:45
Zinc	**0.0153**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:45
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 18-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	19-Jun-2018 13:40
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW03_061218
Collection Date: 12-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 19:24
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 19:24
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 19:24
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 19:24
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 19:24
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW03_061218
Collection Date: 12-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 19:24
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 19:24
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:24
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:24
Surr: 1,2-Dichloroethane-d4	*86.1*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 19:24*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 19:24*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 19:24*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 19:24*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 18:19
Surr: 2-Fluorobiphenyl	*120*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 18:19*
Surr: 4-Terphenyl-d14	*88.3*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 18:19*
Surr: Nitrobenzene-d5	*43.0*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 18:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW03_061218
Collection Date: 12-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0100**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:47
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Barium	**0.169**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:47
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Calcium	**7.71**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:47
Chromium	**0.00150**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:47
Cobalt	0.00100	U	0.000200	0.00100	0.00500	mg/L	1	19-Jun-2018 19:47
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	19-Jun-2018 19:47
Iron	**4.17**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:47
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Magnesium	**5.27**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:47
Manganese	**0.0854**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:47
Nickel	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Potassium	**1.88**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:47
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:47
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Sodium	**98.5**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:47
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:47
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:47
Zinc	0.00250	U	0.00200	0.00250	0.00400	mg/L	1	19-Jun-2018 19:47
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 18-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	19-Jun-2018 13:42
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW03_061218_a
Collection Date: 12-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 19:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 19:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 19:48
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 19:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 19:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW03_061218_a
Collection Date: 12-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 19:48
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 19:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 19:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 19:48
Surr: 1,2-Dichloroethane-d4	*86.0*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 19:48*
Surr: 4-Bromofluorobenzene	*100.0*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 19:48*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 19:48*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 19:48*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 18:39
Surr: 2-Fluorobiphenyl	*119*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 18:39*
Surr: 4-Terphenyl-d14	*76.9*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 18:39*
Surr: Nitrobenzene-d5	*90.6*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 18:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW03_061218_a
Collection Date: 12-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0103**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:53
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Barium	**0.164**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:53
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Calcium	**7.69**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:53
Chromium	**0.00126**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:53
Cobalt	0.00100	U	0.000200	0.00100	0.00500	mg/L	1	19-Jun-2018 19:53
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	19-Jun-2018 19:53
Iron	**4.36**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:53
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Magnesium	**5.15**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:53
Manganese	**0.0864**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:53
Nickel	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Potassium	**1.88**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:53
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:53
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Sodium	**97.5**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:53
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:53
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:53
Zinc	**0.00206**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:53
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 18-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	19-Jun-2018 13:47
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 12-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 14:53
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	16-Jun-2018 14:53
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	16-Jun-2018 14:53
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 14:53
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	16-Jun-2018 14:53
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 12-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060613
Lab ID:HS18060613-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	16-Jun-2018 14:53
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	16-Jun-2018 14:53
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	16-Jun-2018 14:53
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	16-Jun-2018 14:53
Surr: 1,2-Dichloroethane-d4	*87.7*			**0**	*81-118*	*%REC*	*1*	*16-Jun-2018 14:53*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*16-Jun-2018 14:53*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*16-Jun-2018 14:53*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*16-Jun-2018 14:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

Batch ID: 129393 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060613-01	1	1000	1 (mL)	0.001
HS18060613-02	1	1000	1 (mL)	0.001
HS18060613-03	1	1000	1 (mL)	0.001
HS18060613-04	1	1000	1 (mL)	0.001
HS18060613-05	1	1000	1 (mL)	0.001
HS18060613-06	1	1000	1 (mL)	0.001

Batch ID: 129430 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060613-01	1	10	10 (mL)	1
HS18060613-04	1	10	10 (mL)	1
HS18060613-05	1	10	10 (mL)	1
HS18060613-06	1	10	10 (mL)	1

Batch ID: 129503 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060613-01	1	10 (mL)	10 (mL)	1
HS18060613-04	1	10 (mL)	10 (mL)	1
HS18060613-05	1	10 (mL)	10 (mL)	1
HS18060613-06	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129393	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060613-01	MW14_061218	12 Jun 2018 08:40		14 Jun 2018 14:42	21 Jun 2018 14:30	1000
HS18060613-02	AWD1_061218	12 Jun 2018 09:35		14 Jun 2018 14:42	19 Jun 2018 15:30	100
HS18060613-03	18CPTMW19_061218	12 Jun 2018 10:30		14 Jun 2018 14:42	15 Jun 2018 17:37	1
HS18060613-04	18CPTMW19SW_061218	12 Jun 2018 11:25		14 Jun 2018 14:42	15 Jun 2018 17:58	1
HS18060613-05	18WW03_061218	12 Jun 2018 12:25		14 Jun 2018 14:42	15 Jun 2018 18:19	1
HS18060613-06	18WW03_061218_a	12 Jun 2018 12:25		14 Jun 2018 14:42	15 Jun 2018 18:39	1
Batch ID 129430	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060613-01	MW14_061218	12 Jun 2018 08:40		15 Jun 2018 12:00	20 Jun 2018 12:27	10
HS18060613-01	MW14_061218	12 Jun 2018 08:40		15 Jun 2018 12:00	19 Jun 2018 19:43	1
HS18060613-04	18CPTMW19SW_061218	12 Jun 2018 11:25		15 Jun 2018 12:00	19 Jun 2018 19:45	1
HS18060613-05	18WW03_061218	12 Jun 2018 12:25		15 Jun 2018 12:00	19 Jun 2018 19:47	1
HS18060613-06	18WW03_061218_a	12 Jun 2018 12:25		15 Jun 2018 12:00	19 Jun 2018 19:53	1
Batch ID 129503	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060613-01	MW14_061218	12 Jun 2018 08:40		18 Jun 2018 12:12	19 Jun 2018 13:38	1
HS18060613-04	18CPTMW19SW_061218	12 Jun 2018 11:25		18 Jun 2018 12:12	19 Jun 2018 13:40	1
HS18060613-05	18WW03_061218	12 Jun 2018 12:25		18 Jun 2018 12:12	19 Jun 2018 13:42	1
HS18060613-06	18WW03_061218_a	12 Jun 2018 12:25		18 Jun 2018 12:12	19 Jun 2018 13:47	1
Batch ID R318107	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060613-07	Trip Blank	12 Jun 2018 00:00			16 Jun 2018 14:53	1
Batch ID R318107	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060613-01	MW14_061218	12 Jun 2018 08:40			16 Jun 2018 23:23	100
HS18060613-01	MW14_061218	12 Jun 2018 08:40			16 Jun 2018 22:56	10
HS18060613-03	18CPTMW19_061218	12 Jun 2018 10:30			16 Jun 2018 18:35	1
HS18060613-04	18CPTMW19SW_061218	12 Jun 2018 11:25			16 Jun 2018 18:59	1
HS18060613-05	18WW03_061218	12 Jun 2018 12:25			16 Jun 2018 19:24	1
HS18060613-06	18WW03_061218_a	12 Jun 2018 12:25			16 Jun 2018 19:48	1
Batch ID R318810	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060613-01	MW14_061218	12 Jun 2018 08:40			28 Jun 2018 09:16	1
HS18060613-03	18CPTMW19_061218	12 Jun 2018 10:30			28 Jun 2018 09:16	1
HS18060613-04	18CPTMW19SW_061218	12 Jun 2018 11:25			28 Jun 2018 09:16	1
HS18060613-05	18WW03_061218	12 Jun 2018 12:25			28 Jun 2018 09:16	1
HS18060613-06	18WW03_061218_a	12 Jun 2018 12:25			28 Jun 2018 09:16	1

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129430** Units: **mg/L** Analysis Date: **19-Jun-2018 19:15**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615990** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.00344	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01229	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.04754	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129430** Units: **mg/L** Analysis Date: **19-Jun-2018 19:17**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615991** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09908	0.0100	0.1	0	99.1	80 - 120				
Antimony	0.04748	0.00200	0.05	0	95.0	80 - 120				
Arsenic	0.04769	0.00200	0.05	0	95.4	80 - 120				
Barium	0.0471	0.00400	0.05	0	94.2	80 - 120				
Beryllium	0.04958	0.00200	0.05	0	99.2	80 - 120				
Cadmium	0.04777	0.00200	0.05	0	95.5	80 - 120				
Calcium	4.677	0.500	5	0	93.5	80 - 120				
Chromium	0.04811	0.00400	0.05	0	96.2	80 - 120				
Cobalt	0.04815	0.00500	0.05	0	96.3	80 - 120				
Copper	0.04811	0.00200	0.05	0	96.2	80 - 120				
Iron	4.622	0.200	5	0	92.4	80 - 120				
Lead	0.04806	0.00200	0.05	0	96.1	80 - 120				
Magnesium	4.685	0.200	5	0	93.7	80 - 120				
Manganese	0.04624	0.00500	0.05	0	92.5	80 - 120				
Nickel	0.04821	0.00200	0.05	0	96.4	80 - 120				
Potassium	4.669	0.200	5	0	93.4	80 - 120				
Selenium	0.04998	0.00200	0.05	0	100.0	80 - 120				
Silver	0.04916	0.00200	0.05	0	98.3	80 - 120				
Sodium	4.751	0.200	5	0	95.0	80 - 120				
Thallium	0.04577	0.00200	0.05	0	91.5	80 - 120				
Vanadium	0.04485	0.00500	0.05	0	89.7	80 - 120				
Zinc	0.04978	0.00400	0.05	0	99.6	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060552-02MS** Units: **mg/L** Analysis Date: **19-Jun-2018 19:23**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615994** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1133	0.0100	0.1	0.01309	100	80 - 120				
Antimony	0.04514	0.00200	0.05	0.000386	89.5	80 - 120				
Arsenic	0.04689	0.00200	0.05	0.00027	93.2	80 - 120				
Barium	0.6185	0.00400	0.05	0.5637	110	80 - 120				O
Beryllium	0.0561	0.00200	0.05	0.000001	112	80 - 120				
Cadmium	0.04781	0.00200	0.05	0.000067	95.5	80 - 120				
Calcium	49.12	0.500	5	44.18	98.6	80 - 120				O
Chromium	0.05209	0.00400	0.05	0.007476	89.2	80 - 120				
Cobalt	0.04542	0.00500	0.05	0.001036	88.8	80 - 120				
Copper	0.0452	0.00200	0.05	0.000618	89.2	80 - 120				
Iron	10.28	0.200	5	6.152	82.6	80 - 120				
Lead	0.04585	0.00200	0.05	0.000239	91.2	80 - 120				
Magnesium	22.11	0.200	5	18.8	66.2	80 - 120				S
Manganese	0.3142	0.00500	0.05	0.2867	54.9	80 - 120				SO
Nickel	0.04947	0.00200	0.05	0.004612	89.7	80 - 120				
Potassium	161	0.200	5	165.1	-81.2	80 - 120				SO
Selenium	0.04716	0.00200	0.05	0.000447	93.4	80 - 120				
Silver	0.04415	0.00200	0.05	0.00002	88.3	80 - 120				
Sodium	235.6	0.200	5	237.9	-45.1	80 - 120				SEO
Thallium	0.04268	0.00200	0.05	0.000295	84.8	80 - 120				
Vanadium	0.04394	0.00500	0.05	-0.002147	92.2	80 - 120				
Zinc	0.05207	0.00400	0.05	0.006173	91.8	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060552-02MSD** Units: **mg/L** Analysis Date: **19-Jun-2018 19:29**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615997** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1107	0.0100	0.1	0.01309	97.7	80 - 120	0.1133	2.32	20	
Antimony	0.04607	0.00200	0.05	0.000386	91.4	80 - 120	0.04514	2.04	20	
Arsenic	0.04699	0.00200	0.05	0.00027	93.4	80 - 120	0.04689	0.209	20	
Barium	0.6284	0.00400	0.05	0.5637	129	80 - 120	0.6185	1.59	20	SO
Beryllium	0.055	0.00200	0.05	0.000001	110	80 - 120	0.0561	1.97	20	
Cadmium	0.04592	0.00200	0.05	0.000067	91.7	80 - 120	0.04781	4.04	20	
Calcium	49.59	0.500	5	44.18	108	80 - 120	49.12	0.968	20	O
Chromium	0.05316	0.00400	0.05	0.007476	91.4	80 - 120	0.05209	2.04	20	
Cobalt	0.04595	0.00500	0.05	0.001036	89.8	80 - 120	0.04542	1.17	20	
Copper	0.04646	0.00200	0.05	0.000618	91.7	80 - 120	0.0452	2.76	20	
Iron	10.65	0.200	5	6.152	90.0	80 - 120	10.28	3.51	20	
Lead	0.04498	0.00200	0.05	0.000239	89.5	80 - 120	0.04585	1.9	20	
Magnesium	23.32	0.200	5	18.8	90.3	80 - 120	22.11	5.31	20	
Manganese	0.3402	0.00500	0.05	0.2867	107	80 - 120	0.3142	7.97	20	O
Nickel	0.05002	0.00200	0.05	0.004612	90.8	80 - 120	0.04947	1.11	20	
Potassium	166.5	0.200	5	165.1	28.0	80 - 120	161	3.33	20	SO
Selenium	0.04896	0.00200	0.05	0.000447	97.0	80 - 120	0.04716	3.76	20	
Silver	0.04294	0.00200	0.05	0.00002	85.8	80 - 120	0.04415	2.77	20	
Sodium	239.8	0.200	5	237.9	39.4	80 - 120	235.6	1.78	20	SEO
Thallium	0.04335	0.00200	0.05	0.000295	86.1	80 - 120	0.04268	1.55	20	
Vanadium	0.04427	0.00500	0.05	-0.002147	92.8	80 - 120	0.04394	0.766	20	
Zinc	0.05065	0.00400	0.05	0.006173	89.0	80 - 120	0.05207	2.77	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060552-02PDS** Units: **mg/L** Analysis Date: **19-Jun-2018 19:31**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615998** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1107	0.0100	0.1	0.01309	97.6	75 - 125				
Antimony	0.08617	0.00200	0.1	0.000386	85.8	75 - 125				
Arsenic	0.09531	0.00200	0.1	0.00027	95.0	75 - 125				
Barium	0.6704	0.00400	0.1	0.5637	107	75 - 125				O
Beryllium	0.1066	0.00200	0.1	0.000001	107	75 - 125				
Cadmium	0.09185	0.00200	0.1	0.000067	91.8	75 - 125				
Calcium	55.46	0.500	10	44.18	113	75 - 125				O
Chromium	0.09771	0.00400	0.1	0.007476	90.2	75 - 125				
Cobalt	0.0909	0.00500	0.1	0.001036	89.9	75 - 125				
Copper	0.08973	0.00200	0.1	0.000618	89.1	75 - 125				
Iron	14.99	0.200	10	6.152	88.4	75 - 125				
Lead	0.09103	0.00200	0.1	0.000239	90.8	75 - 125				
Magnesium	27.34	0.200	10	18.8	85.4	75 - 125				
Manganese	0.3629	0.00500	0.1	0.2867	76.2	75 - 125				
Nickel	0.0933	0.00200	0.1	0.004612	88.7	75 - 125				
Potassium	173.8	0.200	10	165.1	87.2	75 - 125				O
Selenium	0.09757	0.00200	0.1	0.000447	97.1	75 - 125				
Silver	0.08545	0.00200	0.1	0.00002	85.4	75 - 125				
Thallium	0.09531	0.00200	0.1	0.000295	95.0	75 - 125				
Vanadium	0.09151	0.00500	0.1	-0.002147	93.7	75 - 125				
Zinc	0.09629	0.00400	0.1	0.006173	90.1	75 - 125				

PDS Sample ID: **HS18060552-02PDS** Units: **mg/L** Analysis Date: **20-Jun-2018 12:15**
Client ID: Run ID: **ICPMS05_318286** SeqNo: **4617332** PrepDate: **15-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	344.5	2.00	100	250	94.5	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060552-02SD** Units: **mg/L** Analysis Date: **19-Jun-2018 19:21**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615993** PrepDate: **15-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02093	0.0500					0.01309	0	10	J
Antimony	0.00500	0.0100					0.000386	0	10	U
Arsenic	0.00500	0.0100					0.00027	0	10	U
Barium	0.5647	0.0200					0.5637	0.191	10	
Beryllium	0.00500	0.0100					0.000001	0	10	U
Cadmium	0.00500	0.0100					0.000067	0	10	U
Calcium	44.87	2.50					44.18	1.54	10	
Chromium	0.007043	0.0200					0.007476	0	10	J
Cobalt	0.001066	0.0250					0.001036	0	10	J
Copper	0.0100	0.0100					0.000618	0	10	U
Iron	6.404	1.00					6.152	4.1	10	
Lead	0.00500	0.0100					0.000239	0	10	U
Magnesium	19.33	1.00					18.8	2.83	10	
Manganese	0.2961	0.0250					0.2867	3.27	10	
Nickel	0.003962	0.0100					0.004612	0	10	J
Potassium	169.5	1.00					165.1	2.69	10	
Selenium	0.0100	0.0100					0.000447	0	10	U
Silver	0.00500	0.0100					0.00002	0	10	U
Thallium	0.00500	0.0100					0.000295	0	10	U
Vanadium	0.00500	0.0250					-0.002147	0	10	U
Zinc	0.01549	0.0200					0.006173	0	10	J

SD Sample ID: **HS18060552-02SD** Units: **mg/L** Analysis Date: **20-Jun-2018 12:13**
Client ID: Run ID: **ICPMS05_318286** SeqNo: **4617331** PrepDate: **15-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	257.5	10.0					250	2.98	10	

The following samples were analyzed in this batch: HS18060613-01 HS18060613-04 HS18060613-05 HS18060613-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129503 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129503** Units: **mg/L** Analysis Date: **19-Jun-2018 13:06**
Client ID: Run ID: **HG03_318209** SeqNo: **4615464** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000032	0.000200								J

LCS Sample ID: **LCS-129503** Units: **mg/L** Analysis Date: **19-Jun-2018 13:07**
Client ID: Run ID: **HG03_318209** SeqNo: **4615465** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00456	0.000200	0.005	0	91.2	80 - 120				

MS Sample ID: **HS18060569-01MS** Units: **mg/L** Analysis Date: **19-Jun-2018 13:11**
Client ID: Run ID: **HG03_318209** SeqNo: **4615467** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00455	0.000200	0.005	0.000016	90.7	75 - 125				

MSD Sample ID: **HS18060569-01MSD** Units: **mg/L** Analysis Date: **19-Jun-2018 13:13**
Client ID: Run ID: **HG03_318209** SeqNo: **4615468** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00446	0.000200	0.005	0.000016	88.9	75 - 125	0.00455	2	20	

The following samples were analyzed in this batch: HS18060613-01 HS18060613-04 HS18060613-05 HS18060613-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: 129393 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:11**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617667** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.08692*	*0*	*0.08*	*0*	*109*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06387*	*0*	*0.08*	*0*	*79.8*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04854*	*0*	*0.08*	*0*	*60.7*	*40 - 140*				

MBLK Sample ID: **MBLK-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 11:19**
Client ID: Run ID: **SV-5_318066** SeqNo: **4611403** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.06985*	*0*	*0.08*	*0*	*87.3*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06625*	*0*	*0.08*	*0*	*82.8*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0366*	*0*	*0.08*	*0*	*45.8*	*40 - 140*				

LCS Sample ID: **LCS-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:32**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617668** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08513	0.010	0.08	0	106	40 - 140				
Surr: 2-Fluorobiphenyl	*0.09458*	*0*	*0.08*	*0*	*118*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06339*	*0*	*0.08*	*0*	*79.2*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05764*	*0*	*0.08*	*0*	*72.1*	*40 - 140*				

LCSD Sample ID: **LCSD-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:53**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617669** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07415	0.010	0.08	0	92.7	40 - 140	0.08513	13.8	20	
Surr: 2-Fluorobiphenyl	*0.09534*	*0*	*0.08*	*0*	*119*	*40 - 140*	*0.09458*	*0.809*	*20*	
Surr: 4-Terphenyl-d14	*0.06376*	*0*	*0.08*	*0*	*79.7*	*40 - 140*	*0.06339*	*0.584*	*20*	
Surr: Nitrobenzene-d5	*0.04763*	*0*	*0.08*	*0*	*59.5*	*40 - 140*	*0.05764*	*19*	*20*	

The following samples were analyzed in this batch: HS18060613-01 HS18060613-02 HS18060613-03 HS18060613-04 HS18060613-05 HS18060613-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 14:03**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 14:03**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.46*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.63*	*1.0*	*50*	*0*	*99.3*	*85 - 114*				
Surr: Dibromofluoromethane	*50.9*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*53.1*	*1.0*	*50*	*0*	*106*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 13:13**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.44	1.0	50	0	92.9	78 - 124				
1,1,1-Trichloroethane	45.27	1.0	50	0	90.5	74 - 131				
1,1,2,2-Tetrachloroethane	44.85	1.0	50	0	89.7	71 - 121				
1,1,2-Trichloroethane	46	1.0	50	0	92.0	80 - 119				
1,1-Dichloroethane	47.19	1.0	50	0	94.4	77 - 125				
1,1-Dichloroethene	46.84	1.0	50	0	93.7	71 - 131				
1,1-Dichloropropene	42.26	1.0	50	0	84.5	78 - 125				
1,2,3-Trichlorobenzene	48.61	1.0	50	0	97.2	69 - 129				
1,2,3-Trichloropropane	46.74	1.0	50	0	93.5	73 - 122				
1,2,4-Trichlorobenzene	47.07	1.0	50	0	94.1	69 - 130				
1,2,4-Trimethylbenzene	41.9	1.0	50	0	83.8	76 - 124				
1,2-Dibromo-3-chloropropane	50.93	1.0	50	0	102	62 - 128				
1,2-Dibromoethane	48.72	1.0	50	0	97.4	77 - 121				
1,2-Dichlorobenzene	44	1.0	50	0	88.0	80 - 119				
1,2-Dichloroethane	49.4	1.0	50	0	98.8	73 - 128				
1,2-Dichloropropane	45.49	1.0	50	0	91.0	78 - 122				
1,3,5-Trimethylbenzene	49.88	1.0	50	0	99.8	75 - 124				
1,3-Dichlorobenzene	43.47	1.0	50	0	86.9	80 - 119				
1,3-Dichloropropane	47.12	1.0	50	0	94.2	80 - 119				
1,4-Dichlorobenzene	43.92	1.0	50	0	87.8	79 - 118				
2,2-Dichloropropane	44.28	1.0	50	0	88.6	60 - 139				
2-Butanone	112	2.0	100	0	112	56 - 143				
2-Chlorotoluene	49.1	1.0	50	0	98.2	79 - 122				
2-Hexanone	115	2.0	100	0	115	57 - 139				
4-Chlorotoluene	48.98	1.0	50	0	98.0	78 - 122				
4-Isopropyltoluene	43.49	1.0	50	0	87.0	77 - 127				
4-Methyl-2-pentanone	101.9	2.0	100	0	102	67 - 130				
Acetone	109.4	2.0	100	0	109	39 - 160				
Benzene	44.98	1.0	50	0	90.0	79 - 120				
Bromobenzene	41.37	1.0	50	0	82.7	80 - 120				
Bromochloromethane	50.03	1.0	50	0	100	78 - 123				
Bromodichloromethane	47.94	1.0	50	0	95.9	79 - 125				
Bromoform	49.12	1.0	50	0	98.2	66 - 130				
Bromomethane	44.37	1.0	50	0	88.7	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180616** Units: **ug/L** Analysis Date: **16-Jun-2018 13:13**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	91.03	2.0	100	0	91.0	64 - 133				
Carbon tetrachloride	51.2	1.0	50	0	102	72 - 136				
Chlorobenzene	44.67	1.0	50	0	89.3	82 - 118				
Chloroethane	49.73	1.0	50	0	99.5	60 - 138				
Chloroform	45.1	1.0	50	0	90.2	79 - 124				
Chloromethane	40.06	1.0	50	0	80.1	50 - 139				
cis-1,2-Dichloroethene	46.59	1.0	50	0	93.2	78 - 123				
cis-1,3-Dichloropropene	49.93	1.0	50	0	99.9	75 - 124				
Dibromochloromethane	46.35	1.0	50	0	92.7	74 - 126				
Dibromomethane	51.47	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	49.18	1.0	50	0	98.4	32 - 152				
Ethylbenzene	44	1.0	50	0	88.0	79 - 121				
Hexachlorobutadiene	47.6	1.0	50	0	95.2	66 - 134				
Isopropylbenzene	44.77	1.0	50	0	89.5	72 - 131				
m,p-Xylene	87.15	2.0	100	0	87.1	80 - 121				
Methylene chloride	44.39	2.0	50	0	88.8	74 - 124				
Naphthalene	50.85	1.0	50	0	102	61 - 128				
n-Butylbenzene	46.75	1.0	50	0	93.5	75 - 128				
n-Propylbenzene	48.94	1.0	50	0	97.9	76 - 126				
o-Xylene	44.62	1.0	50	0	89.2	78 - 122				
sec-Butylbenzene	42.98	1.0	50	0	86.0	77 - 126				
Styrene	46.17	1.0	50	0	92.3	78 - 123				
tert-Butylbenzene	49.66	1.0	50	0	99.3	78 - 124				
Tetrachloroethene	43.31	1.0	50	0	86.6	74 - 129				
Toluene	42.79	1.0	50	0	85.6	80 - 121				
trans-1,2-Dichloroethene	46.62	1.0	50	0	93.2	75 - 124				
trans-1,3-Dichloropropene	52.86	1.0	50	0	106	73 - 127				
Trichloroethene	45.86	1.0	50	0	91.7	79 - 123				
Trichlorofluoromethane	47.13	1.0	50	0	94.3	65 - 141				
Vinyl chloride	45.67	1.0	50	0	91.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.96*	*1.0*	*50*	*0*	*87.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.88*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.27*	*1.0*	*50*	*0*	*96.5*	*80 - 119*				
Surr: Toluene-d8	*50.22*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060552-02MS** Units: **ug/L** Analysis Date: **16-Jun-2018 16:07**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.64	1.0	50	0	95.3	78 - 124				
1,1,1-Trichloroethane	50.03	1.0	50	0	100	74 - 131				
1,1,2,2-Tetrachloroethane	44.34	1.0	50	0	88.7	71 - 121				
1,1,2-Trichloroethane	46.18	1.0	50	0	92.4	80 - 119				
1,1-Dichloroethane	49.77	1.0	50	0	99.5	77 - 125				
1,1-Dichloroethene	51.65	1.0	50	0	103	71 - 131				
1,1-Dichloropropene	45.99	1.0	50	0	92.0	78 - 125				
1,2,3-Trichlorobenzene	46.97	1.0	50	0	93.9	69 - 129				
1,2,3-Trichloropropane	44.54	1.0	50	0	89.1	73 - 122				
1,2,4-Trichlorobenzene	45.77	1.0	50	0	91.5	69 - 130				
1,2,4-Trimethylbenzene	43.03	1.0	50	0	86.1	76 - 124				
1,2-Dibromo-3-chloropropane	49.55	1.0	50	0	99.1	62 - 128				
1,2-Dibromoethane	48.46	1.0	50	0	96.9	77 - 121				
1,2-Dichlorobenzene	44.65	1.0	50	0	89.3	80 - 119				
1,2-Dichloroethane	52.96	1.0	50	2.898	100	73 - 128				
1,2-Dichloropropane	46.37	1.0	50	0	92.7	78 - 122				
1,3,5-Trimethylbenzene	53.17	1.0	50	0	106	75 - 124				
1,3-Dichlorobenzene	44.09	1.0	50	0	88.2	80 - 119				
1,3-Dichloropropane	47.53	1.0	50	0	95.1	80 - 119				
1,4-Dichlorobenzene	44.45	1.0	50	0	88.9	79 - 118				
2,2-Dichloropropane	44.2	1.0	50	0	88.4	60 - 139				
2-Butanone	106.4	2.0	100	0	106	56 - 143				
2-Chlorotoluene	51.57	1.0	50	0	103	79 - 122				
2-Hexanone	105.9	2.0	100	0	106	57 - 139				
4-Chlorotoluene	51.51	1.0	50	0	103	78 - 122				
4-Isopropyltoluene	46.51	1.0	50	0	93.0	77 - 127				
4-Methyl-2-pentanone	102	2.0	100	0	102	67 - 130				
Acetone	107.6	2.0	100	0	108	39 - 160				
Benzene	47.85	1.0	50	1.392	92.9	79 - 120				
Bromobenzene	42.35	1.0	50	0	84.7	80 - 120				
Bromochloromethane	50.82	1.0	50	0	102	78 - 123				
Bromodichloromethane	48.8	1.0	50	0	97.6	79 - 125				
Bromoform	48.81	1.0	50	0	97.6	66 - 130				
Bromomethane	47.94	1.0	50	0	95.9	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060552-02MS** Units: **ug/L** Analysis Date: **16-Jun-2018 16:07**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	99.66	2.0	100	0	99.7	64 - 133				
Carbon tetrachloride	56.54	1.0	50	0	113	72 - 136				
Chlorobenzene	46.12	1.0	50	0	92.2	82 - 118				
Chloroethane	55.9	1.0	50	0	112	60 - 138				
Chloroform	47.1	1.0	50	0	94.2	79 - 124				
Chloromethane	41.93	1.0	50	0	83.9	50 - 139				
cis-1,2-Dichloroethene	53.71	1.0	50	4.893	97.6	78 - 123				
cis-1,3-Dichloropropene	49.27	1.0	50	0	98.5	75 - 124				
Dibromochloromethane	47.12	1.0	50	0	94.2	74 - 126				
Dibromomethane	51.29	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	53.26	1.0	50	0	107	32 - 152				
Ethylbenzene	47.13	1.0	50	0	94.3	79 - 121				
Hexachlorobutadiene	48.73	1.0	50	0	97.5	66 - 134				
Isopropylbenzene	48.83	1.0	50	0	97.7	72 - 131				
m,p-Xylene	91.79	2.0	100	0	91.8	80 - 121				
Methylene chloride	45.7	2.0	50	0	91.4	74 - 124				
Naphthalene	47.91	1.0	50	0	95.8	61 - 128				
n-Butylbenzene	49.14	1.0	50	0	98.3	75 - 128				
n-Propylbenzene	52.99	1.0	50	0	106	76 - 126				
o-Xylene	46.67	1.0	50	0	93.3	78 - 122				
sec-Butylbenzene	46.67	1.0	50	0	93.3	77 - 126				
Styrene	46.81	1.0	50	0	93.6	78 - 123				
tert-Butylbenzene	54.01	1.0	50	0	108	78 - 124				
Tetrachloroethene	47.4	1.0	50	0	94.8	74 - 129				
Toluene	45.57	1.0	50	0	91.1	80 - 121				
trans-1,2-Dichloroethene	50.44	1.0	50	1.38	98.1	75 - 124				
trans-1,3-Dichloropropene	50.63	1.0	50	0	101	73 - 127				
Trichloroethene	74.7	1.0	50	27.8	93.8	79 - 123				
Trichlorofluoromethane	53.01	1.0	50	0	106	65 - 141				
Vinyl chloride	51.48	1.0	50	0	103	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.82*	*1.0*	*50*	*0*	*89.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.65*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.31*	*1.0*	*50*	*0*	*96.6*	*80 - 119*				
Surr: Toluene-d8	*50.79*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060552-02MSD** Units: **ug/L** Analysis Date: **16-Jun-2018 16:32**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.67	1.0	50	0	93.3	78 - 124	47.64	2.06	20	
1,1,1-Trichloroethane	48.77	1.0	50	0	97.5	74 - 131	50.03	2.56	20	
1,1,2,2-Tetrachloroethane	44.16	1.0	50	0	88.3	71 - 121	44.34	0.407	20	
1,1,2-Trichloroethane	45.95	1.0	50	0	91.9	80 - 119	46.18	0.494	20	
1,1-Dichloroethane	48.75	1.0	50	0	97.5	77 - 125	49.77	2.07	20	
1,1-Dichloroethene	50.6	1.0	50	0	101	71 - 131	51.65	2.05	20	
1,1-Dichloropropene	44.65	1.0	50	0	89.3	78 - 125	45.99	2.95	20	
1,2,3-Trichlorobenzene	46.54	1.0	50	0	93.1	69 - 129	46.97	0.921	20	
1,2,3-Trichloropropane	43.14	1.0	50	0	86.3	73 - 122	44.54	3.19	20	
1,2,4-Trichlorobenzene	45.63	1.0	50	0	91.3	69 - 130	45.77	0.305	20	
1,2,4-Trimethylbenzene	42.68	1.0	50	0	85.4	76 - 124	43.03	0.802	20	
1,2-Dibromo-3-chloropropane	48.11	1.0	50	0	96.2	62 - 128	49.55	2.95	20	
1,2-Dibromoethane	47.48	1.0	50	0	95.0	77 - 121	48.46	2.04	20	
1,2-Dichlorobenzene	43.93	1.0	50	0	87.9	80 - 119	44.65	1.61	20	
1,2-Dichloroethane	50.55	1.0	50	2.898	95.3	73 - 128	52.96	4.66	20	
1,2-Dichloropropane	45.79	1.0	50	0	91.6	78 - 122	46.37	1.27	20	
1,3,5-Trimethylbenzene	52.46	1.0	50	0	105	75 - 124	53.17	1.35	20	
1,3-Dichlorobenzene	43.72	1.0	50	0	87.4	80 - 119	44.09	0.852	20	
1,3-Dichloropropane	46.38	1.0	50	0	92.8	80 - 119	47.53	2.46	20	
1,4-Dichlorobenzene	44.25	1.0	50	0	88.5	79 - 118	44.45	0.466	20	
2,2-Dichloropropane	42.03	1.0	50	0	84.1	60 - 139	44.2	5.03	20	
2-Butanone	104.5	2.0	100	0	105	56 - 143	106.4	1.76	20	
2-Chlorotoluene	51.49	1.0	50	0	103	79 - 122	51.57	0.156	20	
2-Hexanone	102.5	2.0	100	0	103	57 - 139	105.9	3.25	20	
4-Chlorotoluene	50.44	1.0	50	0	101	78 - 122	51.51	2.09	20	
4-Isopropyltoluene	45.45	1.0	50	0	90.9	77 - 127	46.51	2.3	20	
4-Methyl-2-pentanone	99.52	2.0	100	0	99.5	67 - 130	102	2.48	20	
Acetone	105.1	2.0	100	0	105	39 - 160	107.6	2.37	20	
Benzene	46.8	1.0	50	1.392	90.8	79 - 120	47.85	2.22	20	
Bromobenzene	42.2	1.0	50	0	84.4	80 - 120	42.35	0.361	20	
Bromochloromethane	50.52	1.0	50	0	101	78 - 123	50.82	0.582	20	
Bromodichloromethane	48.09	1.0	50	0	96.2	79 - 125	48.8	1.48	20	
Bromoform	48.4	1.0	50	0	96.8	66 - 130	48.81	0.837	20	
Bromomethane	46.09	1.0	50	0	92.2	53 - 141	47.94	3.94	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060552-02MSD** Units: **ug/L** Analysis Date: **16-Jun-2018 16:32**
Client ID: Run ID: **VOA2_318107** SeqNo: **4612347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	96.61	2.0	100	0	96.6	64 - 133	99.66	3.1	20	
Carbon tetrachloride	54.64	1.0	50	0	109	72 - 136	56.54	3.43	20	
Chlorobenzene	45.44	1.0	50	0	90.9	82 - 118	46.12	1.48	20	
Chloroethane	54.33	1.0	50	0	109	60 - 138	55.9	2.86	20	
Chloroform	46.57	1.0	50	0	93.1	79 - 124	47.1	1.14	20	
Chloromethane	40.94	1.0	50	0	81.9	50 - 139	41.93	2.38	20	
cis-1,2-Dichloroethene	52.35	1.0	50	4.893	94.9	78 - 123	53.71	2.57	20	
cis-1,3-Dichloropropene	48.04	1.0	50	0	96.1	75 - 124	49.27	2.52	20	
Dibromochloromethane	46.74	1.0	50	0	93.5	74 - 126	47.12	0.8	20	
Dibromomethane	50.46	1.0	50	0	101	79 - 123	51.29	1.63	20	
Dichlorodifluoromethane	51.34	1.0	50	0	103	32 - 152	53.26	3.67	20	
Ethylbenzene	46.08	1.0	50	0	92.2	79 - 121	47.13	2.25	20	
Hexachlorobutadiene	48.71	1.0	50	0	97.4	66 - 134	48.73	0.0412	20	
Isopropylbenzene	47.36	1.0	50	0	94.7	72 - 131	48.83	3.07	20	
m,p-Xylene	89.53	2.0	100	0	89.5	80 - 121	91.79	2.5	20	
Methylene chloride	43.97	2.0	50	0	87.9	74 - 124	45.7	3.85	20	
Naphthalene	48.56	1.0	50	0	97.1	61 - 128	47.91	1.35	20	
n-Butylbenzene	48.29	1.0	50	0	96.6	75 - 128	49.14	1.74	20	
n-Propylbenzene	52.03	1.0	50	0	104	76 - 126	52.99	1.82	20	
o-Xylene	45.37	1.0	50	0	90.7	78 - 122	46.67	2.84	20	
sec-Butylbenzene	46.18	1.0	50	0	92.4	77 - 126	46.67	1.04	20	
Styrene	45.97	1.0	50	0	91.9	78 - 123	46.81	1.83	20	
tert-Butylbenzene	52.39	1.0	50	0	105	78 - 124	54.01	3.05	20	
Tetrachloroethene	45.79	1.0	50	0	91.6	74 - 129	47.4	3.46	20	
Toluene	44.46	1.0	50	0	88.9	80 - 121	45.57	2.46	20	
trans-1,2-Dichloroethene	49.67	1.0	50	1.38	96.6	75 - 124	50.44	1.53	20	
trans-1,3-Dichloropropene	49.31	1.0	50	0	98.6	73 - 127	50.63	2.64	20	
Trichloroethene	73.15	1.0	50	27.8	90.7	79 - 123	74.7	2.1	20	
Trichlorofluoromethane	52.06	1.0	50	0	104	65 - 141	53.01	1.82	20	
Vinyl chloride	49.23	1.0	50	0	98.5	58 - 137	51.48	4.49	20	
Surr: 1,2-Dichloroethane-d4	*44.41*	*1.0*	*50*	*0*	*88.8*	*81 - 118*	*44.82*	*0.93*	*20*	
Surr: 4-Bromofluorobenzene	*52.42*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.65*	*0.448*	*20*	
Surr: Dibromofluoromethane	*48.34*	*1.0*	*50*	*0*	*96.7*	*80 - 119*	*48.31*	*0.0698*	*20*	
Surr: Toluene-d8	*50.76*	*1.0*	*50*	*0*	*102*	*89 - 112*	*50.79*	*0.0466*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060613

QC BATCH REPORT

Batch ID: R318107 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060613-01	HS18060613-03	HS18060613-04	HS18060613-05
HS18060613-06	HS18060613-07		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060613**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 28-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 28-Jun-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**13-Jun-2018 08:35**
Work Order:	HS18060613	Received by:	**NDR**

Checklist completed by: *Paresh M. Giga* (eSignature) 13-Jun-2018 (Date)

Reviewed by: *RJ Modashia* (eSignature) 14-Jun-2018 (Date)

Matrices: **Groundwater/Water**

Carrier name: **FedEx**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	2.2c/1.7c U/c		IR11
Cooler(s)/Kit(s):	43968		
Date/Time sample(s) sent to storage:	6/13/18 16:55		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate ENVIRONMENTAL CONSTRUCTION ENGINEERS

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested [5] / Quality Assurance Samples [6]

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
MW14_061218		6/12/18	0840	-	N		WG	6	X	X	X	X				
AWD1_061218		6/12/18	0935	-	N		WG	1				X				
18CPTMW19_061218		6/12/18	1030	-	N		WG	5	X	X		X				
18CPTMW19SW_061218		6/12/18	1125		N		WG	6	X	X	X	X				
18WW03_061218		6/12/18	1225		N		WG	6	X	X	X	X				
18WW03_061218_a		6/12/18	1225	-	FD		WG	6	X	X	X	X				
TRIP BLANK		6/12/18		-	TB		W	2	X							
				-												
				-												
				-												
				-												

HS18060613
Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time
1. Scott Beesinger	6/12/18	1430	1. NR	6/13/18	08:35
2.			2.		
3.			3.		

43968 WC 2.20 #11 CIF = 0.3

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

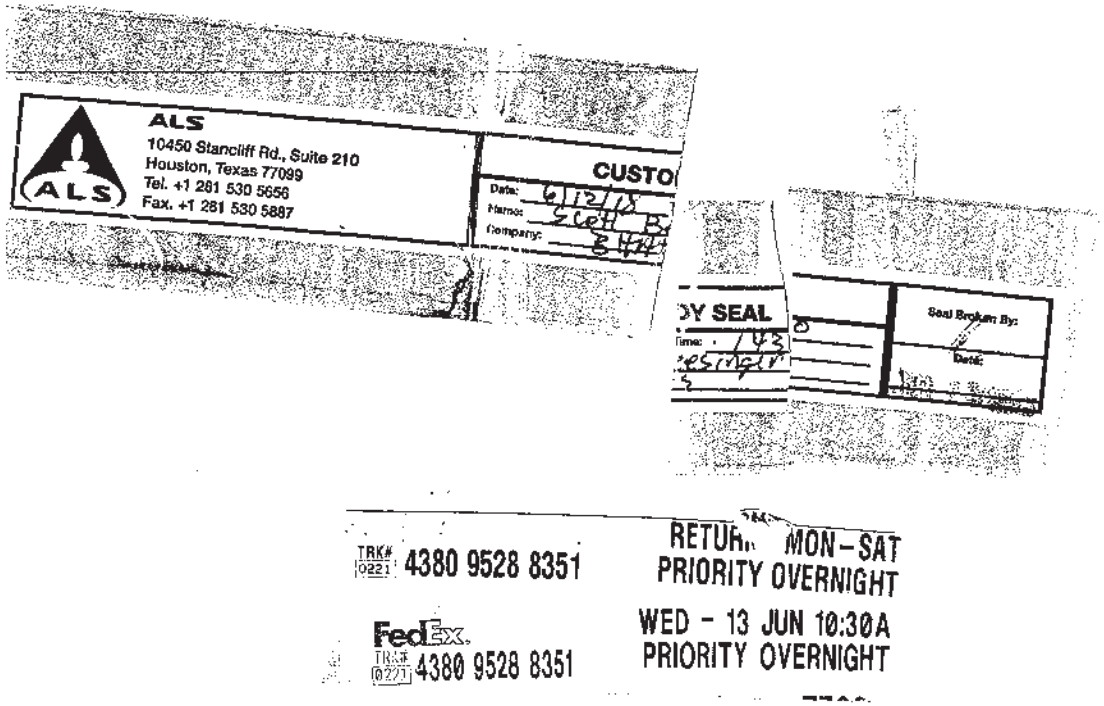
Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTO
Date: 6/12/15
Name:
Company:
Y SEAL
Time:
Seal Broken By:
Date:
TRK# 0221 4380 9528 8351
RETUR MON-SAT
PRIORITY OVERNIGHT
FedEx
TRK# 0271 4380 9528 8351
WED - 13 JUN 10:30A
PRIORITY OVERNIGHT

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1816481; 1816548; 1817040

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2103 (217008)

General Set Information: There were fourteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 1816481001/1816548001 – 10,000; 1816481003/04 – 100. Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605872) was less than 1/2 the CRDL. The recovery for the LCS (605873) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1816481002 (Client ID: 18CPTMW035_061118). The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 19JUND15/23/25.

Thomas Bosch June 21, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 22, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1816548**
Project ID: HS18060613 061218
Purchase Order: HS18060613
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
MW14_061218	1816548001	06/12/18	06/14/18	
18CPTMW19_061218	1816548002	06/12/18	06/14/18	
18CPTMW19SW_061218	1816548003	06/12/18	06/14/18	
18WW03_061218	1816548004	06/12/18	06/14/18	
18WW03_061218-a	1816548005	06/12/18	06/14/18	

ANALYTICAL REPORT

Workorder: 34-1816548
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW14_061218** | Sampling Site: NA | Collected: 06/12/2018
Lab ID: 1816548001 | Media: 125 mL Nalgene | Received: 06/14/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2103 (HBN: 217008) | **Percent Solid:** NA
Analyzed: 06/19/2018 13:56 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**94000**	10000	20000	40000	10000	

Sample ID: **18CPTMW19_061218** | Sampling Site: NA | Collected: 06/12/2018
Lab ID: 1816548002 | Media: 125 mL Nalgene | Received: 06/14/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2103 (HBN: 217008) | **Percent Solid:** NA
Analyzed: 06/19/2018 14:11 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**15**	1.0	2.0	4.0	1	

Sample ID: **18CPTMW19SW_061218** | Sampling Site: NA | Collected: 06/12/2018
Lab ID: 1816548003 | Media: 125 mL Nalgene | Received: 06/14/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2103 (HBN: 217008) | **Percent Solid:** NA
Analyzed: 06/19/2018 14:25 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**5.9**	1.0	2.0	4.0	1	

Sample ID: **18WW03_061218** | Sampling Site: NA | Collected: 06/12/2018
Lab ID: 1816548004 | Media: 125 mL Nalgene | Received: 06/14/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2103 (HBN: 217008) | **Percent Solid:** NA
Analyzed: 06/19/2018 14:39 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1816548
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID:	18WW03_061218-a	Sampling Site:	NA	Collected:	06/12/2018
Lab ID:	1816548005	Media:	125 mL Nalgene	Received:	06/14/2018
Matrix:	Water	Sampling Parameter:	NA		

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:**	EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch:	ELMS/2103 (HBN: 217008)	**Percent Solid:** NA
	Analyzed:	06/19/2018 14:53	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Workorder: 1816548

Sample 1816548001 was analyzed and reported from a 1:10,000 dilution. The reporting limit has been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/20/2018 16:16	/S/ Stephen Brose 06/22/2018 08:16

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1816548
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816548

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850, DoD QSM
Batch: ELMS/2103 (HBN: 217008)
Analyzed By: Thomas Bosch

Blank

LMB: 605872
Analyzed: 06/19/2018 10:34
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605873
Analyzed: 06/19/2018 10:48
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.06	5.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1816481002
Analyzed: 06/19/2018 11:21
Dilution: 1
Units: ug/L

MS: 605908
Analyzed: 06/19/2018 11:35
Dilution: 1
Units: ug/L

MSD: 605909
Analyzed: 06/19/2018 11:49
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	62.0	66.5	5	96.9	78.8	123.8	66.2	90.7	0.469	0.0	20.0

Continuing Calibration Verification

CCV: 605869
Analyzed: 06/19/2018 09:51
Units: ug/L
Criteria: ± 15%

CCV: 605876
Analyzed: 06/19/2018 13:28
Units: ug/L
Criteria: ± 15%

CCV: 605878
Analyzed: 06/19/2018 15:52
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.1	25.0	101	25.1	25.0	100	23.7	25.0	94.8

Interference Check Sample

ICSA: 605871
Analyzed: 06/19/2018 10:20
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.922	1.00	92.2

Limit of Detection Verification

LODV: 605870
Analyzed: 06/19/2018 10:06
Units: ug/L
Criteria: ± 50%

LODV: 605877
Analyzed: 06/19/2018 13:42
Units: ug/L
Criteria: ± 50%

LODV: 605879
Analyzed: 06/19/2018 16:06
Units: ug/L
Criteria: ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.907	1.00	90.7	0.956	1.00	95.6	1.05	1.00	105

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816548

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2103 (HBN: 217008)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/20/2018 16:16	06/22/2018 08:16

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698/#2

W 1816548

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9287

1816548

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18060613
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060613-01**	**MW14_061218**	**Groundwater**	**12 Jun 2018 08:40**
	SUB_Perch-6850			21 Jun 2018
2.	**HS18060613-03**	**18CPTMW19_061218**	**Groundwater**	**12 Jun 2018 10:30**
	SUB_Perch-6850			21 Jun 2018
3.	**HS18060613-04**	**18CPTMW19SW_061218**	**Groundwater**	**12 Jun 2018 11:25**
	SUB_Perch-6850			21 Jun 2018
4.	**HS18060613-05**	**18WW03_061218**	**Groundwater**	**12 Jun 2018 12:25**
	SUB_Perch-6850			21 Jun 2018
5.	**HS18060613-06**	**18WW03_061218_a**	**Groundwater**	**12 Jun 2018 12:25**
	SUB_Perch-6850			21 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

COC ID: 9287

Relinquished By:		Date/Time:	6/13/18 1800.
Received By:	Jennifer Russell	Date/Time:	06/14/18 10:40
Cooler ID(s):		Temperature(s):	

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060613	Split:	Workorder ID: 1816548	Level: ENV_LVL4
Client: 185		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
1	06/12/2018 08:40	MW14_061218	1816548001		Water	A	1	A
2	06/12/2018 10:30	18CPTMW19_061218	1816548002		Water	A	1	A
3	06/12/2018 11:25	18CPTMW19SW_061218	1816548003		Water	A	1	A
4	06/12/2018 12:25	18WW03_061218	1816548004		Water	A	1	A
5	06/12/2018 12:25	18WW03_061218-a	1816548005		Water	A	1	A
6								
7								
8								
9								
10								

55 of 75

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/14/2018 10:40	ALS Sample Receiving	Sample Login
Julie Warath	6/14/18 1630	13B	Storage
R.33.1	6-18-18/16:10	T.Busch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1816548

Date/Time of Receipt: 06 14 18 10:40

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:						
Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8531	3 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tanni Van Tassell (Signature) Tanni Van Tassell (Printed Name) 06 14 18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

Revised 01/01/2018

CRIR.doc

Part # 159469-434 RIT2 EXP 03/19

546C2/930F/S/33C1

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 13JUN18
ACTWGT: 10.40 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060609/613-RJ

FedEx Express

J171016102001uv

THU - 14 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 0404

AX BTFA

84123
UT-US SLC

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Batch Worklist

Batch: ELMS/ 2103 **Created:** 6/19/2018 09:21 **Instrument:** LCMS04 **HBN:** 217008

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1816481 [ENV_LVL4]
Workorder: 1816548 [ENV_LVL4]
Workorder: 1817040 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	605869	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
2	605870	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
3	605871	ICS for HBN 217008 [ELMS/2103]				ICS	3		E6850..D3Q	5311		6/26/2018	6/19/2018
4	605872	LMB for HBN 217008 [ELMS/2103]				LMB	3		E6850Q413Q	5311		6/26/2018	6/19/2018
5	605873	LCS for HBN 217008 [ELMS/2103]				LCS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
6	1816481001	MW23_061118				SAMPLE	3	1816481001-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
7	1816481002	18CPTMW035_061118				SAMPLE	3	1816481002-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
8	605908	18CPTMW035_06..(1816481002MS)				MS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
9	605909	18CPTMW035_0...(1816481002MSD)				MSD	3		E6850Q413Q	5311		6/26/2018	6/19/2018
10	1816481003	MW1_061118				SAMPLE	3	1816481003-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
11	1816481004	MW1_061118-a				SAMPLE	3	1816481004-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
12	1816481005	MW10_061118				SAMPLE	3	1816481005-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
13	1816481006	18CPIMW18_061118				SAMPLE	3	1816481006-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
14	1816481007	18WW22_061118				SAMPLE	3	1816481007-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
15	1816481008	C03_061118				SAMPLE	3	1816481008-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
16	605876	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
17	605877	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
18	1816548001	MW14_061218				SAMPLE	3	1816548001-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
19	1816548002	18CPTMW19_061218				SAMPLE	3	1816548002-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
20	1816548003	18CPTMW19SW_061218				SAMPLE	3	1816548003-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
21	1816548004	18WW03_061218				SAMPLE	3	1816548004-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
22	1816548005	18WW03_061218-a				SAMPLE	3	1816548005-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
23	1817040001	LH18/24-SP650_061818				SAMPLE	3	1817040001-A	E6850Q41.3	5480	7/16/2018	7/3/2018	6/19/2018
24	605878	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
25	605879	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1816481 (001-08); 1816548 (001-05); 1817040 (001)
ELMS Batch/HBN ID: 2103 (217008)
Prep Date: 06/19/2018 Analysis Date: 06/19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605873; Target = 5.0µg/L. ASTM type II water was used for LMB 605872.

MS/MSD: MS/MSD was performed on sample 1816481002 (Client ID: 18CPTMW035_061118). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1816481001/1816548001 – 10,000; 1816481003/04 – 100. Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 19JUND15/23/25.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\217008-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

ALS Work Order #'s & Sample #( )'s: 1815995 (001-08); 1816211 (001-10)
ELMS Batch/HBN ID: 2102 (216868)
Prep Date: 06/18/2018 Analysis Date: 06/18,19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.s & 18JUN18B.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605575; Target = 5.0µg/L. ASTM type II water was used for LMB 605574.

MS/MSD: MS/MSD was performed on samples 1815995006/06 (Client ID: MW22_060718). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815995004/05; 1816211002/03/05-07/09 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 18JUND11/27.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216868-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O	Description - ASTM Type II Water

Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

ALS

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK — **Description - Perchlorate ISTD Stock**

Standard:	23118	**Created By:**	Thomas Bosch	**Amount:**	1 mL
MFG:	Cambridge Isotope	**Create Date:**	04/04/2014 03:04PM	**Expires:**	02/27/2024
MFG Lot:	SDDG-013	**Verified By:**	Thomas Bosch	**Usable:**	Yes
Part ID:	OLM-7310-S	**Verify Date:**	02/05/2009 12:02AM	**Lab Lot:**	CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O	Description - ASTM Type II Water

Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED Reference Material Producer
ANAB ACCREDITED Testing Laboratory

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/INO-001
Rev. 5/16

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 03, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060669**

Laboratory Results for: **LHAAP 18/24**

Dear Marcia,

ALS Environmental received 8 sample(s) on Jun 14, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Work Order: HS18060669

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060669-01	102_061318	Groundwater		13-Jun-2018 08:10	14-Jun-2018 08:57	☐
HS18060669-02	MW12_061318	Groundwater		13-Jun-2018 09:00	14-Jun-2018 08:57	☐
HS18060669-03	MW12_061318_a	Groundwater		13-Jun-2018 09:00	14-Jun-2018 08:57	☐
HS18060669-04	18CPTMW14_061318	Groundwater		13-Jun-2018 09:55	14-Jun-2018 08:57	☐
HS18060669-05	18CPTMW24_061318	Groundwater		13-Jun-2018 10:45	14-Jun-2018 08:57	☐
HS18060669-06	C08_061318	Groundwater		13-Jun-2018 11:50	14-Jun-2018 08:57	☐
HS18060669-07	MW16_061318	Groundwater		13-Jun-2018 12:45	14-Jun-2018 08:57	☐
HS18060669-08	Trip Blank	Water	ALS 051618-82	13-Jun-2018 00:00	14-Jun-2018 08:57	☐

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Work Order: HS18060669

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129393

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R318272

Sample ID: HS18060645-01MS

- MS and MSD are for an unrelated sample.

Batch ID: R318368

Sample ID: HS18060825-01MS

- MS and MSD are for an unrelated sample

Metals by Method SW7470

Batch ID: 129503

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129430

Sample ID: HS18060552-02MS

- MS and MSD are for an unrelated sample

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 102_061318
Collection Date: 13-Jun-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 15:12
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jun-2018 15:12
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jun-2018 15:12
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 15:12
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jun-2018 15:12
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 102_061318
Collection Date: 13-Jun-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 15:12
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 15:12
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:12
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:12
Surr: 1,2-Dichloroethane-d4	*87.0*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2018 15:12*
Surr: 4-Bromofluorobenzene	*99.1*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2018 15:12*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2018 15:12*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2018 15:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 102_061318
Collection Date: 13-Jun-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**0.0370**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:55
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:55
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	19-Jun-2018 19:55
Barium	**0.170**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:55
Beryllium	**0.000289**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:55
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:55
Calcium	**4.39**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	19-Jun-2018 19:55
Chromium	0.00100	U	0.000400	0.00100	0.00400	mg/L	1	19-Jun-2018 19:55
Cobalt	**0.00416**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:55
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	19-Jun-2018 19:55
Iron	**0.0294**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:55
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	19-Jun-2018 19:55
Magnesium	**3.72**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:55
Manganese	**0.0127**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:55
Nickel	**0.00850**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:55
Potassium	**0.684**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:55
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:55
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:55
Sodium	**43.7**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:55
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:55
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	19-Jun-2018 19:55
Zinc	**0.00497**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:55
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 18-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	19-Jun-2018 13:49
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW12_061318
Collection Date: 13-Jun-2018 09:00

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,1-Dichloroethane	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 16:51
1,1-Dichloroethene	**3.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 16:51
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,2-Dichloroethane	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 16:51
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 16:51
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jun-2018 16:51
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jun-2018 16:51
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 16:51
Benzene	**0.23**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 16:51
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jun-2018 16:51
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW12_061318
Collection Date: 13-Jun-2018 09:00

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
cis-1,2-Dichloroethene	**23**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 16:51
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 16:51
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 16:51
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 16:51
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Trichloroethene	**230**		**2.0**	**5.0**	**10**	**ug/L**	10	19-Jun-2018 17:18
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 16:51
Surr: 1,2-Dichloroethane-d4	*87.2*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2018 16:51*
Surr: 1,2-Dichloroethane-d4	*86.7*			**0**	*81-118*	*%REC*	*10*	*19-Jun-2018 17:18*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*19-Jun-2018 17:18*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2018 16:51*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2018 16:51*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*10*	*19-Jun-2018 17:18*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*19-Jun-2018 17:18*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2018 16:51*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW12_061318_a
Collection Date: 13-Jun-2018 09:00

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,1-Dichloroethene	**2.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 17:43
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,2-Dichloroethane	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 17:43
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 17:43
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jun-2018 17:43
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jun-2018 17:43
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 17:43
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jun-2018 17:43
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW12_061318_a
Collection Date: 13-Jun-2018 09:00

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
cis-1,2-Dichloroethene	**22**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 17:43
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 17:43
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 17:43
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 17:43
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Trichloroethene	**220**		**2.0**	**5.0**	**10**	**ug/L**	10	19-Jun-2018 18:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 17:43
Surr: 1,2-Dichloroethane-d4	*88.1*			**0**	*81-118*	*%REC*	*10*	*19-Jun-2018 18:10*
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2018 17:43*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2018 17:43*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*10*	*19-Jun-2018 18:10*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*10*	*19-Jun-2018 18:10*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2018 17:43*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2018 17:43*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*19-Jun-2018 18:10*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW14_061318
Collection Date: 13-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,1-Dichloroethene	**0.97**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 21:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,2-Dichloroethane	**4.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 21:19
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 21:19
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 21:19
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 21:19
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 21:19
Benzene	**0.43**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 21:19
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 21:19
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW14_061318
Collection Date: 13-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**7.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 21:19
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
cis-1,2-Dichloroethene	**3.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 21:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 21:19
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 21:19
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 21:19
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Tetrachloroethene	**16**		**0.30**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 21:19
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Trichloroethene	**600**		**1.0**	**2.5**	**5.0**	**ug/L**	5	19-Jun-2018 20:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 21:19
Surr: 1,2-Dichloroethane-d4	*86.4*			**0**	*81-118*	*%REC*	*5*	*19-Jun-2018 20:21*
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 21:19*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*5*	*19-Jun-2018 20:21*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 21:19*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*5*	*19-Jun-2018 20:21*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 21:19*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*19-Jun-2018 20:21*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 21:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW14_061318
Collection Date: 13-Jun-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 19:00
Surr: 2-Fluorobiphenyl	*56.9*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:00*
Surr: 4-Terphenyl-d14	*102*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:00*
Surr: Nitrobenzene-d5	*44.6*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:00*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 15-Jun-2018		Analyst: JDE
Aluminum	**1.40**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	19-Jun-2018 19:57
Antimony	**0.000451**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:57
Arsenic	**0.00217**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:57
Barium	**2.05**		**0.0190**	**0.0250**	**0.0400**	**mg/L**	10	20-Jun-2018 12:29
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:57
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:57
Calcium	**268**		**0.340**	**1.00**	**5.00**	**mg/L**	10	20-Jun-2018 12:29
Chromium	**0.0545**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	19-Jun-2018 19:57
Cobalt	**0.00219**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:57
Copper	**0.00191**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	19-Jun-2018 19:57
Iron	**0.919**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:57
Lead	**0.000625**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:57
Magnesium	**43.2**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:57
Manganese	**0.0800**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:57
Nickel	**0.00223**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	19-Jun-2018 19:57
Potassium	**17.9**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	19-Jun-2018 19:57
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	19-Jun-2018 19:57
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:57
Sodium	**358**		**0.140**	**1.00**	**2.00**	**mg/L**	10	20-Jun-2018 12:29
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	19-Jun-2018 19:57
Vanadium	**0.00188**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	19-Jun-2018 19:57
Zinc	**0.00521**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	19-Jun-2018 19:57
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 18-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	19-Jun-2018 13:50
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW24_061318
Collection Date: 13-Jun-2018 10:45

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 18:34
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jun-2018 18:34
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jun-2018 18:34
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 18:34
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jun-2018 18:34
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18CPTMW24_061318
Collection Date: 13-Jun-2018 10:45

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
cis-1,2-Dichloroethene	**23**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 18:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 18:34
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 18:34
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 18:34
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Trichloroethene	**8.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 18:34
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 18:34
Surr: 1,2-Dichloroethane-d4	*88.7*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2018 18:34*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2018 18:34*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2018 18:34*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2018 18:34*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 19:20
Surr: 2-Fluorobiphenyl	*114*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:20*
Surr: 4-Terphenyl-d14	*81.6*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:20*
Surr: Nitrobenzene-d5	*58.7*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:20*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: C08_061318
Collection Date: 13-Jun-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 15:37
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jun-2018 15:37
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jun-2018 15:37
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 15:37
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jun-2018 15:37
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: C08_061318
Collection Date: 13-Jun-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 15:37
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 15:37
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 15:37
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 15:37
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2018 15:37*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2018 15:37*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2018 15:37*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2018 15:37*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 19:41
Surr: 2-Fluorobiphenyl	*122*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:41*
Surr: 4-Terphenyl-d14	*83.6*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:41*
Surr: Nitrobenzene-d5	*65.8*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 19:41*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW16_061318
Collection Date: 13-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,1-Dichloroethane	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 19:26
1,1-Dichloroethene	**7.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 19:26
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,2-Dichloroethane	**47**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 19:26
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 19:26
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jun-2018 19:26
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jun-2018 19:26
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 19:26
Benzene	**0.24**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 19:26
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jun-2018 19:26
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW16_061318
Collection Date: 13-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
cis-1,2-Dichloroethene	**23**		**0.20**	**0.50**	**1.0**	**ug/L**	1	19-Jun-2018 19:26
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 19:26
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 19:26
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 19:26
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Trichloroethene	**520**		**2.0**	**5.0**	**10**	**ug/L**	10	19-Jun-2018 19:53
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 19:26
Surr: 1,2-Dichloroethane-d4	*85.8*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2018 19:26*
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*10*	*19-Jun-2018 19:53*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2018 19:26*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*10*	*19-Jun-2018 19:53*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2018 19:26*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*10*	*19-Jun-2018 19:53*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2018 19:26*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*19-Jun-2018 19:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW16_061318
Collection Date: 13-Jun-2018 12:45

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 14-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	15-Jun-2018 20:02
Surr: 2-Fluorobiphenyl	*101*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 20:02*
Surr: 4-Terphenyl-d14	*83.5*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 20:02*
Surr: Nitrobenzene-d5	*61.1*			**0**	*40-140*	*%REC*	*1*	*15-Jun-2018 20:02*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: Trip Blank
Collection Date: 13-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 14:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jun-2018 14:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jun-2018 14:48
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 14:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jun-2018 14:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: Trip Blank
Collection Date: 13-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060669
Lab ID:HS18060669-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jun-2018 14:48
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jun-2018 14:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	19-Jun-2018 14:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	19-Jun-2018 14:48
Surr: 1,2-Dichloroethane-d4	*86.3*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2018 14:48*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2018 14:48*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2018 14:48*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2018 14:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

Batch ID: 129393 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060669-04	1	1000	1 (mL)	0.001
HS18060669-05	1	1000	1 (mL)	0.001
HS18060669-06	1	1000	1 (mL)	0.001
HS18060669-07	1	1000	1 (mL)	0.001

Batch ID: 129430 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060669-01	1	10	10 (mL)	1
HS18060669-04	1	10	10 (mL)	1

Batch ID: 129503 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060669-01	1	10 (mL)	10 (mL)	1
HS18060669-04	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129393	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060669-04	18CPTMW14_061318	13 Jun 2018 09:55		14 Jun 2018 14:42	15 Jun 2018 19:00	1
HS18060669-05	18CPTMW24_061318	13 Jun 2018 10:45		14 Jun 2018 14:42	15 Jun 2018 19:20	1
HS18060669-06	C08_061318	13 Jun 2018 11:50		14 Jun 2018 14:42	15 Jun 2018 19:41	1
HS18060669-07	MW16_061318	13 Jun 2018 12:45		14 Jun 2018 14:42	15 Jun 2018 20:02	1
Batch ID 129430	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060669-01	102_061318	13 Jun 2018 08:10		15 Jun 2018 12:00	19 Jun 2018 19:55	1
HS18060669-04	18CPTMW14_061318	13 Jun 2018 09:55		15 Jun 2018 12:00	20 Jun 2018 12:29	10
HS18060669-04	18CPTMW14_061318	13 Jun 2018 09:55		15 Jun 2018 12:00	19 Jun 2018 19:57	1
Batch ID 129503	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060669-01	102_061318	13 Jun 2018 08:10		18 Jun 2018 12:12	19 Jun 2018 13:49	1
HS18060669-04	18CPTMW14_061318	13 Jun 2018 09:55		18 Jun 2018 12:12	19 Jun 2018 13:50	1
Batch ID R318272	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060669-08	Trip Blank	13 Jun 2018 00:00			19 Jun 2018 14:48	1
Batch ID R318272	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060669-01	102_061318	13 Jun 2018 08:10			19 Jun 2018 15:12	1
HS18060669-02	MW12_061318	13 Jun 2018 09:00			19 Jun 2018 17:18	10
HS18060669-02	MW12_061318	13 Jun 2018 09:00			19 Jun 2018 16:51	1
HS18060669-03	MW12_061318_a	13 Jun 2018 09:00			19 Jun 2018 18:10	10
HS18060669-03	MW12_061318_a	13 Jun 2018 09:00			19 Jun 2018 17:43	1
HS18060669-04	18CPTMW14_061318	13 Jun 2018 09:55			19 Jun 2018 20:21	5
HS18060669-05	18CPTMW24_061318	13 Jun 2018 10:45			19 Jun 2018 18:34	1
HS18060669-06	C08_061318	13 Jun 2018 11:50			19 Jun 2018 15:37	1
HS18060669-07	MW16_061318	13 Jun 2018 12:45			19 Jun 2018 19:53	10
HS18060669-07	MW16_061318	13 Jun 2018 12:45			19 Jun 2018 19:26	1
Batch ID R318368	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060669-04	18CPTMW14_061318	13 Jun 2018 09:55			20 Jun 2018 21:19	1
Batch ID R318810	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060669-01	102_061318	13 Jun 2018 08:10			28 Jun 2018 09:16	1
HS18060669-02	MW12_061318	13 Jun 2018 09:00			28 Jun 2018 09:16	1
HS18060669-03	MW12_061318_a	13 Jun 2018 09:00			28 Jun 2018 09:16	1
HS18060669-04	18CPTMW14_061318	13 Jun 2018 09:55			28 Jun 2018 09:16	1
HS18060669-05	18CPTMW24_061318	13 Jun 2018 10:45			28 Jun 2018 09:16	1
HS18060669-06	C08_061318	13 Jun 2018 11:50			28 Jun 2018 09:16	1
HS18060669-07	MW16_061318	13 Jun 2018 12:45			28 Jun 2018 09:16	1

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129430** Units: **mg/L** Analysis Date: **19-Jun-2018 19:15**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615990** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.00344	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01229	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.04754	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129430** Units: **mg/L** Analysis Date: **19-Jun-2018 19:17**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615991** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09908	0.0100	0.1	0	99.1	80 - 120				
Antimony	0.04748	0.00200	0.05	0	95.0	80 - 120				
Arsenic	0.04769	0.00200	0.05	0	95.4	80 - 120				
Barium	0.0471	0.00400	0.05	0	94.2	80 - 120				
Beryllium	0.04958	0.00200	0.05	0	99.2	80 - 120				
Cadmium	0.04777	0.00200	0.05	0	95.5	80 - 120				
Calcium	4.677	0.500	5	0	93.5	80 - 120				
Chromium	0.04811	0.00400	0.05	0	96.2	80 - 120				
Cobalt	0.04815	0.00500	0.05	0	96.3	80 - 120				
Copper	0.04811	0.00200	0.05	0	96.2	80 - 120				
Iron	4.622	0.200	5	0	92.4	80 - 120				
Lead	0.04806	0.00200	0.05	0	96.1	80 - 120				
Magnesium	4.685	0.200	5	0	93.7	80 - 120				
Manganese	0.04624	0.00500	0.05	0	92.5	80 - 120				
Nickel	0.04821	0.00200	0.05	0	96.4	80 - 120				
Potassium	4.669	0.200	5	0	93.4	80 - 120				
Selenium	0.04998	0.00200	0.05	0	100.0	80 - 120				
Silver	0.04916	0.00200	0.05	0	98.3	80 - 120				
Sodium	4.751	0.200	5	0	95.0	80 - 120				
Thallium	0.04577	0.00200	0.05	0	91.5	80 - 120				
Vanadium	0.04485	0.00500	0.05	0	89.7	80 - 120				
Zinc	0.04978	0.00400	0.05	0	99.6	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060552-02MS** Units: **mg/L** Analysis Date: **19-Jun-2018 19:23**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615994** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1133	0.0100	0.1	0.01309	100	80 - 120				
Antimony	0.04514	0.00200	0.05	0.000386	89.5	80 - 120				
Arsenic	0.04689	0.00200	0.05	0.00027	93.2	80 - 120				
Barium	0.6185	0.00400	0.05	0.5637	110	80 - 120				O
Beryllium	0.0561	0.00200	0.05	0.000001	112	80 - 120				
Cadmium	0.04781	0.00200	0.05	0.000067	95.5	80 - 120				
Calcium	49.12	0.500	5	44.18	98.6	80 - 120				O
Chromium	0.05209	0.00400	0.05	0.007476	89.2	80 - 120				
Cobalt	0.04542	0.00500	0.05	0.001036	88.8	80 - 120				
Copper	0.0452	0.00200	0.05	0.000618	89.2	80 - 120				
Iron	10.28	0.200	5	6.152	82.6	80 - 120				
Lead	0.04585	0.00200	0.05	0.000239	91.2	80 - 120				
Magnesium	22.11	0.200	5	18.8	66.2	80 - 120				S
Manganese	0.3142	0.00500	0.05	0.2867	54.9	80 - 120				SO
Nickel	0.04947	0.00200	0.05	0.004612	89.7	80 - 120				
Potassium	161	0.200	5	165.1	-81.2	80 - 120				SO
Selenium	0.04716	0.00200	0.05	0.000447	93.4	80 - 120				
Silver	0.04415	0.00200	0.05	0.00002	88.3	80 - 120				
Sodium	235.6	0.200	5	237.9	-45.1	80 - 120				SEO
Thallium	0.04268	0.00200	0.05	0.000295	84.8	80 - 120				
Vanadium	0.04394	0.00500	0.05	-0.002147	92.2	80 - 120				
Zinc	0.05207	0.00400	0.05	0.006173	91.8	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060552-02MSD** Units: **mg/L** Analysis Date: **19-Jun-2018 19:29**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615997** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1107	0.0100	0.1	0.01309	97.7	80 - 120	0.1133	2.32	20	
Antimony	0.04607	0.00200	0.05	0.000386	91.4	80 - 120	0.04514	2.04	20	
Arsenic	0.04699	0.00200	0.05	0.00027	93.4	80 - 120	0.04689	0.209	20	
Barium	0.6284	0.00400	0.05	0.5637	129	80 - 120	0.6185	1.59	20	SO
Beryllium	0.055	0.00200	0.05	0.000001	110	80 - 120	0.0561	1.97	20	
Cadmium	0.04592	0.00200	0.05	0.000067	91.7	80 - 120	0.04781	4.04	20	
Calcium	49.59	0.500	5	44.18	108	80 - 120	49.12	0.968	20	O
Chromium	0.05316	0.00400	0.05	0.007476	91.4	80 - 120	0.05209	2.04	20	
Cobalt	0.04595	0.00500	0.05	0.001036	89.8	80 - 120	0.04542	1.17	20	
Copper	0.04646	0.00200	0.05	0.000618	91.7	80 - 120	0.0452	2.76	20	
Iron	10.65	0.200	5	6.152	90.0	80 - 120	10.28	3.51	20	
Lead	0.04498	0.00200	0.05	0.000239	89.5	80 - 120	0.04585	1.9	20	
Magnesium	23.32	0.200	5	18.8	90.3	80 - 120	22.11	5.31	20	
Manganese	0.3402	0.00500	0.05	0.2867	107	80 - 120	0.3142	7.97	20	O
Nickel	0.05002	0.00200	0.05	0.004612	90.8	80 - 120	0.04947	1.11	20	
Potassium	166.5	0.200	5	165.1	28.0	80 - 120	161	3.33	20	SO
Selenium	0.04896	0.00200	0.05	0.000447	97.0	80 - 120	0.04716	3.76	20	
Silver	0.04294	0.00200	0.05	0.00002	85.8	80 - 120	0.04415	2.77	20	
Sodium	239.8	0.200	5	237.9	39.4	80 - 120	235.6	1.78	20	SEO
Thallium	0.04335	0.00200	0.05	0.000295	86.1	80 - 120	0.04268	1.55	20	
Vanadium	0.04427	0.00500	0.05	-0.002147	92.8	80 - 120	0.04394	0.766	20	
Zinc	0.05065	0.00400	0.05	0.006173	89.0	80 - 120	0.05207	2.77	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060552-02PDS** Units: **mg/L** Analysis Date: **19-Jun-2018 19:31**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615998** PrepDate: **15-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1107	0.0100	0.1	0.01309	97.6	75 - 125				
Antimony	0.08617	0.00200	0.1	0.000386	85.8	75 - 125				
Arsenic	0.09531	0.00200	0.1	0.00027	95.0	75 - 125				
Barium	0.6704	0.00400	0.1	0.5637	107	75 - 125				O
Beryllium	0.1066	0.00200	0.1	0.000001	107	75 - 125				
Cadmium	0.09185	0.00200	0.1	0.000067	91.8	75 - 125				
Calcium	55.46	0.500	10	44.18	113	75 - 125				O
Chromium	0.09771	0.00400	0.1	0.007476	90.2	75 - 125				
Cobalt	0.0909	0.00500	0.1	0.001036	89.9	75 - 125				
Copper	0.08973	0.00200	0.1	0.000618	89.1	75 - 125				
Iron	14.99	0.200	10	6.152	88.4	75 - 125				
Lead	0.09103	0.00200	0.1	0.000239	90.8	75 - 125				
Magnesium	27.34	0.200	10	18.8	85.4	75 - 125				
Manganese	0.3629	0.00500	0.1	0.2867	76.2	75 - 125				
Nickel	0.0933	0.00200	0.1	0.004612	88.7	75 - 125				
Potassium	173.8	0.200	10	165.1	87.2	75 - 125				O
Selenium	0.09757	0.00200	0.1	0.000447	97.1	75 - 125				
Silver	0.08545	0.00200	0.1	0.00002	85.4	75 - 125				
Thallium	0.09531	0.00200	0.1	0.000295	95.0	75 - 125				
Vanadium	0.09151	0.00500	0.1	-0.002147	93.7	75 - 125				
Zinc	0.09629	0.00400	0.1	0.006173	90.1	75 - 125				

PDS Sample ID: **HS18060552-02PDS** Units: **mg/L** Analysis Date: **20-Jun-2018 12:15**
Client ID: Run ID: **ICPMS05_318286** SeqNo: **4617332** PrepDate: **15-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	344.5	2.00	100	250	94.5	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129430 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060552-02SD** Units: **mg/L** Analysis Date: **19-Jun-2018 19:21**
Client ID: Run ID: **ICPMS05_318268** SeqNo: **4615993** PrepDate: **15-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02093	0.0500					0.01309	0	10	J
Antimony	0.00500	0.0100					0.000386	0	10	U
Arsenic	0.00500	0.0100					0.00027	0	10	U
Barium	0.5647	0.0200					0.5637	0.191	10	
Beryllium	0.00500	0.0100					0.000001	0	10	U
Cadmium	0.00500	0.0100					0.000067	0	10	U
Calcium	44.87	2.50					44.18	1.54	10	
Chromium	0.007043	0.0200					0.007476	0	10	J
Cobalt	0.001066	0.0250					0.001036	0	10	J
Copper	0.0100	0.0100					0.000618	0	10	U
Iron	6.404	1.00					6.152	4.1	10	
Lead	0.00500	0.0100					0.000239	0	10	U
Magnesium	19.33	1.00					18.8	2.83	10	
Manganese	0.2961	0.0250					0.2867	3.27	10	
Nickel	0.003962	0.0100					0.004612	0	10	J
Potassium	169.5	1.00					165.1	2.69	10	
Selenium	0.0100	0.0100					0.000447	0	10	U
Silver	0.00500	0.0100					0.00002	0	10	U
Thallium	0.00500	0.0100					0.000295	0	10	U
Vanadium	0.00500	0.0250					-0.002147	0	10	U
Zinc	0.01549	0.0200					0.006173	0	10	J

SD Sample ID: **HS18060552-02SD** Units: **mg/L** Analysis Date: **20-Jun-2018 12:13**
Client ID: Run ID: **ICPMS05_318286** SeqNo: **4617331** PrepDate: **15-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	257.5	10.0					250	2.98	10	

The following samples were analyzed in this batch: HS18060669-01 HS18060669-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129503 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129503** Units: **mg/L** Analysis Date: **19-Jun-2018 13:06**
Client ID: Run ID: **HG03_318209** SeqNo: **4615464** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000032	0.000200								J

LCS Sample ID: **LCS-129503** Units: **mg/L** Analysis Date: **19-Jun-2018 13:07**
Client ID: Run ID: **HG03_318209** SeqNo: **4615465** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00456	0.000200	0.005	0	91.2	80 - 120				

MS Sample ID: **HS18060569-01MS** Units: **mg/L** Analysis Date: **19-Jun-2018 13:11**
Client ID: Run ID: **HG03_318209** SeqNo: **4615467** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00455	0.000200	0.005	0.000016	90.7	75 - 125				

MSD Sample ID: **HS18060569-01MSD** Units: **mg/L** Analysis Date: **19-Jun-2018 13:13**
Client ID: Run ID: **HG03_318209** SeqNo: **4615468** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00446	0.000200	0.005	0.000016	88.9	75 - 125	0.00455	2	20	

The following samples were analyzed in this batch: HS18060669-01 HS18060669-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: 129393 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 11:19**
Client ID: Run ID: **SV-5_318066** SeqNo: **4611403** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.06985*	*0*	*0.08*	*0*	*87.3*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06625*	*0*	*0.08*	*0*	*82.8*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0366*	*0*	*0.08*	*0*	*45.8*	*40 - 140*				

MBLK Sample ID: **MBLK-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:11**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617667** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.08692*	*0*	*0.08*	*0*	*109*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06387*	*0*	*0.08*	*0*	*79.8*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04854*	*0*	*0.08*	*0*	*60.7*	*40 - 140*				

LCS Sample ID: **LCS-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:32**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617668** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08513	0.010	0.08	0	106	40 - 140				
Surr: 2-Fluorobiphenyl	*0.09458*	*0*	*0.08*	*0*	*118*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06339*	*0*	*0.08*	*0*	*79.2*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05764*	*0*	*0.08*	*0*	*72.1*	*40 - 140*				

LCSD Sample ID: **LCSD-129393** Units: **ug/L** Analysis Date: **15-Jun-2018 14:53**
Client ID: Run ID: **SV-5_318348** SeqNo: **4617669** PrepDate: **14-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07415	0.010	0.08	0	92.7	40 - 140	0.08513	13.8	20	
Surr: 2-Fluorobiphenyl	*0.09534*	*0*	*0.08*	*0*	*119*	*40 - 140*	*0.09458*	*0.809*	*20*	
Surr: 4-Terphenyl-d14	*0.06376*	*0*	*0.08*	*0*	*79.7*	*40 - 140*	*0.06339*	*0.584*	*20*	
Surr: Nitrobenzene-d5	*0.04763*	*0*	*0.08*	*0*	*59.5*	*40 - 140*	*0.05764*	*19*	*20*	

The following samples were analyzed in this batch: HS18060669-04 HS18060669-05 HS18060669-06 HS18060669-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-180619** Units: **ug/L** Analysis Date: **19-Jun-2018 11:52**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616216** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180619** Units: **ug/L** Analysis Date: **19-Jun-2018 11:52**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616216** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.39*	*1.0*	*50*	*0*	*86.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.52*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*51.22*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*52.47*	*1.0*	*50*	*0*	*105*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180619** Units: **ug/L** Analysis Date: **19-Jun-2018 10:14**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616288** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.14	1.0	50	0	90.3	78 - 124				
1,1,1-Trichloroethane	48.72	1.0	50	0	97.4	74 - 131				
1,1,2,2-Tetrachloroethane	42.31	1.0	50	0	84.6	71 - 121				
1,1,2-Trichloroethane	47.79	1.0	50	0	95.6	80 - 119				
1,1-Dichloroethane	48.92	1.0	50	0	97.8	77 - 125				
1,1-Dichloroethene	50.78	1.0	50	0	102	71 - 131				
1,1-Dichloropropene	45.87	1.0	50	0	91.7	78 - 125				
1,2,3-Trichlorobenzene	48.37	1.0	50	0	96.7	69 - 129				
1,2,3-Trichloropropane	42.86	1.0	50	0	85.7	73 - 122				
1,2,4-Trichlorobenzene	47.99	1.0	50	0	96.0	69 - 130				
1,2,4-Trimethylbenzene	43.83	1.0	50	0	87.7	76 - 124				
1,2-Dibromo-3-chloropropane	45.08	1.0	50	0	90.2	62 - 128				
1,2-Dibromoethane	50.56	1.0	50	0	101	77 - 121				
1,2-Dichlorobenzene	44.94	1.0	50	0	89.9	80 - 119				
1,2-Dichloroethane	50.51	1.0	50	0	101	73 - 128				
1,2-Dichloropropane	46.28	1.0	50	0	92.6	78 - 122				
1,3,5-Trimethylbenzene	52.93	1.0	50	0	106	75 - 124				
1,3-Dichlorobenzene	45.19	1.0	50	0	90.4	80 - 119				
1,3-Dichloropropane	49.81	1.0	50	0	99.6	80 - 119				
1,4-Dichlorobenzene	45.2	1.0	50	0	90.4	79 - 118				
2,2-Dichloropropane	50.27	1.0	50	0	101	60 - 139				
2-Butanone	97.18	2.0	100	0	97.2	56 - 143				
2-Chlorotoluene	51.91	1.0	50	0	104	79 - 122				
2-Hexanone	95.98	2.0	100	0	96.0	57 - 139				
4-Chlorotoluene	52.15	1.0	50	0	104	78 - 122				
4-Isopropyltoluene	46.57	1.0	50	0	93.1	77 - 127				
4-Methyl-2-pentanone	95.94	2.0	100	0	95.9	67 - 130				
Acetone	92.9	2.0	100	0	92.9	39 - 160				
Benzene	46.93	1.0	50	0	93.9	79 - 120				
Bromobenzene	42.74	1.0	50	0	85.5	80 - 120				
Bromochloromethane	51.34	1.0	50	0	103	78 - 123				
Bromodichloromethane	48.65	1.0	50	0	97.3	79 - 125				
Bromoform	50.6	1.0	50	0	101	66 - 130				
Bromomethane	50.95	1.0	50	0	102	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180619** Units: **ug/L** Analysis Date: **19-Jun-2018 10:14**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616288** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	96.68	2.0	100	0	96.7	64 - 133				
Carbon tetrachloride	54.72	1.0	50	0	109	72 - 136				
Chlorobenzene	45.26	1.0	50	0	90.5	82 - 118				
Chloroethane	54.82	1.0	50	0	110	60 - 138				
Chloroform	47.47	1.0	50	0	94.9	79 - 124				
Chloromethane	45.82	1.0	50	0	91.6	50 - 139				
cis-1,2-Dichloroethene	48.66	1.0	50	0	97.3	78 - 123				
cis-1,3-Dichloropropene	50.65	1.0	50	0	101	75 - 124				
Dibromochloromethane	50.49	1.0	50	0	101	74 - 126				
Dibromomethane	50.9	1.0	50	0	102	79 - 123				
Dichlorodifluoromethane	53.68	1.0	50	0	107	32 - 152				
Ethylbenzene	44.53	1.0	50	0	89.1	79 - 121				
Hexachlorobutadiene	50.87	1.0	50	0	102	66 - 134				
Isopropylbenzene	50.65	1.0	50	0	101	72 - 131				
m,p-Xylene	91.12	2.0	100	0	91.1	80 - 121				
Methylene chloride	45.3	2.0	50	0	90.6	74 - 124				
Naphthalene	47.43	1.0	50	0	94.9	61 - 128				
n-Butylbenzene	50.97	1.0	50	0	102	75 - 128				
n-Propylbenzene	53.12	1.0	50	0	106	76 - 126				
o-Xylene	46.02	1.0	50	0	92.0	78 - 122				
sec-Butylbenzene	46.43	1.0	50	0	92.9	77 - 126				
Styrene	47.12	1.0	50	0	94.2	78 - 123				
tert-Butylbenzene	52.84	1.0	50	0	106	78 - 124				
Tetrachloroethene	49.69	1.0	50	0	99.4	74 - 129				
Toluene	47.27	1.0	50	0	94.5	80 - 121				
trans-1,2-Dichloroethene	48.29	1.0	50	0	96.6	75 - 124				
trans-1,3-Dichloropropene	51.16	1.0	50	0	102	73 - 127				
Trichloroethene	48.04	1.0	50	0	96.1	79 - 123				
Trichlorofluoromethane	52.74	1.0	50	0	105	65 - 141				
Vinyl chloride	48.66	1.0	50	0	97.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.85*	*1.0*	*50*	*0*	*89.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.59*	*1.0*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*48.9*	*1.0*	*50*	*0*	*97.8*	*80 - 119*				
Surr: Toluene-d8	*53.38*	*1.0*	*50*	*0*	*107*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060645-01MS** Units: **ug/L** Analysis Date: **19-Jun-2018 13:33**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616218** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.79	1.0	50	0	93.6	78 - 124				
1,1,1-Trichloroethane	49.17	1.0	50	0	98.3	74 - 131				
1,1,2,2-Tetrachloroethane	45.48	1.0	50	0	91.0	71 - 121				
1,1,2-Trichloroethane	45.56	1.0	50	0	91.1	80 - 119				
1,1-Dichloroethane	49.24	1.0	50	0	98.5	77 - 125				
1,1-Dichloroethene	51.8	1.0	50	0	104	71 - 131				
1,1-Dichloropropene	45.37	1.0	50	0	90.7	78 - 125				
1,2,3-Trichlorobenzene	48.14	1.0	50	0	96.3	69 - 129				
1,2,3-Trichloropropane	45.82	1.0	50	0	91.6	73 - 122				
1,2,4-Trichlorobenzene	46.27	1.0	50	0	92.5	69 - 130				
1,2,4-Trimethylbenzene	43.43	1.0	50	0	86.9	76 - 124				
1,2-Dibromo-3-chloropropane	49.7	1.0	50	0	99.4	62 - 128				
1,2-Dibromoethane	48.46	1.0	50	0	96.9	77 - 121				
1,2-Dichlorobenzene	44.38	1.0	50	0	88.8	80 - 119				
1,2-Dichloroethane	50.38	1.0	50	0	101	73 - 128				
1,2-Dichloropropane	45.62	1.0	50	0	91.2	78 - 122				
1,3,5-Trimethylbenzene	52.75	1.0	50	0	105	75 - 124				
1,3-Dichlorobenzene	44.48	1.0	50	0	89.0	80 - 119				
1,3-Dichloropropane	47.12	1.0	50	0	94.2	80 - 119				
1,4-Dichlorobenzene	44.12	1.0	50	0	88.2	79 - 118				
2,2-Dichloropropane	49.75	1.0	50	0	99.5	60 - 139				
2-Butanone	107.8	2.0	100	0	108	56 - 143				
2-Chlorotoluene	51.74	1.0	50	0	103	79 - 122				
2-Hexanone	156.5	2.0	100	0	156	57 - 139				S
4-Chlorotoluene	51.35	1.0	50	0	103	78 - 122				
4-Isopropyltoluene	46.66	1.0	50	0.5416	92.2	77 - 127				
4-Methyl-2-pentanone	115.8	2.0	100	0	116	67 - 130				
Acetone	105.3	2.0	100	0	105	39 - 160				
Benzene	46.64	1.0	50	0.6183	92.0	79 - 120				
Bromobenzene	42.44	1.0	50	0	84.9	80 - 120				
Bromochloromethane	49.78	1.0	50	0	99.6	78 - 123				
Bromodichloromethane	48.2	1.0	50	0	96.4	79 - 125				
Bromoform	49.55	1.0	50	0	99.1	66 - 130				
Bromomethane	49.25	1.0	50	0	98.5	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060645-01MS** Units: **ug/L** Analysis Date: **19-Jun-2018 13:33**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616218** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	97.64	2.0	100	0	97.6	64 - 133				
Carbon tetrachloride	55.05	1.0	50	0	110	72 - 136				
Chlorobenzene	45.22	1.0	50	0	90.4	82 - 118				
Chloroethane	53.19	1.0	50	0	106	60 - 138				
Chloroform	46.75	1.0	50	0	93.5	79 - 124				
Chloromethane	44.63	1.0	50	0	89.3	50 - 139				
cis-1,2-Dichloroethene	50.06	1.0	50	2.336	95.5	78 - 123				
cis-1,3-Dichloropropene	50.04	1.0	50	0	100	75 - 124				
Dibromochloromethane	47.51	1.0	50	0	95.0	74 - 126				
Dibromomethane	50.6	1.0	50	0	101	79 - 123				
Dichlorodifluoromethane	52.32	1.0	50	0	105	32 - 152				
Ethylbenzene	46.3	1.0	50	0	92.6	79 - 121				
Hexachlorobutadiene	49.97	1.0	50	0	99.9	66 - 134				
Isopropylbenzene	49.47	1.0	50	1.359	96.2	72 - 131				
m,p-Xylene	90.07	2.0	100	0	90.1	80 - 121				
Methylene chloride	44.94	2.0	50	0	89.9	74 - 124				
Naphthalene	50.88	1.0	50	0	102	61 - 128				
n-Butylbenzene	50.93	1.0	50	0	102	75 - 128				
n-Propylbenzene	53.94	1.0	50	0	108	76 - 126				
o-Xylene	46.34	1.0	50	0	92.7	78 - 122				
sec-Butylbenzene	47.88	1.0	50	0.9246	93.9	77 - 126				
Styrene	46.62	1.0	50	0	93.2	78 - 123				
tert-Butylbenzene	53.73	1.0	50	0	107	78 - 124				
Tetrachloroethene	47.1	1.0	50	0	94.2	74 - 129				
Toluene	44.97	1.0	50	0	89.9	80 - 121				
trans-1,2-Dichloroethene	49.77	1.0	50	0	99.5	75 - 124				
trans-1,3-Dichloropropene	51.24	1.0	50	0	102	73 - 127				
Trichloroethene	75.55	1.0	50	27.21	96.7	79 - 123				
Trichlorofluoromethane	46.09	1.0	50	0	92.2	65 - 141				
Vinyl chloride	49.64	1.0	50	0	99.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.5*	*1.0*	*50*	*0*	*89.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.32*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*48.47*	*1.0*	*50*	*0*	*96.9*	*80 - 119*				
Surr: Toluene-d8	*50.79*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060645-01MSD** Units: **ug/L** Analysis Date: **19-Jun-2018 13:58**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616219** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.26	1.0	50	0	92.5	78 - 124	46.79	1.14	20	
1,1,1-Trichloroethane	48.21	1.0	50	0	96.4	74 - 131	49.17	1.95	20	
1,1,2,2-Tetrachloroethane	44.66	1.0	50	0	89.3	71 - 121	45.48	1.83	20	
1,1,2-Trichloroethane	45.47	1.0	50	0	90.9	80 - 119	45.56	0.207	20	
1,1-Dichloroethane	47.46	1.0	50	0	94.9	77 - 125	49.24	3.68	20	
1,1-Dichloroethene	49.73	1.0	50	0	99.5	71 - 131	51.8	4.08	20	
1,1-Dichloropropene	43.78	1.0	50	0	87.6	78 - 125	45.37	3.57	20	
1,2,3-Trichlorobenzene	48.08	1.0	50	0	96.2	69 - 129	48.14	0.127	20	
1,2,3-Trichloropropane	44.8	1.0	50	0	89.6	73 - 122	45.82	2.26	20	
1,2,4-Trichlorobenzene	46.17	1.0	50	0	92.3	69 - 130	46.27	0.206	20	
1,2,4-Trimethylbenzene	42.63	1.0	50	0	85.3	76 - 124	43.43	1.87	20	
1,2-Dibromo-3-chloropropane	50.79	1.0	50	0	102	62 - 128	49.7	2.16	20	
1,2-Dibromoethane	47.23	1.0	50	0	94.5	77 - 121	48.46	2.57	20	
1,2-Dichlorobenzene	43.43	1.0	50	0	86.9	80 - 119	44.38	2.16	20	
1,2-Dichloroethane	49.15	1.0	50	0	98.3	73 - 128	50.38	2.48	20	
1,2-Dichloropropane	45.18	1.0	50	0	90.4	78 - 122	45.62	0.976	20	
1,3,5-Trimethylbenzene	52.21	1.0	50	0	104	75 - 124	52.75	1.01	20	
1,3-Dichlorobenzene	43.41	1.0	50	0	86.8	80 - 119	44.48	2.45	20	
1,3-Dichloropropane	46.29	1.0	50	0	92.6	80 - 119	47.12	1.78	20	
1,4-Dichlorobenzene	43.7	1.0	50	0	87.4	79 - 118	44.12	0.94	20	
2,2-Dichloropropane	47.15	1.0	50	0	94.3	60 - 139	49.75	5.36	20	
2-Butanone	103.7	2.0	100	0	104	56 - 143	107.8	3.85	20	
2-Chlorotoluene	50.34	1.0	50	0	101	79 - 122	51.74	2.75	20	
2-Hexanone	153	2.0	100	0	153	57 - 139	156.5	2.25	20	S
4-Chlorotoluene	50.56	1.0	50	0	101	78 - 122	51.35	1.54	20	
4-Isopropyltoluene	45.39	1.0	50	0.5416	89.7	77 - 127	46.66	2.76	20	
4-Methyl-2-pentanone	112.5	2.0	100	0	112	67 - 130	115.8	2.9	20	
Acetone	103	2.0	100	0	103	39 - 160	105.3	2.2	20	
Benzene	45.57	1.0	50	0.6183	89.9	79 - 120	46.64	2.32	20	
Bromobenzene	41.27	1.0	50	0	82.5	80 - 120	42.44	2.79	20	
Bromochloromethane	48.97	1.0	50	0	97.9	78 - 123	49.78	1.64	20	
Bromodichloromethane	47.04	1.0	50	0	94.1	79 - 125	48.2	2.45	20	
Bromoform	48.02	1.0	50	0	96.0	66 - 130	49.55	3.15	20	
Bromomethane	46.78	1.0	50	0	93.6	53 - 141	49.25	5.16	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060645-01MSD** Units: **ug/L** Analysis Date: **19-Jun-2018 13:58**
Client ID: Run ID: **VOA2_318272** SeqNo: **4616219** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	94.15	2.0	100	0	94.1	64 - 133	97.64	3.64	20	
Carbon tetrachloride	55.34	1.0	50	0	111	72 - 136	55.05	0.533	20	
Chlorobenzene	44.36	1.0	50	0	88.7	82 - 118	45.22	1.92	20	
Chloroethane	54.07	1.0	50	0	108	60 - 138	53.19	1.63	20	
Chloroform	45.44	1.0	50	0	90.9	79 - 124	46.75	2.86	20	
Chloromethane	44.09	1.0	50	0	88.2	50 - 139	44.63	1.23	20	
cis-1,2-Dichloroethene	48.58	1.0	50	2.336	92.5	78 - 123	50.06	3	20	
cis-1,3-Dichloropropene	48.17	1.0	50	0	96.3	75 - 124	50.04	3.81	20	
Dibromochloromethane	46.64	1.0	50	0	93.3	74 - 126	47.51	1.84	20	
Dibromomethane	49.78	1.0	50	0	99.6	79 - 123	50.6	1.64	20	
Dichlorodifluoromethane	48.92	1.0	50	0	97.8	32 - 152	52.32	6.72	20	
Ethylbenzene	45.22	1.0	50	0	90.4	79 - 121	46.3	2.36	20	
Hexachlorobutadiene	49.15	1.0	50	0	98.3	66 - 134	49.97	1.64	20	
Isopropylbenzene	48.13	1.0	50	1.359	93.5	72 - 131	49.47	2.76	20	
m,p-Xylene	88.2	2.0	100	0	88.2	80 - 121	90.07	2.1	20	
Methylene chloride	43.9	2.0	50	0	87.8	74 - 124	44.94	2.34	20	
Naphthalene	50.42	1.0	50	0	101	61 - 128	50.88	0.909	20	
n-Butylbenzene	49.03	1.0	50	0	98.1	75 - 128	50.93	3.8	20	
n-Propylbenzene	52.24	1.0	50	0	104	76 - 126	53.94	3.19	20	
o-Xylene	44.73	1.0	50	0	89.5	78 - 122	46.34	3.53	20	
sec-Butylbenzene	46.17	1.0	50	0.9246	90.5	77 - 126	47.88	3.64	20	
Styrene	45.76	1.0	50	0	91.5	78 - 123	46.62	1.87	20	
tert-Butylbenzene	52.22	1.0	50	0	104	78 - 124	53.73	2.85	20	
Tetrachloroethene	45.81	1.0	50	0	91.6	74 - 129	47.1	2.78	20	
Toluene	44.09	1.0	50	0	88.2	80 - 121	44.97	1.99	20	
trans-1,2-Dichloroethene	47.5	1.0	50	0	95.0	75 - 124	49.77	4.65	20	
trans-1,3-Dichloropropene	49.62	1.0	50	0	99.2	73 - 127	51.24	3.22	20	
Trichloroethene	74.04	1.0	50	27.21	93.7	79 - 123	75.55	2.02	20	
Trichlorofluoromethane	46.46	1.0	50	0	92.9	65 - 141	46.09	0.795	20	
Vinyl chloride	47.79	1.0	50	0	95.6	58 - 137	49.64	3.8	20	
Surr: 1,2-Dichloroethane-d4	*44.5*	*1.0*	*50*	*0*	*89.0*	*81 - 118*	*44.5*	*0*	*20*	
Surr: 4-Bromofluorobenzene	*52.08*	*1.0*	*50*	*0*	*104*	*85 - 114*	*52.32*	*0.474*	*20*	
Surr: Dibromofluoromethane	*48.75*	*1.0*	*50*	*0*	*97.5*	*80 - 119*	*48.47*	*0.589*	*20*	
Surr: Toluene-d8	*50.74*	*1.0*	*50*	*0*	*101*	*89 - 112*	*50.79*	*0.0949*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318272 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060669-01	HS18060669-02	HS18060669-03	HS18060669-04
HS18060669-05	HS18060669-06	HS18060669-07	HS18060669-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 13:14**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 13:14**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.47*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.88*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*50.23*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*52.69*	*1.0*	*50*	*0*	*105*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 12:24**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618345** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.46	1.0	50	0	88.9	78 - 124				
1,1,1-Trichloroethane	43.15	1.0	50	0	86.3	74 - 131				
1,1,2,2-Tetrachloroethane	41.6	1.0	50	0	83.2	71 - 121				
1,1,2-Trichloroethane	43.2	1.0	50	0	86.4	80 - 119				
1,1-Dichloroethane	43.55	1.0	50	0	87.1	77 - 125				
1,1-Dichloroethene	43.62	1.0	50	0	87.2	71 - 131				
1,1-Dichloropropene	40.16	1.0	50	0	80.3	78 - 125				
1,2,3-Trichlorobenzene	43.4	1.0	50	0	86.8	69 - 129				
1,2,3-Trichloropropane	41.69	1.0	50	0	83.4	73 - 122				
1,2,4-Trichlorobenzene	40.49	1.0	50	0	81.0	69 - 130				
1,2,4-Trimethylbenzene	39.76	1.0	50	0	79.5	76 - 124				
1,2-Dibromo-3-chloropropane	39.39	1.0	50	0	78.8	62 - 128				
1,2-Dibromoethane	45.37	1.0	50	0	90.7	77 - 121				
1,2-Dichlorobenzene	41.84	1.0	50	0	83.7	80 - 119				
1,2-Dichloroethane	46	1.0	50	0	92.0	73 - 128				
1,2-Dichloropropane	42.79	1.0	50	0	85.6	78 - 122				
1,3,5-Trimethylbenzene	48.22	1.0	50	0	96.4	75 - 124				
1,3-Dichlorobenzene	41.37	1.0	50	0	82.7	80 - 119				
1,3-Dichloropropane	44.63	1.0	50	0	89.3	80 - 119				
1,4-Dichlorobenzene	41.7	1.0	50	0	83.4	79 - 118				
2,2-Dichloropropane	42.82	1.0	50	0	85.6	60 - 139				
2-Butanone	95.45	2.0	100	0	95.5	56 - 143				
2-Chlorotoluene	47.38	1.0	50	0	94.8	79 - 122				
2-Hexanone	98.15	2.0	100	0	98.1	57 - 139				
4-Chlorotoluene	47.08	1.0	50	0	94.2	78 - 122				
4-Isopropyltoluene	42.12	1.0	50	0	84.2	77 - 127				
4-Methyl-2-pentanone	92.24	2.0	100	0	92.2	67 - 130				
Acetone	94.07	2.0	100	0	94.1	39 - 160				
Benzene	42.17	1.0	50	0	84.3	79 - 120				
Bromobenzene	40.14	1.0	50	0	80.3	80 - 120				
Bromochloromethane	46.54	1.0	50	0	93.1	78 - 123				
Bromodichloromethane	45.23	1.0	50	0	90.5	79 - 125				
Bromoform	46.11	1.0	50	0	92.2	66 - 130				
Bromomethane	43.98	1.0	50	0	88.0	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 12:24**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618345** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	83.07	2.0	100	0	83.1	64 - 133				
Carbon tetrachloride	48.31	1.0	50	0	96.6	72 - 136				
Chlorobenzene	42.54	1.0	50	0	85.1	82 - 118				
Chloroethane	45.59	1.0	50	0	91.2	60 - 138				
Chloroform	42.39	1.0	50	0	84.8	79 - 124				
Chloromethane	39.45	1.0	50	0	78.9	50 - 139				
cis-1,2-Dichloroethene	42.41	1.0	50	0	84.8	78 - 123				
cis-1,3-Dichloropropene	46.88	1.0	50	0	93.8	75 - 124				
Dibromochloromethane	44.92	1.0	50	0	89.8	74 - 126				
Dibromomethane	47.47	1.0	50	0	94.9	79 - 123				
Dichlorodifluoromethane	40.96	1.0	50	0	81.9	32 - 152				
Ethylbenzene	42.27	1.0	50	0	84.5	79 - 121				
Hexachlorobutadiene	43.35	1.0	50	0	86.7	66 - 134				
Isopropylbenzene	43.38	1.0	50	0	86.8	72 - 131				
m,p-Xylene	82.6	2.0	100	0	82.6	80 - 121				
Methylene chloride	40.87	2.0	50	0	81.7	74 - 124				
Naphthalene	41.86	1.0	50	0	83.7	61 - 128				
n-Butylbenzene	45.04	1.0	50	0	90.1	75 - 128				
n-Propylbenzene	47.53	1.0	50	0	95.1	76 - 126				
o-Xylene	42.62	1.0	50	0	85.2	78 - 122				
sec-Butylbenzene	42.11	1.0	50	0	84.2	77 - 126				
Styrene	43.48	1.0	50	0	87.0	78 - 123				
tert-Butylbenzene	48.17	1.0	50	0	96.3	78 - 124				
Tetrachloroethene	42.25	1.0	50	0	84.5	74 - 129				
Toluene	41.05	1.0	50	0	82.1	80 - 121				
trans-1,2-Dichloroethene	42.88	1.0	50	0	85.8	75 - 124				
trans-1,3-Dichloropropene	48.24	1.0	50	0	96.5	73 - 127				
Trichlorofluoromethane	38.78	1.0	50	0	77.6	65 - 141				
Vinyl chloride	41.4	1.0	50	0	82.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.84*	*1.0*	*50*	*0*	*87.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.17*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.62*	*1.0*	*50*	*0*	*95.2*	*80 - 119*				
Surr: Toluene-d8	*51.17*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060825-01MS** Units: **ug/L** Analysis Date: **20-Jun-2018 14:55**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618350** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	33.6	1.0	50	0	67.2	78 - 124				S
1,1,1-Trichloroethane	31.74	1.0	50	0	63.5	74 - 131				S
1,1,2,2-Tetrachloroethane	34.48	1.0	50	0	69.0	71 - 121				S
1,1,2-Trichloroethane	33.92	1.0	50	0	67.8	80 - 119				S
1,1-Dichloroethane	33.2	1.0	50	0	66.4	77 - 125				S
1,1-Dichloroethene	31.82	1.0	50	0	63.6	71 - 131				S
1,1-Dichloropropene	29.74	1.0	50	0	59.5	78 - 125				S
1,2,3-Trichlorobenzene	30.23	1.0	50	0	60.5	69 - 129				S
1,2,3-Trichloropropane	35.66	1.0	50	0	71.3	73 - 122				S
1,2,4-Trichlorobenzene	29.94	1.0	50	0	59.9	69 - 130				S
1,2,4-Trimethylbenzene	29.51	1.0	50	0	59.0	76 - 124				S
1,2-Dibromo-3-chloropropane	40.08	1.0	50	0	80.2	62 - 128				
1,2-Dibromoethane	35.47	1.0	50	0	70.9	77 - 121				S
1,2-Dichlorobenzene	30.91	1.0	50	0	61.8	80 - 119				S
1,2-Dichloroethane	35.41	1.0	50	0	70.8	73 - 128				S
1,2-Dichloropropane	32.45	1.0	50	0	64.9	78 - 122				S
1,3,5-Trimethylbenzene	35.03	1.0	50	0	70.1	75 - 124				S
1,3-Dichlorobenzene	30.45	1.0	50	0	60.9	80 - 119				S
1,3-Dichloropropane	34.42	1.0	50	0	68.8	80 - 119				S
1,4-Dichlorobenzene	30.44	1.0	50	0	60.9	79 - 118				S
2,2-Dichloropropane	31.28	1.0	50	0	62.6	60 - 139				
2-Butanone	87.99	2.0	100	0	88.0	56 - 143				
2-Chlorotoluene	34.85	1.0	50	0	69.7	79 - 122				S
2-Hexanone	89.87	2.0	100	0	89.9	57 - 139				
4-Chlorotoluene	34.4	1.0	50	0	68.8	78 - 122				S
4-Isopropyltoluene	29.66	1.0	50	0	59.3	77 - 127				S
4-Methyl-2-pentanone	81.95	2.0	100	0	81.9	67 - 130				
Acetone	88.36	2.0	100	0	88.4	39 - 160				
Benzene	31.85	1.0	50	0	63.7	79 - 120				S
Bromobenzene	29.91	1.0	50	0	59.8	80 - 120				S
Bromochloromethane	34.76	1.0	50	0	69.5	78 - 123				S
Bromodichloromethane	34.06	1.0	50	0	68.1	79 - 125				S
Bromoform	35.83	1.0	50	0	71.7	66 - 130				
Bromomethane	30.72	1.0	50	0	61.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060825-01MS** Units: **ug/L** Analysis Date: **20-Jun-2018 14:55**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618350** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	62.42	2.0	100	0	62.4	64 - 133				S
Carbon tetrachloride	34.84	1.0	50	0	69.7	72 - 136				S
Chlorobenzene	31.88	1.0	50	0	63.8	82 - 118				S
Chloroethane	31.04	1.0	50	0	62.1	60 - 138				
Chloroform	32.05	1.0	50	0	64.1	79 - 124				S
Chloromethane	27.4	1.0	50	0	54.8	50 - 139				
cis-1,2-Dichloroethene	32.82	1.0	50	0	65.6	78 - 123				S
cis-1,3-Dichloropropene	34.93	1.0	50	0	69.9	75 - 124				S
Dibromochloromethane	33.87	1.0	50	0	67.7	74 - 126				S
Dibromomethane	35.91	1.0	50	0	71.8	79 - 123				S
Dichlorodifluoromethane	23.14	1.0	50	0	46.3	32 - 152				
Ethylbenzene	31.48	1.0	50	0	63.0	79 - 121				S
Hexachlorobutadiene	27.23	1.0	50	0	54.5	66 - 134				S
Isopropylbenzene	31.85	1.0	50	0	63.7	72 - 131				S
m,p-Xylene	61.73	2.0	100	0	61.7	80 - 121				S
Methylene chloride	30.54	2.0	50	0	61.1	74 - 124				S
Naphthalene	35.74	1.0	50	0	71.5	61 - 128				
n-Butylbenzene	30.85	1.0	50	0	61.7	75 - 128				S
n-Propylbenzene	34.55	1.0	50	0	69.1	76 - 126				S
o-Xylene	31.85	1.0	50	0	63.7	78 - 122				S
sec-Butylbenzene	29.96	1.0	50	0	59.9	77 - 126				S
Styrene	32.42	1.0	50	0	64.8	78 - 123				S
tert-Butylbenzene	34.86	1.0	50	0	69.7	78 - 124				S
Tetrachloroethene	30.01	1.0	50	0	60.0	74 - 129				S
Toluene	31.25	1.0	50	0	62.5	80 - 121				S
trans-1,2-Dichloroethene	32.19	1.0	50	0	64.4	75 - 124				S
trans-1,3-Dichloropropene	35.88	1.0	50	0	71.8	73 - 127				S
Trichlorofluoromethane	27.2	1.0	50	0	54.4	65 - 141				S
Vinyl chloride	30.83	1.0	50	0	61.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.14*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.51*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*48.87*	*1.0*	*50*	*0*	*97.7*	*80 - 119*				
Surr: Toluene-d8	*51.87*	*1.0*	*50*	*0*	*104*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060825-01MSD** Units: **ug/L** Analysis Date: **20-Jun-2018 15:19**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618351** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	33.12	1.0	50	0	66.2	78 - 124	33.6	1.46	20	S
1,1,1-Trichloroethane	30.91	1.0	50	0	61.8	74 - 131	31.74	2.65	20	S
1,1,2,2-Tetrachloroethane	34.95	1.0	50	0	69.9	71 - 121	34.48	1.38	20	S
1,1,2-Trichloroethane	33.54	1.0	50	0	67.1	80 - 119	33.92	1.14	20	S
1,1-Dichloroethane	32.72	1.0	50	0	65.4	77 - 125	33.2	1.45	20	S
1,1-Dichloroethene	31.37	1.0	50	0	62.7	71 - 131	31.82	1.43	20	S
1,1-Dichloropropene	28.59	1.0	50	0	57.2	78 - 125	29.74	3.92	20	S
1,2,3-Trichlorobenzene	30.76	1.0	50	0	61.5	69 - 129	30.23	1.72	20	S
1,2,3-Trichloropropane	35.15	1.0	50	0	70.3	73 - 122	35.66	1.44	20	S
1,2,4-Trichlorobenzene	28.81	1.0	50	0	57.6	69 - 130	29.94	3.87	20	S
1,2,4-Trimethylbenzene	29.73	1.0	50	0	59.5	76 - 124	29.51	0.716	20	S
1,2-Dibromo-3-chloropropane	34.06	1.0	50	0	68.1	62 - 128	40.08	16.2	20	
1,2-Dibromoethane	35.14	1.0	50	0	70.3	77 - 121	35.47	0.931	20	S
1,2-Dichlorobenzene	31.23	1.0	50	0	62.5	80 - 119	30.91	1.03	20	S
1,2-Dichloroethane	35.1	1.0	50	0	70.2	73 - 128	35.41	0.875	20	S
1,2-Dichloropropane	31.21	1.0	50	0	62.4	78 - 122	32.45	3.92	20	S
1,3,5-Trimethylbenzene	34.97	1.0	50	0	69.9	75 - 124	35.03	0.169	20	S
1,3-Dichlorobenzene	30.1	1.0	50	0	60.2	80 - 119	30.45	1.13	20	S
1,3-Dichloropropane	34.25	1.0	50	0	68.5	80 - 119	34.42	0.503	20	S
1,4-Dichlorobenzene	30.11	1.0	50	0	60.2	79 - 118	30.44	1.07	20	S
2,2-Dichloropropane	29.7	1.0	50	0	59.4	60 - 139	31.28	5.2	20	S
2-Butanone	84.97	2.0	100	0	85.0	56 - 143	87.99	3.5	20	
2-Chlorotoluene	34.85	1.0	50	0	69.7	79 - 122	34.85	0.0249	20	S
2-Hexanone	85.17	2.0	100	0	85.2	57 - 139	89.87	5.37	20	
4-Chlorotoluene	34.56	1.0	50	0	69.1	78 - 122	34.4	0.477	20	S
4-Isopropyltoluene	29.66	1.0	50	0	59.3	77 - 127	29.66	0.0163	20	S
4-Methyl-2-pentanone	82.62	2.0	100	0	82.6	67 - 130	81.95	0.812	20	
Acetone	86.27	2.0	100	0	86.3	39 - 160	88.36	2.39	20	
Benzene	30.76	1.0	50	0	61.5	79 - 120	31.85	3.46	20	S
Bromobenzene	29.69	1.0	50	0	59.4	80 - 120	29.91	0.735	20	S
Bromochloromethane	33.74	1.0	50	0	67.5	78 - 123	34.76	2.97	20	S
Bromodichloromethane	32.7	1.0	50	0	65.4	79 - 125	34.06	4.09	20	S
Bromoform	35.68	1.0	50	0	71.4	66 - 130	35.83	0.415	20	
Bromomethane	30.27	1.0	50	0	60.5	53 - 141	30.72	1.47	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060669

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060825-01MSD** Units: **ug/L** Analysis Date: **20-Jun-2018 15:19**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618351** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	61.38	2.0	100	0	61.4	64 - 133	62.42	1.68	20	S
Carbon tetrachloride	33.22	1.0	50	0	66.4	72 - 136	34.84	4.76	20	S
Chlorobenzene	31.5	1.0	50	0	63.0	82 - 118	31.88	1.21	20	S
Chloroethane	33.32	1.0	50	0	66.6	60 - 138	31.04	7.1	20	
Chloroform	31.31	1.0	50	0	62.6	79 - 124	32.05	2.36	20	S
Chloromethane	27.87	1.0	50	0	55.7	50 - 139	27.4	1.69	20	
cis-1,2-Dichloroethene	32.06	1.0	50	0	64.1	78 - 123	32.82	2.35	20	S
cis-1,3-Dichloropropene	33.39	1.0	50	0	66.8	75 - 124	34.93	4.52	20	S
Dibromochloromethane	34.02	1.0	50	0	68.0	74 - 126	33.87	0.419	20	S
Dibromomethane	35	1.0	50	0	70.0	79 - 123	35.91	2.57	20	S
Dichlorodifluoromethane	22.39	1.0	50	0	44.8	32 - 152	23.14	3.33	20	
Ethylbenzene	30.88	1.0	50	0	61.8	79 - 121	31.48	1.91	20	S
Hexachlorobutadiene	25.48	1.0	50	0	51.0	66 - 134	27.23	6.65	20	S
Isopropylbenzene	31.45	1.0	50	0	62.9	72 - 131	31.85	1.27	20	S
m,p-Xylene	60.74	2.0	100	0	60.7	80 - 121	61.73	1.62	20	S
Methylene chloride	29.93	2.0	50	0	59.9	74 - 124	30.54	2	20	S
Naphthalene	34.05	1.0	50	0	68.1	61 - 128	35.74	4.83	20	
n-Butylbenzene	30.46	1.0	50	0	60.9	75 - 128	30.85	1.28	20	S
n-Propylbenzene	34.14	1.0	50	0	68.3	76 - 126	34.55	1.19	20	S
o-Xylene	31.35	1.0	50	0	62.7	78 - 122	31.85	1.59	20	S
sec-Butylbenzene	29.73	1.0	50	0	59.5	77 - 126	29.96	0.79	20	S
Styrene	32.29	1.0	50	0	64.6	78 - 123	32.42	0.386	20	S
tert-Butylbenzene	34.21	1.0	50	0	68.4	78 - 124	34.86	1.9	20	S
Tetrachloroethene	29.68	1.0	50	0	59.4	74 - 129	30.01	1.1	20	S
Toluene	30.4	1.0	50	0	60.8	80 - 121	31.25	2.76	20	S
trans-1,2-Dichloroethene	32.12	1.0	50	0	64.2	75 - 124	32.19	0.203	20	S
trans-1,3-Dichloropropene	33.79	1.0	50	0	67.6	73 - 127	35.88	6.01	20	S
Trichlorofluoromethane	25.57	1.0	50	0	51.1	65 - 141	27.2	6.16	20	S
Vinyl chloride	30.05	1.0	50	0	60.1	58 - 137	30.83	2.54	20	
Surr: 1,2-Dichloroethane-d4	*45.45*	*1.0*	*50*	*0*	*90.9*	*81 - 118*	*45.14*	*0.681*	*20*	
Surr: 4-Bromofluorobenzene	*51.21*	*1.0*	*50*	*0*	*102*	*85 - 114*	*51.51*	*0.596*	*20*	
Surr: Dibromofluoromethane	*49.24*	*1.0*	*50*	*0*	*98.5*	*80 - 119*	*48.87*	*0.756*	*20*	
Surr: Toluene-d8	*52.79*	*1.0*	*50*	*0*	*106*	*89 - 112*	*51.87*	*1.75*	*20*	

The following samples were analyzed in this batch: HS18060669-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: **HS18060669**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 03-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 03-Jul-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**14-Jun-2018 08:57**
Work Order:	HS18060669	Received by:	**NDR**

Checklist completed by: *Jared R. Makan* (eSignature) 14-Jun-2018 (Date)

Reviewed by: *RJ Modashia* (eSignature) 15-Jun-2018 (Date)

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	1.8c/1.4c UC/C	IR30	
Cooler(s)/Kit(s):	43016		
Date/Time sample(s) sent to storage:	06/14/2018 16:11		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate ENVIRONMENTAL ASSOCIATES

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
								Sample Analysis Requested (5)											Quality Assurance Samples (6)			
102_061318		6/13/18	0810	-	N		WG	5	X	X	X											
MW12_061318		6/13/18	0900	-	N		WG	4	X	X												
MW12_061318_		6/13/18	0900	-	FD		WG	4	X	X												
18CPTMW14_061318		6/13/18	0955		N		WG	6	X	X	X	X										
18CPTMW24_061318		6/13/18	1045		N		WG	5	X	X		X										
C08_061318		6/13/18	1150	-	N		WG	5	X	X		X										
MW16_061318		6/13/18	1245	-	N		WG	5	X	X		X										
TRIPBLANK		6/13/18		-	TB		W	2	X													
				-																		
				-																		
				-																		

HS18060669

Bhate Environmental Associates, Inc.
LHAAP 18/24

COMMENTS: _____

Custody Transfers Prior to Receipt By Laboratory

Relinquished By (Signed)	Date	Time	Received By (signed)	Date	Time
1. Scott Beesinger	6/13/18	1430	1. [illegible]	6/14/18	08:57
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No.:

Method of Shipment: _____

Fed Ex _____ Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

43016 1.8 430

SEAL
1430
NIGER

Seal Broken By:
JUN 14 2018
Date:

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY
Date: 6/13/18 Time:
Name: Scott [illegible]
Company: [illegible]

Fed Exp
E

RETURNS MON-
PRIORITY OVERNIG.
77099

TRK# 7376 9752 9204
(0221)

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1816951; 1816952; 1816954

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2106 (217071)

General Set Information: There were seventeen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions.
1816952001 – 10; 1816952004/1816954001/04 – 100; 1816954002/05 – 1,000. Samples 1816951001 and 1816952006 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 606014) was less than 1/2 the CRDL. The recovery for the LCS (606015) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1816951001 (Client ID: LH18/24-SP650_061318). The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafile 19JUNP17. The initial CCV (606051) analyzed on 06/20/18 for sequence 19JUN18Q.s was a corrupted file and could not be used. The LODV (1.0µg/L - 606052) that was analyzed next passes the method criteria of +/- 15%.

Thomas Bosch June 21, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 22, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1816952**
Project ID: HS18060669 061318
Purchase Order: HS18060669
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
102_061318	1816952001	06/13/18	06/15/18	
MW12_061318	1816952002	06/13/18	06/15/18	
MW12_061318_a	1816952003	06/13/18	06/15/18	
18CPTMW14_061318	1816952004	06/13/18	06/15/18	
18CPTMW24_061318	1816952005	06/13/18	06/15/18	
C08_061318	1816952006	06/13/18	06/15/18	
MW16_061318	1816952007	06/13/18	06/15/18	

ANALYTICAL REPORT

Workorder: 34-1816952
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **102_061318** | Sampling Site: NA | Collected: 06/13/2018
Lab ID: 1816952001 | Media: 125 mL Nalgene | Received: 06/15/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 18:49
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**170**	10	20	40	10	

Sample ID: **MW12_061318** | Sampling Site: NA | Collected: 06/13/2018
Lab ID: 1816952002 | Media: 125 mL Nalgene | Received: 06/15/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 19:03
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **MW12_061318_a** | Sampling Site: NA | Collected: 06/13/2018
Lab ID: 1816952003 | Media: 125 mL Nalgene | Received: 06/15/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 19:17
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18CPTMW14_061318** | Sampling Site: NA | Collected: 06/13/2018
Lab ID: 1816952004 | Media: 125 mL Nalgene | Received: 06/15/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 19:31
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**1600**	100	200	400	100	

ANALYTICAL REPORT

Workorder: 34-1816952
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **18CPTMW24_061318** | Sampling Site: NA | Collected: 06/13/2018
Lab ID: 1816952005 | Media: 125 mL Nalgene | Received: 06/15/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2106 (HBN: 217071) | **Percent Solid:** NA
Analyzed: 06/19/2018 19:45 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**23**	1.0	2.0	4.0	1	

Sample ID: **C08_061318** | Sampling Site: NA | Collected: 06/13/2018
Lab ID: 1816952006 | Media: 125 mL Nalgene | Received: 06/15/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2106 (HBN: 217071) | **Percent Solid:** NA
Analyzed: 06/20/2018 08:39 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Sample ID: **MW16_061318** | Sampling Site: NA | Collected: 06/13/2018
Lab ID: 1816952007 | Media: 125 mL Nalgene | Received: 06/15/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2106 (HBN: 217071) | **Percent Solid:** NA
Analyzed: 06/19/2018 20:14 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Workorder: 1816952

The following samples were analyzed and reported at various dilutions. 1816952004 – 100; 1816952001 – 10. Sample 1816952006 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/21/2018 11:46	/S/ Stephen Brose 06/22/2018 14:30

ANALYTICAL REPORT

Workorder: 34-1816952
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1816952
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816952

Limits: Client SOW/Contract Specified
Basis: DoD QSM

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: EPA 6850
Batch: ELMS/2106 (HBN: 217071)
Analyzed By: Thomas Bosch

Blank

LMB: 606014
Analyzed: 06/19/2018 17:08
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 606015
Analyzed: 06/19/2018 17:22
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.17	5.00	103	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1816951001
Analyzed: 06/19/2018 18:06
Dilution: 5
Units: ug/L

MS: 606016
Analyzed: 06/19/2018 18:20
Dilution: 5
Units: ug/L

MSD: 606017
Analyzed: 06/19/2018 18:35
Dilution: 5
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	27.3	25	109	78.8	123.8	28.8	115	5.37	0.0	20.0

Continuing Calibration Verification

CCV: 606011
Analyzed: 06/19/2018 16:25
Units: ug/L
Criteria: ± 15%

CCV: 606018
Analyzed: 06/19/2018 20:28
Units: ug/L
Criteria: ± 15%

CCV: 606020
Analyzed: 06/19/2018 23:18
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	23.9	25.0	95.6	22.8	25.0	91.2	22.9	25.0	91.5

CCV: 606053
Analyzed: 06/20/2018 08:58
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.
Perchlorate	25.3	25.0	101

Interference Check Sample

ICSA: 606013
Analyzed: 06/19/2018 16:54
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.976	1.00	97.6

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816952

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2106 (HBN: 217071)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

LODV:	606012			**LODV:**	606019		**LODV:**	606021	
Analyzed:	06/19/2018 16:39			**Analyzed:**	06/19/2018 20:42		**Analyzed:**	06/19/2018 23:32	
Units:	ug/L			**Units:**	ug/L		**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%		**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.06	1.00	106	0.955	1.00	95.5	1.00	1.00	100

LODV:	606052			**LODV:**	606054	
Analyzed:	06/20/2018 08:25			**Analyzed:**	06/20/2018 09:12	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.03	1.00	103	1.00	1.00	100

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/21/2018 11:47	06/22/2018 14:30

Symbols and Definitions

- ✱ - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ⬢ - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698
~~15095~~ /2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

1816952

Subcontract Chain of Custody

COC ID: 9290

1816952

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18060669
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060669-01**	**102_061318**	**Groundwater**	**13 Jun 2018 08:10**
	SUB_Perch-6850			22 Jun 2018
2.	**HS18060669-02**	**MW12_061318**	**Groundwater**	**13 Jun 2018 09:00**
	SUB_Perch-6850			22 Jun 2018
3.	**HS18060669-03**	**MW12_061318_a**	**Groundwater**	**13 Jun 2018 09:00**
	SUB_Perch-6850			22 Jun 2018
4.	**HS18060669-04**	**18CPTMW14_061318**	**Groundwater**	**13 Jun 2018 09:55**
	SUB_Perch-6850			22 Jun 2018
5.	**HS18060669-05**	**18CPTMW24_061318**	**Groundwater**	**13 Jun 2018 10:45**
	SUB_Perch-6850			22 Jun 2018
6.	**HS18060669-06**	**C08_061318**	**Groundwater**	**13 Jun 2018 11:50**
	SUB_Perch-6850			22 Jun 2018
7.	**HS18060669-07**	**MW16_061318**	**Groundwater**	**13 Jun 2018 12:45**
	SUB_Perch-6850			22 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

COC ID: 9290

QC Level: DOD IV (DoD Data Package)

Relinquished By:	J. MAHAN	Date/Time:	6/14/18 18:00
Received By:	Linda Warman / ALS	Date/Time:	6/15/18 0925
Cooler ID(s):		Temperature(s):	6°C

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060669	Split:	Workorder ID: 1816952	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
1	06/13/2018 08:10	102_061318	1816952001		Water	A	1	A
2	06/13/2018 09:00	MW12_061318	1816952002		Water	A	1	A
3	06/13/2018 09:00	MW12_061318_a	1816952003		Water	A	1	A
4	06/13/2018 09:55	18CPTMW14_061318	1816952004		Water	A	1	A
5	06/13/2018 10:45	18CPTMW24_061318	1816952005		Water	A	1	A
6	06/13/2018 11:50	C08_061318	1816952006		Water	A	1	A
7	06/13/2018 12:45	MW16_061318	1816952007		Water	A	1	A
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/15/2018 09:25	ALS Sample Receiving	Sample Login
Julie Warath	6/15/18 1300	4B	Storage
R.33.1	6.19.18/10:35	T.Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: Houston

Project/Task/Site: 1816952

Date/Time of Receipt: 6/15/18 0925

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 - 8636	6 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Julie Warath (Signature) Julie Warath (Printed Name) 6/15/18 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc Revised 01/01/2018

Part # 159469-434 AIT2 EXP 03/19

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 14JUN18
ACTWGT: 17.80 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

546C2/93DF/53C1

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060669/661 RJ

FedEx Express

E

J171016102001uv

FRI - 15 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 0735

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2106 **Created:** 6/19/2018 15:43 **Instrument:** LCMS04 **HBN:** 217071

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1816951 [ENV_LVL4]
Workorder: 1816952 [ENV_LVL4]
Workorder: 1816954 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	606011	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018
2	606012	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
3	606013	ICS for HBN 217071 [ELMS/2106]				ICS	3		E6850..D3Q	5311		6/28/2018	6/19/2018
4	606014	LMB for HBN 217071 [ELMS/2106]				LMB	3		E6850Q413Q	5311		6/28/2018	6/19/2018
5	606015	LCS for HBN 217071 [ELMS/2106]				LCS	3		E6850Q413Q	5311		6/28/2018	6/19/2018
6	1816951001	LH18/24-SP650_061318				SAMPLE	3	1816951001-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
7	606016	LH18/24-SP650...(1816951001MS)				MS	3		E6850Q413Q	5311		6/28/2018	6/19/2018
8	606017	LH18/24-SP65...(1816951001MSD)				MSD	3		E6850Q413Q	5311		6/28/2018	6/19/2018
9	1816952001	102_061318				SAMPLE	3	1816952001-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
10	1816952002	MW12_061318				SAMPLE	3	1816952002-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
11	1816952003	MW12_061318_a				SAMPLE	3	1816952003-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
12	1816952004	18CPTMW14_061318				SAMPLE	3	1816952004-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
13	1816952005	18CPTMW24_061318				SAMPLE	3	1816952005-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
14	1816952006	C08_061318				SAMPLE	3	1816952006-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/20/2018
15	1816952007	MW16_061318				SAMPLE	3	1816952007-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
16	1816954001	129_061418				SAMPLE	3	1816954001-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
17	1816954002	120_061418				SAMPLE	3	1816954002-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
18	606018	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018
19	606019	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
20	1816954003	123_061418				SAMPLE	3	1816954003-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
21	1816954004	109_061418				SAMPLE	3	1816954004-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
22	1816954005	MW3_061418				SAMPLE	3	1816954005-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
23	1816954006	18cptMW07_061418				SAMPLE	3	1816954006-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
24	1816954007	MW19_061418				SAMPLE	3	1816954007-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
25	1816954008	17WW08_061418				SAMPLE	3	1816954008-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
26	1816954009	18cptMW26SW_061418				SAMPLE	3	1816954009-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
27	606020	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
28	606021	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
29	606052	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/20/2018
30	606053	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/20/2018
31	606054	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/20/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1816951 (001); 1816952 (001-07); 1816954 (001-09)
ELMS Batch/HBN ID: 2106 (217071)
Prep Date: 06/19/2018 Analysis Date: 06/19,20/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18P.s & 19JUN18Q.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 606015: Target = 5.0µg/L. ASTM type II water was used for LMB 606014.

MS/MSD: MS/MSD was performed on sample 1816951001 (Client ID: LH18/24-SP650_061318). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1816952001 – 10; 1816952004/1816954001/04 – 100; 1816954002/05 – 1,000. Samples 1816951001 and 1816952006 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters. The initial CCV (606051) analyzed on 06/20/18 for sequence 19JUN18Q.s was a corrupted file and could not be used. The LODV (1.0µg/L - 606052) that was analyzed next passes the method criteria of +/- 15%
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 19JUNP17.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\217071-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
~~36733~~	~~CLO4 STOCK~~	~~6850 Stock AccStd 1,000ug/mL~~	~~CLO4 STOCK~~	~~0.1 mL~~	~~10/04/2018~~

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard:	41827	**Created By:**	Thomas Bosch	**Amount:**	10 mL
MFG:	ALS/SLC	**Create Date:**	05/09/2018 10:05AM	**Expires:**	05/09/2019
MFG Lot:	TNB: 05/09/2018	**Verified By:**	Thomas Bosch	**Usable:**	Yes
Pipette ID:	Not Provided	**Verify Date:**		**Lab Lot:**	CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: **41830**
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
~~36748~~	~~CLO4 QCSTOCK~~	~~6850 QC Stock STD 1,000ug/mL~~	~~CLO4 QC STOCK~~	~~0.1 mL~~	~~03/31/2020~~

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
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July 03, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060725**

Laboratory Results for: **LHAAP 18/24**

Dear Marcia,

ALS Environmental received 10 sample(s) on Jun 15, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Work Order: HS18060725

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060725-01	129_061418	Groundwater		14-Jun-2018 07:40	15-Jun-2018 08:30	☐
HS18060725-02	120_061418	Groundwater		14-Jun-2018 08:05	15-Jun-2018 08:30	☐
HS18060725-03	123_061418	Groundwater		14-Jun-2018 08:15	15-Jun-2018 08:30	☐
HS18060725-04	109_061418	Groundwater		14-Jun-2018 08:35	15-Jun-2018 08:30	☐
HS18060725-05	MW3_061418	Groundwater		14-Jun-2018 09:30	15-Jun-2018 08:30	☐
HS18060725-06	18cptMW07_061418	Groundwater		14-Jun-2018 10:30	15-Jun-2018 08:30	☐
HS18060725-07	MW19_061418	Groundwater		14-Jun-2018 11:30	15-Jun-2018 08:30	☐
HS18060725-08	17WW08_061418	Groundwater		14-Jun-2018 12:25	15-Jun-2018 08:30	☐
HS18060725-09	18cptMW26SW_061418	Groundwater		14-Jun-2018 13:30	15-Jun-2018 08:30	☐
HS18060725-10	Trip Blank ALS 051618-81	Water		14-Jun-2018 00:00	15-Jun-2018 08:30	☐

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Work Order: HS18060725

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129496

Sample ID: 120_061418 (HS18060725-02)

- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 129_061418 (HS18060725-01)

- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: LCSD-129496

- LCSD RPD was above the control limits. The individual recoveries were in control.

GCMS Volatiles by Method SW8260

Batch ID: R318288

Sample ID: 18cptMW07_061418 (HS18060725-06MS)

- The recovery of the Matrix Spike (MS) associated to several analytes was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: 18cptMW07_061418 (HS18060725-06MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to several analytes was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Batch ID: R318525

Sample ID: HS18060697-09MS

- MS and MSD are for an unrelated sample

Metals by Method SW6020

Batch ID: 129615

Sample ID: MW3_061418 (HS18060725-05MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Barium, Calcium, Manganese, and Sodium.

Sample ID: MW3_061418 (HS18060725-05PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Manganese.

Metals by Method SW7470

Batch ID: 129607

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 129_061418
Collection Date: 14-Jun-2018 07:40

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,2,4-Trimethylbenzene	**0.56**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,2-Dichloroethane	**11**		**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:49
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	22-Jun-2018 16:49
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	22-Jun-2018 16:49
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	22-Jun-2018 16:49
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	22-Jun-2018 16:49
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	22-Jun-2018 16:49
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 129_061418
Collection Date: 14-Jun-2018 07:40

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:49
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
cis-1,2-Dichloroethene	**3.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	22-Jun-2018 16:49
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	22-Jun-2018 16:49
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:49
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Toluene	**0.47**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Trichloroethene	**890**		**1.0**	**2.5**	**5.0**	**ug/L**	5	20-Jun-2018 05:56
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:49
Surr: 1,2-Dichloroethane-d4	*84.2*			**0**	*81-118*	*%REC*	*5*	*20-Jun-2018 05:56*
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*1*	*22-Jun-2018 16:49*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*5*	*20-Jun-2018 05:56*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*22-Jun-2018 16:49*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*5*	*20-Jun-2018 05:56*
Surr: Dibromofluoromethane	*99.6*			**0**	*80-119*	*%REC*	*1*	*22-Jun-2018 16:49*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*5*	*20-Jun-2018 05:56*
Surr: Toluene-d8	*92.9*			**0**	*89-112*	*%REC*	*1*	*22-Jun-2018 16:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 129_061418
Collection Date: 14-Jun-2018 07:40

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 18-Jun-2018		Analyst: ACN
1,4-Dioxane	**4.3**		**1.0**	**1.0**	**1.0**	**ug/L**	100	19-Jun-2018 16:52
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*19-Jun-2018 16:52*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*19-Jun-2018 16:52*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*19-Jun-2018 16:52*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.182**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 12:56
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 12:56
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 12:56
Barium	**0.156**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 12:56
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 12:56
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 12:56
Calcium	**6.80**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 12:56
Chromium	**0.00162**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 12:56
Cobalt	**0.000396**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 12:56
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 12:56
Iron	**0.223**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 12:56
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 12:56
Magnesium	**5.02**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 12:56
Manganese	**0.00458**	J	**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 12:56
Nickel	**0.00170**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 12:56
Potassium	**0.240**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 12:56
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 12:56
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 12:56
Sodium	**106**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 12:56
Thallium	**0.000427**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 12:56
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 12:56
Zinc	**0.00291**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 12:56
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 20-Jun-2018		Analyst: JBA
Mercury	**0.000216**		**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	20-Jun-2018 16:20
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 120_061418
Collection Date: 14-Jun-2018 08:05

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,1,1-Trichloroethane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,1-Dichloroethane	**28**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
1,1-Dichloroethene	**150**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
1,1-Dichloropropene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2,3-Trichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2,3-Trichloropropane	5.0	U	5.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2,4-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2-Dibromo-3-chloropropane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2-Dibromoethane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2-Dichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,2-Dichloroethane	**38**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
1,2-Dichloropropane	5.0	U	5.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,3,5-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,3-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,3-Dichloropropane	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
1,4-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
2,2-Dichloropropane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
2-Butanone	10	U	5.0	10	20	ug/L	10	20-Jun-2018 07:44
2-Chlorotoluene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
2-Hexanone	10	U	10	10	20	ug/L	10	20-Jun-2018 07:44
4-Chlorotoluene	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
4-Isopropyltoluene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
4-Methyl-2-pentanone	10	U	7.0	10	20	ug/L	10	20-Jun-2018 07:44
Acetone	10	U	4.0	10	20	ug/L	10	20-Jun-2018 07:44
Benzene	**5.4**	J	**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
Bromobenzene	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Bromochloromethane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Bromodichloromethane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Bromoform	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Bromomethane	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Carbon disulfide	10	U	6.0	10	20	ug/L	10	20-Jun-2018 07:44
Carbon tetrachloride	5.0	U	5.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Chlorobenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Chloroethane	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 120_061418
Collection Date: 14-Jun-2018 08:05

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**41**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
Chloromethane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
cis-1,2-Dichloroethene	**1,700**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Dibromochloromethane	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Dibromomethane	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Dichlorodifluoromethane	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Ethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Hexachlorobutadiene	5.0	U	10	5.0	10	ug/L	10	20-Jun-2018 07:44
Isopropylbenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
m,p-Xylene	10	U	5.0	10	20	ug/L	10	20-Jun-2018 07:44
Methylene chloride	10	U	4.0	10	20	ug/L	10	20-Jun-2018 07:44
n-Butylbenzene	5.0	U	4.0	5.0	10	ug/L	10	20-Jun-2018 07:44
n-Propylbenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Naphthalene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
o-Xylene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
sec-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Styrene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
tert-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Tetrachloroethene	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Toluene	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
trans-1,2-Dichloroethene	**17**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
trans-1,3-Dichloropropene	5.0	U	2.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Trichloroethene	**17,000**		**20**	**50**	**100**	**ug/L**	100	20-Jun-2018 08:11
Trichlorofluoromethane	5.0	U	3.0	5.0	10	ug/L	10	20-Jun-2018 07:44
Vinyl chloride	**82**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 07:44
Surr: 1,2-Dichloroethane-d4	*87.1*			**0**	*81-118*	*%REC*	*100*	*20-Jun-2018 08:11*
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*10*	*20-Jun-2018 07:44*
Surr: 4-Bromofluorobenzene	*93.5*			**0**	*85-114*	*%REC*	*100*	*20-Jun-2018 08:11*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*10*	*20-Jun-2018 07:44*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*100*	*20-Jun-2018 08:11*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*10*	*20-Jun-2018 07:44*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*20-Jun-2018 07:44*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*100*	*20-Jun-2018 08:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18/24	WorkOrder:HS18060725
Sample ID:	120_061418	Lab ID:HS18060725-02
Collection Date:	14-Jun-2018 08:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 18-Jun-2018		Analyst: ACN
1,4-Dioxane	**120**		**10**	**10**	**10**	**ug/L**	1000	25-Jun-2018 13:48
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*1000*	*25-Jun-2018 13:48*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*1000*	*25-Jun-2018 13:48*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*1000*	*25-Jun-2018 13:48*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 123_061418
Collection Date: 14-Jun-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,2-Dichloroethane	**2.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 04:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 04:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 04:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 04:10
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 04:10
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 04:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 123_061418
Collection Date: 14-Jun-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
cis-1,2-Dichloroethene	**6.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 04:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 04:10
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 04:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 04:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Trichloroethene	**70**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 04:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 04:10
Surr: 1,2-Dichloroethane-d4	*86.2*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 04:10*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 04:10*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 04:10*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 04:10*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 18-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	19-Jun-2018 13:47
Surr: 2-Fluorobiphenyl	*110*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 13:47*
Surr: 4-Terphenyl-d14	*121*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 13:47*
Surr: Nitrobenzene-d5	*67.0*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 13:47*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 109_061418
Collection Date: 14-Jun-2018 08:35

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,1-Dichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2,4-Trimethylbenzene	**0.65**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:23
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	22-Jun-2018 16:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	22-Jun-2018 16:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	22-Jun-2018 16:23
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	22-Jun-2018 16:23
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	22-Jun-2018 16:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 109_061418
Collection Date: 14-Jun-2018 08:35

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
cis-1,2-Dichloroethene	**110**		**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	22-Jun-2018 16:23
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	22-Jun-2018 16:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	22-Jun-2018 16:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Toluene	**0.58**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:23
trans-1,2-Dichloroethene	**1.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	22-Jun-2018 16:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Trichloroethene	**670**		**1.0**	**2.5**	**5.0**	**ug/L**	5	20-Jun-2018 06:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	22-Jun-2018 16:23
Surr: 1,2-Dichloroethane-d4	*88.2*			**0**	*81-118*	*%REC*	*5*	*20-Jun-2018 06:50*
Surr: 1,2-Dichloroethane-d4	*89.4*			**0**	*81-118*	*%REC*	*1*	*22-Jun-2018 16:23*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*85-114*	*%REC*	*5*	*20-Jun-2018 06:50*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*22-Jun-2018 16:23*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*5*	*20-Jun-2018 06:50*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*22-Jun-2018 16:23*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*5*	*20-Jun-2018 06:50*
Surr: Toluene-d8	*97.7*			**0**	*89-112*	*%REC*	*1*	*22-Jun-2018 16:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP 18/24	WorkOrder:HS18060725
Sample ID:	109_061418	Lab ID:HS18060725-04
Collection Date:	14-Jun-2018 08:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 18-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.090**		**0.010**	**0.010**	**0.010**	**ug/L**	1	19-Jun-2018 14:08
Surr: 2-Fluorobiphenyl	*117*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:08*
Surr: 4-Terphenyl-d14	*80.1*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:08*
Surr: Nitrobenzene-d5	*57.6*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:08*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW3_061418
Collection Date: 14-Jun-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,1-Dichloroethane	**3.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
1,1-Dichloroethene	**21**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 05:02
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 05:02
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 05:02
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 05:02
Benzene	**0.28**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 05:02
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW3_061418
Collection Date: 14-Jun-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
cis-1,2-Dichloroethene	**76**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 05:02
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 05:02
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 05:02
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Tetrachloroethene	**1.0**		**0.30**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
trans-1,2-Dichloroethene	**2.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Trichloroethene	**300**		**2.0**	**5.0**	**10**	**ug/L**	10	20-Jun-2018 05:29
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 05:02
Vinyl chloride	**6.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 05:02
Surr: 1,2-Dichloroethane-d4	*88.3*			**0**	*81-118*	*%REC*	*10*	*20-Jun-2018 05:29*
Surr: 1,2-Dichloroethane-d4	*89.4*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 05:02*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*20-Jun-2018 05:29*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 05:02*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 05:02*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*10*	*20-Jun-2018 05:29*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 05:02*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*20-Jun-2018 05:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW3_061418
Collection Date: 14-Jun-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.00590**	J	**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 12:58
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 12:58
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 12:58
Barium	**0.516**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 12:58
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 12:58
Cadmium	**0.000290**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 12:58
Calcium	**26.2**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 12:58
Chromium	**0.00722**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 12:58
Cobalt	**0.00544**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 12:58
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 12:58
Iron	**0.723**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 12:58
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 12:58
Magnesium	**15.4**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 12:58
Manganese	**1.03**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 12:58
Nickel	**0.00392**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 12:58
Potassium	**1.54**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 12:58
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 12:58
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 12:58
Sodium	**223**		**0.140**	**1.00**	**2.00**	**mg/L**	10	21-Jun-2018 15:24
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 12:58
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 12:58
Zinc	**0.00618**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 12:58
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 20-Jun-2018		Analyst: JBA
Mercury	**0.0000980**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	20-Jun-2018 16:21
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18cptMW07_061418
Collection Date: 14-Jun-2018 10:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 01:18
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 01:18
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 01:18
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 01:18
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 01:18
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18cptMW07_061418
Collection Date: 14-Jun-2018 10:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 01:18
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 01:18
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 01:18
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 01:18
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 01:18*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 01:18*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 01:18*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 01:18*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 18-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	19-Jun-2018 14:28
Surr: 2-Fluorobiphenyl	*112*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:28*
Surr: 4-Terphenyl-d14	*118*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:28*
Surr: Nitrobenzene-d5	*56.5*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:28*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW19_061418
Collection Date: 14-Jun-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 02:56
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 02:56
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 02:56
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 02:56
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 02:56
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW19_061418
Collection Date: 14-Jun-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
cis-1,2-Dichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 02:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 02:56
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 02:56
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 02:56
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Trichloroethene	**1.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 02:56
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 02:56
Surr: 1,2-Dichloroethane-d4	*87.7*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 02:56*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 02:56*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 02:56*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 02:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: MW19_061418
Collection Date: 14-Jun-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**1.58**		**0.0180**	**0.0250**	**0.100**	**mg/L**	10	21-Jun-2018 15:34
Antimony	**0.00220**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Arsenic	**0.0111**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Barium	**0.534**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:08
Beryllium	**0.000296**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Cadmium	**0.00195**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Calcium	**48.6**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:08
Chromium	**0.882**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:08
Cobalt	**0.0237**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:08
Copper	**0.0209**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Iron	**48.5**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:08
Lead	**0.00235**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Magnesium	**25.5**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:08
Manganese	**2.22**		**0.00700**	**0.0100**	**0.0500**	**mg/L**	10	21-Jun-2018 15:34
Nickel	**0.324**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Potassium	**3.64**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:08
Selenium	**0.00192**	J	**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:08
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:08
Sodium	**432**		**0.140**	**1.00**	**2.00**	**mg/L**	10	21-Jun-2018 15:34
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:08
Vanadium	**0.00674**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:08
Zinc	**0.0183**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:08
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 20-Jun-2018		Analyst: JBA
Mercury	**0.0000300**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	20-Jun-2018 16:23
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 17WW08_061418
Collection Date: 14-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 03:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 03:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 03:21
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 03:21
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 03:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 17WW08_061418
Collection Date: 14-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 03:21
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 03:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:21
Surr: 1,2-Dichloroethane-d4	*87.2*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 03:21*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 03:21*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 03:21*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 03:21*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 17WW08_061418
Collection Date: 14-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.406**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:10
Antimony	**0.000565**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:10
Arsenic	**0.0101**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:10
Barium	**0.487**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:10
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:10
Cadmium	**0.000425**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:10
Calcium	**94.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:10
Chromium	**1.23**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:10
Cobalt	**0.0172**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:10
Copper	**0.0198**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:10
Iron	**31.6**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:10
Lead	**0.000947**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:10
Magnesium	**57.8**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:10
Manganese	**1.35**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:10
Nickel	**0.559**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:10
Potassium	**2.10**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:10
Selenium	**0.00226**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:10
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:10
Sodium	**411**		**0.140**	**1.00**	**2.00**	**mg/L**	10	21-Jun-2018 15:36
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:10
Vanadium	**0.00153**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:10
Zinc	**0.0161**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:10
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 20-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	20-Jun-2018 16:25
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18cptMW26SW_061418
Collection Date: 14-Jun-2018 13:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 03:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 03:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 03:45
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 03:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 03:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: 18cptMW26SW_061418
Collection Date: 14-Jun-2018 13:30

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 03:45
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 03:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 03:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 03:45
Surr: 1,2-Dichloroethane-d4	*87.3*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 03:45*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 03:45*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 03:45*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 03:45*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 18-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	19-Jun-2018 14:49
Surr: 2-Fluorobiphenyl	*113*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:49*
Surr: 4-Terphenyl-d14	*88.2*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:49*
Surr: Nitrobenzene-d5	*61.9*			**0**	*40-140*	*%REC*	*1*	*19-Jun-2018 14:49*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: Trip Blank ALS 051618-81
Collection Date: 14-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 00:54
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 00:54
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 00:54
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 00:54
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 00:54
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
Sample ID: Trip Blank ALS 051618-81
Collection Date: 14-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060725
Lab ID:HS18060725-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 00:54
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 00:54
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 00:54
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 00:54
Surr: 1,2-Dichloroethane-d4	*85.8*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 00:54*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 00:54*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 00:54*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 00:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 03-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

Batch ID: 129496 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060725-01	1	1000	1 (mL)	0.001
HS18060725-02	1	1000	1 (mL)	0.001
HS18060725-03	1	1000	1 (mL)	0.001
HS18060725-04	1	1000	1 (mL)	0.001
HS18060725-06	1	1000	1 (mL)	0.001
HS18060725-09	1	1000	1 (mL)	0.001

Batch ID: 129607 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060725-01	1	10 (mL)	10 (mL)	1
HS18060725-05	1	10 (mL)	10 (mL)	1
HS18060725-07	1	10 (mL)	10 (mL)	1
HS18060725-08	1	10 (mL)	10 (mL)	1

Batch ID: 129615 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060725-01	1	10	10 (mL)	1
HS18060725-05	1	10	10 (mL)	1
HS18060725-07	1	10	10 (mL)	1
HS18060725-08	1	10	10 (mL)	1

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129496	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060725-01	129_061418	14 Jun 2018 07:40		18 Jun 2018 13:43	19 Jun 2018 16:52	100
HS18060725-02	120_061418	14 Jun 2018 08:05		18 Jun 2018 13:43	25 Jun 2018 13:48	1000
HS18060725-03	123_061418	14 Jun 2018 08:15		18 Jun 2018 13:43	19 Jun 2018 13:47	1
HS18060725-04	109_061418	14 Jun 2018 08:35		18 Jun 2018 13:43	19 Jun 2018 14:08	1
HS18060725-06	18cptMW07_061418	14 Jun 2018 10:30		18 Jun 2018 13:43	19 Jun 2018 14:28	1
HS18060725-09	18cptMW26SW_061418	14 Jun 2018 13:30		18 Jun 2018 13:43	19 Jun 2018 14:49	1
Batch ID 129607	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060725-01	129_061418	14 Jun 2018 07:40		20 Jun 2018 10:16	20 Jun 2018 16:20	1
HS18060725-05	MW3_061418	14 Jun 2018 09:30		20 Jun 2018 10:16	20 Jun 2018 16:21	1
HS18060725-07	MW19_061418	14 Jun 2018 11:30		20 Jun 2018 10:16	20 Jun 2018 16:23	1
HS18060725-08	17WW08_061418	14 Jun 2018 12:25		20 Jun 2018 10:16	20 Jun 2018 16:25	1
Batch ID 129615	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060725-01	129_061418	14 Jun 2018 07:40		20 Jun 2018 13:53	21 Jun 2018 12:56	1
HS18060725-05	MW3_061418	14 Jun 2018 09:30		20 Jun 2018 13:53	21 Jun 2018 15:24	10
HS18060725-05	MW3_061418	14 Jun 2018 09:30		20 Jun 2018 13:53	21 Jun 2018 12:58	1
HS18060725-07	MW19_061418	14 Jun 2018 11:30		20 Jun 2018 13:53	21 Jun 2018 15:34	10
HS18060725-07	MW19_061418	14 Jun 2018 11:30		20 Jun 2018 13:53	21 Jun 2018 13:08	1
HS18060725-08	17WW08_061418	14 Jun 2018 12:25		20 Jun 2018 13:53	21 Jun 2018 15:36	10
HS18060725-08	17WW08_061418	14 Jun 2018 12:25		20 Jun 2018 13:53	21 Jun 2018 13:10	1
Batch ID R318288	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060725-10	Trip Blank ALS 051618-81	14 Jun 2018 00:00			20 Jun 2018 00:54	1
Batch ID R318288	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060725-01	129_061418	14 Jun 2018 07:40			20 Jun 2018 05:56	5
HS18060725-02	120_061418	14 Jun 2018 08:05			20 Jun 2018 08:11	100
HS18060725-02	120_061418	14 Jun 2018 08:05			20 Jun 2018 07:44	10
HS18060725-03	123_061418	14 Jun 2018 08:15			20 Jun 2018 04:10	1
HS18060725-04	109_061418	14 Jun 2018 08:35			20 Jun 2018 06:50	5
HS18060725-05	MW3_061418	14 Jun 2018 09:30			20 Jun 2018 05:29	10
HS18060725-05	MW3_061418	14 Jun 2018 09:30			20 Jun 2018 05:02	1
HS18060725-06	18cptMW07_061418	14 Jun 2018 10:30			20 Jun 2018 01:18	1
HS18060725-07	MW19_061418	14 Jun 2018 11:30			20 Jun 2018 02:56	1
HS18060725-08	17WW08_061418	14 Jun 2018 12:25			20 Jun 2018 03:21	1
HS18060725-09	18cptMW26SW_061418	14 Jun 2018 13:30			20 Jun 2018 03:45	1
Batch ID R318525	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060725-01	129_061418	14 Jun 2018 07:40			22 Jun 2018 16:49	1
HS18060725-04	109_061418	14 Jun 2018 08:35			22 Jun 2018 16:23	1

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318810	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060725-01	129_061418	14 Jun 2018 07:40			28 Jun 2018 09:16	1
HS18060725-02	120_061418	14 Jun 2018 08:05			28 Jun 2018 09:16	1
HS18060725-03	123_061418	14 Jun 2018 08:15			28 Jun 2018 09:16	1
HS18060725-04	109_061418	14 Jun 2018 08:35			28 Jun 2018 09:16	1
HS18060725-05	MW3_061418	14 Jun 2018 09:30			28 Jun 2018 09:16	1
HS18060725-06	18cptMW07_061418	14 Jun 2018 10:30			28 Jun 2018 09:16	1
HS18060725-07	MW19_061418	14 Jun 2018 11:30			28 Jun 2018 09:16	1
HS18060725-08	17WW08_061418	14 Jun 2018 12:25			28 Jun 2018 09:16	1
HS18060725-09	18cptMW26SW_061418	14 Jun 2018 13:30			28 Jun 2018 09:16	1

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: 129607 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129607** Units: **mg/L** Analysis Date: **20-Jun-2018 15:44**
Client ID: Run ID: **HG03_318339** SeqNo: **4617936** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129607** Units: **mg/L** Analysis Date: **20-Jun-2018 15:45**
Client ID: Run ID: **HG03_318339** SeqNo: **4617937** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00454	0.000200	0.005	0	90.8	80 - 120				

MS Sample ID: **HS18060748-01MS** Units: **mg/L** Analysis Date: **20-Jun-2018 15:49**
Client ID: Run ID: **HG03_318339** SeqNo: **4617939** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00487	0.000200	0.005	0.000022	97.0	75 - 125				

MSD Sample ID: **HS18060748-01MSD** Units: **mg/L** Analysis Date: **20-Jun-2018 15:50**
Client ID: Run ID: **HG03_318339** SeqNo: **4617940** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0054	0.000200	0.005	0.000022	108	75 - 125	0.00487	10.3	20	

The following samples were analyzed in this batch: HS18060725-01 HS18060725-05 HS18060725-07 HS18060725-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:52**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619232** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.002896	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01128	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.02701	0.200								J
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.1074	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:54**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619233** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1009	0.0100	0.1	0	101	80 - 120				
Antimony	0.0511	0.00200	0.05	0	102	80 - 120				
Arsenic	0.04875	0.00200	0.05	0	97.5	80 - 120				
Barium	0.04803	0.00400	0.05	0	96.1	80 - 120				
Beryllium	0.04748	0.00200	0.05	0	95.0	80 - 120				
Cadmium	0.04859	0.00200	0.05	0	97.2	80 - 120				
Calcium	4.942	0.500	5	0	98.8	80 - 120				
Chromium	0.0485	0.00400	0.05	0	97.0	80 - 120				
Cobalt	0.04995	0.00500	0.05	0	99.9	80 - 120				
Copper	0.05088	0.00200	0.05	0	102	80 - 120				
Iron	4.893	0.200	5	0	97.9	80 - 120				
Lead	0.05088	0.00200	0.05	0	102	80 - 120				
Magnesium	4.811	0.200	5	0	96.2	80 - 120				
Manganese	0.04963	0.00500	0.05	0	99.3	80 - 120				
Nickel	0.0502	0.00200	0.05	0	100	80 - 120				
Potassium	5.037	0.200	5	0	101	80 - 120				
Selenium	0.0552	0.00200	0.05	0	110	80 - 120				
Silver	0.05032	0.00200	0.05	0	101	80 - 120				
Sodium	4.979	0.200	5	0	99.6	80 - 120				
Thallium	0.04338	0.00200	0.05	0	86.8	80 - 120				
Vanadium	0.04673	0.00500	0.05	0	93.5	80 - 120				
Zinc	0.05053	0.00400	0.05	0	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: **129615** **Instrument:** **ICPMS05** **Method:** **SW6020**

MS Sample ID: **HS18060725-05MS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:02**
Client ID: **MW3_061418** Run ID: **ICPMS05_318393** SeqNo: **4619237** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.105	0.0100	0.1	0.005904	99.1	80 - 120				
Antimony	0.0519	0.00200	0.05	-0.000096	104	80 - 120				
Arsenic	0.05057	0.00200	0.05	0.000306	101	80 - 120				
Barium	0.5785	0.00400	0.05	0.5156	126	80 - 120				SO
Beryllium	0.05107	0.00200	0.05	0.000003	102	80 - 120				
Cadmium	0.05041	0.00200	0.05	0.00029	100	80 - 120				
Calcium	31.34	0.500	5	26.18	103	80 - 120				O
Chromium	0.05229	0.00400	0.05	0.007222	90.1	80 - 120				
Cobalt	0.05401	0.00500	0.05	0.005436	97.2	80 - 120				
Copper	0.05074	0.00200	0.05	0.000504	100	80 - 120				
Iron	5.52	0.200	5	0.7229	95.9	80 - 120				
Lead	0.04911	0.00200	0.05	0.00009	98.0	80 - 120				
Magnesium	20.22	0.200	5	15.4	96.5	80 - 120				
Manganese	1.101	0.00500	0.05	1.032	137	80 - 120				SO
Nickel	0.05234	0.00200	0.05	0.003916	96.8	80 - 120				
Potassium	6.307	0.200	5	1.542	95.3	80 - 120				
Selenium	0.05076	0.00200	0.05	0.000443	101	80 - 120				
Silver	0.04731	0.00200	0.05	0.000008	94.6	80 - 120				
Sodium	242.1	0.200	5	235.2	137	80 - 120				SEO
Thallium	0.04553	0.00200	0.05	0.00007	90.9	80 - 120				
Vanadium	0.0497	0.00500	0.05	-0.000427	100	80 - 120				
Zinc	0.05692	0.00400	0.05	0.006181	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: **129615** **Instrument:** **ICPMS05** **Method:** **SW6020**

MSD Sample ID: **HS18060725-05MSD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:04**
Client ID: **MW3_061418** Run ID: **ICPMS05_318393** SeqNo: **4619238** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1044	0.0100	0.1	0.005904	98.5	80 - 120	0.105	0.558	20	
Antimony	0.05084	0.00200	0.05	-0.000096	102	80 - 120	0.0519	2.06	20	
Arsenic	0.04978	0.00200	0.05	0.000306	99.0	80 - 120	0.05057	1.56	20	
Barium	0.5982	0.00400	0.05	0.5156	165	80 - 120	0.5785	3.35	20	SO
Beryllium	0.05207	0.00200	0.05	0.000003	104	80 - 120	0.05107	1.93	20	
Cadmium	0.04884	0.00200	0.05	0.00029	97.1	80 - 120	0.05041	3.17	20	
Calcium	32.54	0.500	5	26.18	127	80 - 120	31.34	3.77	20	SO
Chromium	0.05042	0.00400	0.05	0.007222	86.4	80 - 120	0.05229	3.63	20	
Cobalt	0.0538	0.00500	0.05	0.005436	96.7	80 - 120	0.05401	0.393	20	
Copper	0.05026	0.00200	0.05	0.000504	99.5	80 - 120	0.05074	0.951	20	
Iron	5.426	0.200	5	0.7229	94.1	80 - 120	5.52	1.71	20	
Lead	0.04811	0.00200	0.05	0.00009	96.0	80 - 120	0.04911	2.06	20	
Magnesium	20.4	0.200	5	15.4	100	80 - 120	20.22	0.889	20	
Manganese	1.099	0.00500	0.05	1.032	135	80 - 120	1.101	0.121	20	SO
Nickel	0.05334	0.00200	0.05	0.003916	98.8	80 - 120	0.05234	1.89	20	
Potassium	6.412	0.200	5	1.542	97.4	80 - 120	6.307	1.66	20	
Selenium	0.05279	0.00200	0.05	0.000443	105	80 - 120	0.05076	3.91	20	
Silver	0.04636	0.00200	0.05	0.000008	92.7	80 - 120	0.04731	2.04	20	
Sodium	245.3	0.200	5	235.2	201	80 - 120	242.1	1.31	20	SEO
Thallium	0.04533	0.00200	0.05	0.00007	90.5	80 - 120	0.04553	0.434	20	
Vanadium	0.04896	0.00500	0.05	-0.000427	98.8	80 - 120	0.0497	1.49	20	
Zinc	0.05676	0.00400	0.05	0.006181	101	80 - 120	0.05692	0.276	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:06**
Client ID: **MW3_061418** Run ID: **ICPMS05_318393** SeqNo: **4619239** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09658	0.0100	0.1	0.005904	90.7	75 - 125				
Antimony	0.09212	0.00200	0.1	-0.000096	92.2	75 - 125				
Arsenic	0.0985	0.00200	0.1	0.000306	98.2	75 - 125				
Barium	0.6318	0.00400	0.1	0.5156	116	75 - 125				O
Beryllium	0.09555	0.00200	0.1	0.000003	95.6	75 - 125				
Cadmium	0.09675	0.00200	0.1	0.00029	96.5	75 - 125				
Calcium	36.95	0.500	10	26.18	108	75 - 125				
Chromium	0.1005	0.00400	0.1	0.007222	93.3	75 - 125				
Cobalt	0.1015	0.00500	0.1	0.005436	96.0	75 - 125				
Copper	0.09866	0.00200	0.1	0.000504	98.2	75 - 125				
Iron	10.25	0.200	10	0.7229	95.3	75 - 125				
Lead	0.09675	0.00200	0.1	0.00009	96.7	75 - 125				
Magnesium	24.8	0.200	10	15.4	94.0	75 - 125				
Manganese	1.165	0.00500	0.1	1.032	133	75 - 125				SO
Nickel	0.09842	0.00200	0.1	0.003916	94.5	75 - 125				
Potassium	10.9	0.200	10	1.542	93.5	75 - 125				
Selenium	0.106	0.00200	0.1	0.000443	106	75 - 125				
Silver	0.09238	0.00200	0.1	0.000008	92.4	75 - 125				
Thallium	0.09414	0.00200	0.1	0.00007	94.1	75 - 125				
Vanadium	0.0963	0.00500	0.1	-0.000427	96.7	75 - 125				
Zinc	0.107	0.00400	0.1	0.006181	101	75 - 125				

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 15:28**
Client ID: **MW3_061418** Run ID: **ICPMS05_318393** SeqNo: **4619524** PrepDate: **20-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	314.2	2.00	100	222.8	91.3	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:00**
Client ID: **MW3_061418** Run ID: **ICPMS05_318393** SeqNo: **4619236** PrepDate: **20-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.0125	0.0500					0.005904	0	10	U
Antimony	0.00500	0.0100					-0.000096	0	10	U
Arsenic	0.00500	0.0100					0.000306	0	10	U
Barium	0.5185	0.0200					0.5156	0.553	10	
Beryllium	0.00500	0.0100					0.000003	0	10	U
Cadmium	0.00500	0.0100					0.00029	0	10	U
Calcium	26.96	2.50					26.18	2.97	10	
Chromium	0.00713	0.0200					0.007222	0	10	J
Cobalt	0.005761	0.0250					0.005436	0	10	J
Copper	0.0100	0.0100					0.000504	0	10	U
Iron	0.7586	1.00					0.7229	0	10	J
Lead	0.00500	0.0100					0.00009	0	10	U
Magnesium	16.29	1.00					15.4	5.81	10	
Manganese	1.091	0.0250					1.032	5.71	10	
Nickel	0.00500	0.0100					0.003916	0	10	U
Selenium	0.0100	0.0100					0.000443	0	10	U
Silver	0.00500	0.0100					0.000008	0	10	U
Thallium	0.00500	0.0100					0.00007	0	10	U
Vanadium	0.00500	0.0250					-0.000427	0	10	U
Zinc	0.0125	0.0200					0.006181	0	10	U

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 15:26**
Client ID: **MW3_061418** Run ID: **ICPMS05_318393** SeqNo: **4619523** PrepDate: **20-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	209.2	10.0					222.8	6.11	10	

The following samples were analyzed in this batch: HS18060725-01 HS18060725-05 HS18060725-07 HS18060725-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: 129496 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129496** Units: **ug/L** Analysis Date: **19-Jun-2018 12:04**
Client ID: Run ID: **SV-5_318332** SeqNo: **4617361** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1035*	*0*	*0.08*	*0*	*129*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06628*	*0*	*0.08*	*0*	*82.9*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05681*	*0*	*0.08*	*0*	*71.0*	*40 - 140*				

LCS Sample ID: **LCS-129496** Units: **ug/L** Analysis Date: **19-Jun-2018 12:25**
Client ID: Run ID: **SV-5_318332** SeqNo: **4617362** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07368	0.010	0.08	0	92.1	40 - 140				
Surr: 2-Fluorobiphenyl	*0.104*	*0*	*0.08*	*0*	*130*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06671*	*0*	*0.08*	*0*	*83.4*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05978*	*0*	*0.08*	*0*	*74.7*	*40 - 140*				

LCSD Sample ID: **LCSD-129496** Units: **ug/L** Analysis Date: **19-Jun-2018 12:45**
Client ID: Run ID: **SV-5_318332** SeqNo: **4617363** PrepDate: **18-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.06548	0.010	0.08	0	81.8	40 - 140	0.07368	11.8	20	
Surr: 2-Fluorobiphenyl	*0.04126*	*0*	*0.08*	*0*	*51.6*	*40 - 140*	*0.104*	*86.4*	*20*	R
Surr: 4-Terphenyl-d14	*0.05526*	*0*	*0.08*	*0*	*69.1*	*40 - 140*	*0.06671*	*18.8*	*20*	
Surr: Nitrobenzene-d5	*0.04316*	*0*	*0.08*	*0*	*53.9*	*40 - 140*	*0.05978*	*32.3*	*20*	R

The following samples were analyzed in this batch: HS18060725-01 HS18060725-02 HS18060725-03 HS18060725-04 HS18060725-06 HS18060725-09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180619** Units: **ug/L** Analysis Date: **20-Jun-2018 00:05**
Client ID: Run ID: **VOA2_318288** SeqNo: **4616509** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180619** Units: **ug/L** Analysis Date: **20-Jun-2018 00:05**
Client ID: Run ID: **VOA2_318288** SeqNo: **4616509** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.36*	*1.0*	*50*	*0*	*84.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.48*	*1.0*	*50*	*0*	*99.0*	*85 - 114*				
Surr: Dibromofluoromethane	*50.16*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*52.56*	*1.0*	*50*	*0*	*105*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180619** Units: **ug/L** Analysis Date: **19-Jun-2018 23:15**
Client ID: Run ID: **VOA2_318288** SeqNo: **4616508** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.96	1.0	50	0	89.9	78 - 124				
1,1,1-Trichloroethane	43	1.0	50	0	86.0	74 - 131				
1,1,2,2-Tetrachloroethane	41.54	1.0	50	0	83.1	71 - 121				
1,1,2-Trichloroethane	44	1.0	50	0	88.0	80 - 119				
1,1-Dichloroethane	45.88	1.0	50	0	91.8	77 - 125				
1,1-Dichloroethene	44.26	1.0	50	0	88.5	71 - 131				
1,1-Dichloropropene	39.75	1.0	50	0	79.5	78 - 125				
1,2,3-Trichlorobenzene	43.78	1.0	50	0	87.6	69 - 129				
1,2,3-Trichloropropane	41.21	1.0	50	0	82.4	73 - 122				
1,2,4-Trichlorobenzene	43.36	1.0	50	0	86.7	69 - 130				
1,2,4-Trimethylbenzene	38.83	1.0	50	0	77.7	76 - 124				
1,2-Dibromo-3-chloropropane	43.51	1.0	50	0	87.0	62 - 128				
1,2-Dibromoethane	45.86	1.0	50	0	91.7	77 - 121				
1,2-Dichlorobenzene	41.52	1.0	50	0	83.0	80 - 119				
1,2-Dichloroethane	48.08	1.0	50	0	96.2	73 - 128				
1,2-Dichloropropane	43.57	1.0	50	0	87.1	78 - 122				
1,3,5-Trimethylbenzene	46.9	1.0	50	0	93.8	75 - 124				
1,3-Dichlorobenzene	40.92	1.0	50	0	81.8	80 - 119				
1,3-Dichloropropane	44.85	1.0	50	0	89.7	80 - 119				
1,4-Dichlorobenzene	41.44	1.0	50	0	82.9	79 - 118				
2,2-Dichloropropane	40	1.0	50	0	80.0	60 - 139				
2-Butanone	93.02	2.0	100	0	93.0	56 - 143				
2-Chlorotoluene	46.23	1.0	50	0	92.5	79 - 122				
2-Hexanone	90.66	2.0	100	0	90.7	57 - 139				
4-Chlorotoluene	46.48	1.0	50	0	93.0	78 - 122				
4-Isopropyltoluene	40.13	1.0	50	0	80.3	77 - 127				
4-Methyl-2-pentanone	90.84	2.0	100	0	90.8	67 - 130				
Acetone	93.84	2.0	100	0	93.8	39 - 160				
Benzene	42.43	1.0	50	0	84.9	79 - 120				
Bromobenzene	40.02	1.0	50	0	80.0	80 - 120				
Bromochloromethane	48.02	1.0	50	0	96.0	78 - 123				
Bromodichloromethane	46.22	1.0	50	0	92.4	79 - 125				
Bromoform	46.01	1.0	50	0	92.0	66 - 130				
Bromomethane	49.54	1.0	50	0	99.1	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180619** Units: **ug/L** Analysis Date: **19-Jun-2018 23:15**
Client ID: Run ID: **VOA2_318288** SeqNo: **4616508** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	85.97	2.0	100	0	86.0	64 - 133				
Carbon tetrachloride	48.07	1.0	50	0	96.1	72 - 136				
Chlorobenzene	42.68	1.0	50	0	85.4	82 - 118				
Chloroethane	47.83	1.0	50	0	95.7	60 - 138				
Chloroform	43.89	1.0	50	0	87.8	79 - 124				
Chloromethane	42.74	1.0	50	0	85.5	50 - 139				
cis-1,2-Dichloroethene	44.57	1.0	50	0	89.1	78 - 123				
cis-1,3-Dichloropropene	46.65	1.0	50	0	93.3	75 - 124				
Dibromochloromethane	45.44	1.0	50	0	90.9	74 - 126				
Dibromomethane	48.22	1.0	50	0	96.4	79 - 123				
Dichlorodifluoromethane	43.21	1.0	50	0	86.4	32 - 152				
Ethylbenzene	41.52	1.0	50	0	83.0	79 - 121				
Hexachlorobutadiene	41.99	1.0	50	0	84.0	66 - 134				
Isopropylbenzene	42.28	1.0	50	0	84.6	72 - 131				
m,p-Xylene	81.72	2.0	100	0	81.7	80 - 121				
Methylene chloride	42.63	2.0	50	0	85.3	74 - 124				
Naphthalene	43.96	1.0	50	0	87.9	61 - 128				
n-Butylbenzene	42.59	1.0	50	0	85.2	75 - 128				
n-Propylbenzene	45.46	1.0	50	0	90.9	76 - 126				
o-Xylene	42.27	1.0	50	0	84.5	78 - 122				
sec-Butylbenzene	40.14	1.0	50	0	80.3	77 - 126				
Styrene	43.73	1.0	50	0	87.5	78 - 123				
tert-Butylbenzene	45.63	1.0	50	0	91.3	78 - 124				
Tetrachloroethene	40.73	1.0	50	0	81.5	74 - 129				
Toluene	40.81	1.0	50	0	81.6	80 - 121				
trans-1,2-Dichloroethene	44.28	1.0	50	0	88.6	75 - 124				
trans-1,3-Dichloropropene	47.76	1.0	50	0	95.5	73 - 127				
Trichloroethene	43.37	1.0	50	0	86.7	79 - 123				
Trichlorofluoromethane	38	1.0	50	0	76.0	65 - 141				
Vinyl chloride	43.29	1.0	50	0	86.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.15*	*1.0*	*50*	*0*	*88.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.79*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*48.63*	*1.0*	*50*	*0*	*97.3*	*80 - 119*				
Surr: Toluene-d8	*51.05*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060725-06MS** Units: **ug/L** Analysis Date: **20-Jun-2018 01:43**
Client ID: **18cptMW07_061418** Run ID: **VOA2_318288** SeqNo: **4616512** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	35.05	1.0	50	0	70.1	78 - 124				S
1,1,1-Trichloroethane	33.89	1.0	50	0	67.8	74 - 131				S
1,1,2,2-Tetrachloroethane	34.12	1.0	50	0	68.2	71 - 121				S
1,1,2-Trichloroethane	34.64	1.0	50	0	69.3	80 - 119				S
1,1-Dichloroethane	35.51	1.0	50	0	71.0	77 - 125				S
1,1-Dichloroethene	33.82	1.0	50	0	67.6	71 - 131				S
1,1-Dichloropropene	30.48	1.0	50	0	61.0	78 - 125				S
1,2,3-Trichlorobenzene	30.94	1.0	50	0	61.9	69 - 129				S
1,2,3-Trichloropropane	35.03	1.0	50	0	70.1	73 - 122				S
1,2,4-Trichlorobenzene	30.57	1.0	50	0	61.1	69 - 130				S
1,2,4-Trimethylbenzene	31.05	1.0	50	0	62.1	76 - 124				S
1,2-Dibromo-3-chloropropane	37.62	1.0	50	0	75.2	62 - 128				
1,2-Dibromoethane	36.76	1.0	50	0	73.5	77 - 121				S
1,2-Dichlorobenzene	32.77	1.0	50	0	65.5	80 - 119				S
1,2-Dichloroethane	36.72	1.0	50	0	73.4	73 - 128				
1,2-Dichloropropane	34.36	1.0	50	0	68.7	78 - 122				S
1,3,5-Trimethylbenzene	36.88	1.0	50	0	73.8	75 - 124				S
1,3-Dichlorobenzene	32.26	1.0	50	0	64.5	80 - 119				S
1,3-Dichloropropane	35.58	1.0	50	0	71.2	80 - 119				S
1,4-Dichlorobenzene	31.87	1.0	50	0	63.7	79 - 118				S
2,2-Dichloropropane	29.47	1.0	50	0	58.9	60 - 139				S
2-Butanone	83.71	2.0	100	0	83.7	56 - 143				
2-Chlorotoluene	36.84	1.0	50	0	73.7	79 - 122				S
2-Hexanone	75.14	2.0	100	0	75.1	57 - 139				
4-Chlorotoluene	36.83	1.0	50	0	73.7	78 - 122				S
4-Isopropyltoluene	31.24	1.0	50	0	62.5	77 - 127				S
4-Methyl-2-pentanone	78.02	2.0	100	0	78.0	67 - 130				
Acetone	84.7	2.0	100	0	84.7	39 - 160				
Benzene	33.48	1.0	50	0	67.0	79 - 120				S
Bromobenzene	31.22	1.0	50	0	62.4	80 - 120				S
Bromochloromethane	37.63	1.0	50	0	75.3	78 - 123				S
Bromodichloromethane	35.77	1.0	50	0	71.5	79 - 125				S
Bromoform	36.76	1.0	50	0	73.5	66 - 130				
Bromomethane	36.75	1.0	50	0	73.5	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060725-06MS** Units: **ug/L** Analysis Date: **20-Jun-2018 01:43**
Client ID: **18cptMW07_061418** Run ID: **VOA2_318288** SeqNo: **4616512** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	66.03	2.0	100	0	66.0	64 - 133				
Carbon tetrachloride	36.52	1.0	50	0	73.0	72 - 136				
Chlorobenzene	33.68	1.0	50	0	67.4	82 - 118				S
Chloroethane	37.03	1.0	50	0	74.1	60 - 138				
Chloroform	34.38	1.0	50	0	68.8	79 - 124				S
Chloromethane	28.52	1.0	50	0	57.0	50 - 139				
cis-1,2-Dichloroethene	35.14	1.0	50	0	70.3	78 - 123				S
cis-1,3-Dichloropropene	36.07	1.0	50	0	72.1	75 - 124				S
Dibromochloromethane	35.52	1.0	50	0	71.0	74 - 126				S
Dibromomethane	37.43	1.0	50	0	74.9	79 - 123				S
Dichlorodifluoromethane	22.86	1.0	50	0	45.7	32 - 152				
Ethylbenzene	33.01	1.0	50	0	66.0	79 - 121				S
Hexachlorobutadiene	27.82	1.0	50	0	55.6	66 - 134				S
Isopropylbenzene	33.57	1.0	50	0	67.1	72 - 131				S
m,p-Xylene	65.31	2.0	100	0	65.3	80 - 121				S
Methylene chloride	32.84	2.0	50	0	65.7	74 - 124				S
Naphthalene	34.86	1.0	50	0	69.7	61 - 128				
n-Butylbenzene	32.14	1.0	50	0	64.3	75 - 128				S
n-Propylbenzene	36.26	1.0	50	0	72.5	76 - 126				S
o-Xylene	33.62	1.0	50	0	67.2	78 - 122				S
sec-Butylbenzene	31.59	1.0	50	0	63.2	77 - 126				S
Styrene	34.18	1.0	50	0	68.4	78 - 123				S
tert-Butylbenzene	36.24	1.0	50	0	72.5	78 - 124				S
Tetrachloroethene	31.65	1.0	50	0	63.3	74 - 129				S
Toluene	32.61	1.0	50	0	65.2	80 - 121				S
trans-1,2-Dichloroethene	34.61	1.0	50	0	69.2	75 - 124				S
trans-1,3-Dichloropropene	36.45	1.0	50	0	72.9	73 - 127				S
Trichloroethene	33.83	1.0	50	0	67.7	79 - 123				S
Trichlorofluoromethane	25.4	1.0	50	0	50.8	65 - 141				S
Vinyl chloride	31.88	1.0	50	0	63.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.34*	*1.0*	*50*	*0*	*88.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.56*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*48.24*	*1.0*	*50*	*0*	*96.5*	*80 - 119*				
Surr: Toluene-d8	*50.44*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060725-06MSD** Units: **ug/L** Analysis Date: **20-Jun-2018 02:07**
Client ID: **18cptMW07_061418** Run ID: **VOA2_318288** SeqNo: **4616513** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	35.72	1.0	50	0	71.4	78 - 124	35.05	1.88	20	S
1,1,1-Trichloroethane	33.88	1.0	50	0	67.8	74 - 131	33.89	0.0283	20	S
1,1,2,2-Tetrachloroethane	35.37	1.0	50	0	70.7	71 - 121	34.12	3.6	20	S
1,1,2-Trichloroethane	35.29	1.0	50	0	70.6	80 - 119	34.64	1.87	20	S
1,1-Dichloroethane	35.66	1.0	50	0	71.3	77 - 125	35.51	0.423	20	S
1,1-Dichloroethene	32.39	1.0	50	0	64.8	71 - 131	33.82	4.33	20	S
1,1-Dichloropropene	30.46	1.0	50	0	60.9	78 - 125	30.48	0.049	20	S
1,2,3-Trichlorobenzene	32.37	1.0	50	0	64.7	69 - 129	30.94	4.51	20	S
1,2,3-Trichloropropane	36.15	1.0	50	0	72.3	73 - 122	35.03	3.15	20	S
1,2,4-Trichlorobenzene	31.11	1.0	50	0	62.2	69 - 130	30.57	1.74	20	S
1,2,4-Trimethylbenzene	31.37	1.0	50	0	62.7	76 - 124	31.05	1	20	S
1,2-Dibromo-3-chloropropane	38.96	1.0	50	0	77.9	62 - 128	37.62	3.5	20	
1,2-Dibromoethane	37.43	1.0	50	0	74.9	77 - 121	36.76	1.79	20	S
1,2-Dichlorobenzene	33.06	1.0	50	0	66.1	80 - 119	32.77	0.868	20	S
1,2-Dichloroethane	37.21	1.0	50	0	74.4	73 - 128	36.72	1.32	20	
1,2-Dichloropropane	34.37	1.0	50	0	68.7	78 - 122	34.36	0.0285	20	S
1,3,5-Trimethylbenzene	37.18	1.0	50	0	74.4	75 - 124	36.88	0.823	20	S
1,3-Dichlorobenzene	32.26	1.0	50	0	64.5	80 - 119	32.26	0.00142	20	S
1,3-Dichloropropane	36.81	1.0	50	0	73.6	80 - 119	35.58	3.39	20	S
1,4-Dichlorobenzene	32.96	1.0	50	0	65.9	79 - 118	31.87	3.34	20	S
2,2-Dichloropropane	29.31	1.0	50	0	58.6	60 - 139	29.47	0.515	20	S
2-Butanone	85.23	2.0	100	0	85.2	56 - 143	83.71	1.8	20	
2-Chlorotoluene	36.74	1.0	50	0	73.5	79 - 122	36.84	0.275	20	S
2-Hexanone	82.01	2.0	100	0	82.0	57 - 139	75.14	8.73	20	
4-Chlorotoluene	37.09	1.0	50	0	74.2	78 - 122	36.83	0.704	20	S
4-Isopropyltoluene	31.33	1.0	50	0	62.7	77 - 127	31.24	0.301	20	S
4-Methyl-2-pentanone	80.79	2.0	100	0	80.8	67 - 130	78.02	3.49	20	
Acetone	86.12	2.0	100	0	86.1	39 - 160	84.7	1.66	20	
Benzene	33.49	1.0	50	0	67.0	79 - 120	33.48	0.0551	20	S
Bromobenzene	31.77	1.0	50	0	63.5	80 - 120	31.22	1.76	20	S
Bromochloromethane	36.43	1.0	50	0	72.9	78 - 123	37.63	3.23	20	S
Bromodichloromethane	36.1	1.0	50	0	72.2	79 - 125	35.77	0.922	20	S
Bromoform	37.72	1.0	50	0	75.4	66 - 130	36.76	2.56	20	
Bromomethane	35.03	1.0	50	0	70.1	53 - 141	36.75	4.78	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060725-06MSD** Units: **ug/L** Analysis Date: **20-Jun-2018 02:07**
Client ID: **18cptMW07_061418** Run ID: **VOA2_318288** SeqNo: **4616513** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	66.16	2.0	100	0	66.2	64 - 133	66.03	0.197	20	
Carbon tetrachloride	34.67	1.0	50	0	69.3	72 - 136	36.52	5.21	20	S
Chlorobenzene	33.71	1.0	50	0	67.4	82 - 118	33.68	0.11	20	S
Chloroethane	34.64	1.0	50	0	69.3	60 - 138	37.03	6.66	20	
Chloroform	34.52	1.0	50	0	69.0	79 - 124	34.38	0.412	20	S
Chloromethane	28.63	1.0	50	0	57.3	50 - 139	28.52	0.392	20	
cis-1,2-Dichloroethene	35.03	1.0	50	0	70.1	78 - 123	35.14	0.319	20	S
cis-1,3-Dichloropropene	36.28	1.0	50	0	72.6	75 - 124	36.07	0.583	20	S
Dibromochloromethane	35.88	1.0	50	0	71.8	74 - 126	35.52	1.01	20	S
Dibromomethane	38.63	1.0	50	0	77.3	79 - 123	37.43	3.16	20	S
Dichlorodifluoromethane	22.03	1.0	50	0	44.1	32 - 152	22.86	3.67	20	
Ethylbenzene	33.07	1.0	50	0	66.1	79 - 121	33.01	0.183	20	S
Hexachlorobutadiene	28.34	1.0	50	0	56.7	66 - 134	27.82	1.87	20	S
Isopropylbenzene	33.66	1.0	50	0	67.3	72 - 131	33.57	0.268	20	S
m,p-Xylene	65.01	2.0	100	0	65.0	80 - 121	65.31	0.46	20	S
Methylene chloride	32.76	2.0	50	0	65.5	74 - 124	32.84	0.267	20	S
Naphthalene	36.86	1.0	50	0	73.7	61 - 128	34.86	5.57	20	
n-Butylbenzene	32.1	1.0	50	0	64.2	75 - 128	32.14	0.101	20	S
n-Propylbenzene	36.22	1.0	50	0	72.4	76 - 126	36.26	0.112	20	S
o-Xylene	33.71	1.0	50	0	67.4	78 - 122	33.62	0.267	20	S
sec-Butylbenzene	31.31	1.0	50	0	62.6	77 - 126	31.59	0.911	20	S
Styrene	34.46	1.0	50	0	68.9	78 - 123	34.18	0.809	20	S
tert-Butylbenzene	36.3	1.0	50	0	72.6	78 - 124	36.24	0.18	20	S
Tetrachloroethene	32.02	1.0	50	0	64.0	74 - 129	31.65	1.15	20	S
Toluene	32.78	1.0	50	0	65.6	80 - 121	32.61	0.53	20	S
trans-1,2-Dichloroethene	34.03	1.0	50	0	68.1	75 - 124	34.61	1.68	20	S
trans-1,3-Dichloropropene	37.3	1.0	50	0	74.6	73 - 127	36.45	2.28	20	
Trichloroethene	34.23	1.0	50	0	68.5	79 - 123	33.83	1.18	20	S
Trichlorofluoromethane	26.62	1.0	50	0	53.2	65 - 141	25.4	4.71	20	S
Vinyl chloride	31.82	1.0	50	0	63.6	58 - 137	31.88	0.211	20	
Surr: 1,2-Dichloroethane-d4	*44.93*	*1.0*	*50*	*0*	*89.9*	*81 - 118*	*44.34*	*1.32*	*20*	
Surr: 4-Bromofluorobenzene	*51.66*	*1.0*	*50*	*0*	*103*	*85 - 114*	*51.56*	*0.179*	*20*	
Surr: Dibromofluoromethane	*49.15*	*1.0*	*50*	*0*	*98.3*	*80 - 119*	*48.24*	*1.87*	*20*	
Surr: Toluene-d8	*50.88*	*1.0*	*50*	*0*	*102*	*89 - 112*	*50.44*	*0.865*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318288 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060725-01	HS18060725-02	HS18060725-03	HS18060725-04
HS18060725-05	HS18060725-06	HS18060725-07	HS18060725-08
HS18060725-09	HS18060725-10		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180622** Units: **ug/L** Analysis Date: **22-Jun-2018 15:57**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622170** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180622** Units: **ug/L** Analysis Date: **22-Jun-2018 15:57**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622170** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*40.52*	*1.0*	*50*	*0*	*81.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.55*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*49.13*	*1.0*	*50*	*0*	*98.3*	*80 - 119*				
Surr: Toluene-d8	*49.57*	*1.0*	*50*	*0*	*99.1*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180622** Units: **ug/L** Analysis Date: **22-Jun-2018 14:38**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622178** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.85	1.0	50	0	95.7	78 - 124				
1,1,1-Trichloroethane	42.03	1.0	50	0	84.1	74 - 131				
1,1,2,2-Tetrachloroethane	45.49	1.0	50	0	91.0	71 - 121				
1,1,2-Trichloroethane	47.58	1.0	50	0	95.2	80 - 119				
1,1-Dichloroethane	45.84	1.0	50	0	91.7	77 - 125				
1,1-Dichloroethene	46.89	1.0	50	0	93.8	71 - 131				
1,1-Dichloropropene	39.55	1.0	50	0	79.1	78 - 125				
1,2,3-Trichlorobenzene	48.14	1.0	50	0	96.3	69 - 129				
1,2,3-Trichloropropane	47.47	1.0	50	0	94.9	73 - 122				
1,2,4-Trichlorobenzene	46.57	1.0	50	0	93.1	69 - 130				
1,2,4-Trimethylbenzene	41.75	1.0	50	0	83.5	76 - 124				
1,2-Dibromo-3-chloropropane	49.2	1.0	50	0	98.4	62 - 128				
1,2-Dibromoethane	51.02	1.0	50	0	102	77 - 121				
1,2-Dichlorobenzene	44.91	1.0	50	0	89.8	80 - 119				
1,2-Dichloroethane	47.48	1.0	50	0	95.0	73 - 128				
1,2-Dichloropropane	45.21	1.0	50	0	90.4	78 - 122				
1,3,5-Trimethylbenzene	48.2	1.0	50	0	96.4	75 - 124				
1,3-Dichlorobenzene	44.3	1.0	50	0	88.6	80 - 119				
1,3-Dichloropropane	47.84	1.0	50	0	95.7	80 - 119				
1,4-Dichlorobenzene	45.05	1.0	50	0	90.1	79 - 118				
2,2-Dichloropropane	44.08	1.0	50	0	88.2	60 - 139				
2-Butanone	101.7	2.0	100	0	102	56 - 143				
2-Chlorotoluene	48.05	1.0	50	0	96.1	79 - 122				
2-Hexanone	113.4	2.0	100	0	113	57 - 139				
4-Chlorotoluene	48.26	1.0	50	0	96.5	78 - 122				
4-Isopropyltoluene	40.25	1.0	50	0	80.5	77 - 127				
4-Methyl-2-pentanone	96.91	2.0	100	0	96.9	67 - 130				
Acetone	95.5	2.0	100	0	95.5	39 - 160				
Benzene	46.25	1.0	50	0	92.5	79 - 120				
Bromobenzene	42.86	1.0	50	0	85.7	80 - 120				
Bromochloromethane	51	1.0	50	0	102	78 - 123				
Bromodichloromethane	47.55	1.0	50	0	95.1	79 - 125				
Bromoform	52.6	1.0	50	0	105	66 - 130				
Bromomethane	45.51	1.0	50	0	91.0	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180622** Units: **ug/L** Analysis Date: **22-Jun-2018 14:38**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622178** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	90.94	2.0	100	0	90.9	64 - 133				
Carbon tetrachloride	47.42	1.0	50	0	94.8	72 - 136				
Chlorobenzene	46.81	1.0	50	0	93.6	82 - 118				
Chloroethane	46.01	1.0	50	0	92.0	60 - 138				
Chloroform	44.39	1.0	50	0	88.8	79 - 124				
Chloromethane	40.17	1.0	50	0	80.3	50 - 139				
cis-1,2-Dichloroethene	48.03	1.0	50	0	96.1	78 - 123				
cis-1,3-Dichloropropene	50.96	1.0	50	0	102	75 - 124				
Dibromochloromethane	48.52	1.0	50	0	97.0	74 - 126				
Dibromomethane	52.16	1.0	50	0	104	79 - 123				
Dichlorodifluoromethane	50.94	1.0	50	0	102	32 - 152				
Ethylbenzene	44.7	1.0	50	0	89.4	79 - 121				
Hexachlorobutadiene	42.63	1.0	50	0	85.3	66 - 134				
Isopropylbenzene	44.35	1.0	50	0	88.7	72 - 131				
m,p-Xylene	89.74	2.0	100	0	89.7	80 - 121				
Methylene chloride	45.56	2.0	50	0	91.1	74 - 124				
Naphthalene	51.79	1.0	50	0	104	61 - 128				
n-Butylbenzene	42.06	1.0	50	0	84.1	75 - 128				
n-Propylbenzene	46.13	1.0	50	0	92.3	76 - 126				
o-Xylene	46.29	1.0	50	0	92.6	78 - 122				
sec-Butylbenzene	39.28	1.0	50	0	78.6	77 - 126				
Styrene	47.53	1.0	50	0	95.1	78 - 123				
tert-Butylbenzene	46.46	1.0	50	0	92.9	78 - 124				
Tetrachloroethene	44.27	1.0	50	0	88.5	74 - 129				
Toluene	44.34	1.0	50	0	88.7	80 - 121				
trans-1,2-Dichloroethene	47.73	1.0	50	0	95.5	75 - 124				
trans-1,3-Dichloropropene	54.21	1.0	50	0	108	73 - 127				
Trichlorofluoromethane	41.75	1.0	50	0	83.5	65 - 141				
Vinyl chloride	45.15	1.0	50	0	90.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*42.64*	*1.0*	*50*	*0*	*85.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.7*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*45.99*	*1.0*	*50*	*0*	*92.0*	*80 - 119*				
Surr: Toluene-d8	*50.32*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060697-09MS** Units: **ug/L** Analysis Date: **22-Jun-2018 17:40**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622174** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	42.66	1.0	50	0	85.3	78 - 124				
1,1,1-Trichloroethane	43.53	1.0	50	0	87.1	74 - 131				
1,1,2,2-Tetrachloroethane	38.85	1.0	50	0	77.7	71 - 121				
1,1,2-Trichloroethane	42.03	1.0	50	0	84.1	80 - 119				
1,1-Dichloroethane	43.39	1.0	50	0	86.8	77 - 125				
1,1-Dichloroethene	39.33	1.0	50	0	78.7	71 - 131				
1,1-Dichloropropene	40.86	1.0	50	0	81.7	78 - 125				
1,2,3-Trichlorobenzene	41.06	1.0	50	0	82.1	69 - 129				
1,2,3-Trichloropropane	37.99	1.0	50	0	76.0	73 - 122				
1,2,4-Trichlorobenzene	38.57	1.0	50	0	77.1	69 - 130				
1,2,4-Trimethylbenzene	39.13	1.0	50	0.5757	77.1	76 - 124				
1,2-Dibromo-3-chloropropane	43.75	1.0	50	0	87.5	62 - 128				
1,2-Dibromoethane	43.37	1.0	50	0	86.7	77 - 121				
1,2-Dichlorobenzene	39.61	1.0	50	0	79.2	80 - 119				S
1,2-Dichloroethane	44.17	1.0	50	0	88.3	73 - 128				
1,2-Dichloropropane	41.54	1.0	50	0	83.1	78 - 122				
1,3,5-Trimethylbenzene	47.86	1.0	50	0	95.7	75 - 124				
1,3-Dichlorobenzene	39.62	1.0	50	0	79.2	80 - 119				S
1,3-Dichloropropane	42.68	1.0	50	0	85.4	80 - 119				
1,4-Dichlorobenzene	39.85	1.0	50	0	79.7	79 - 118				
2,2-Dichloropropane	41.26	1.0	50	0	82.5	60 - 139				
2-Butanone	96.15	2.0	100	0	96.2	56 - 143				
2-Chlorotoluene	45.87	1.0	50	0	91.7	79 - 122				
2-Hexanone	105.5	2.0	100	0	105	57 - 139				
4-Chlorotoluene	45.93	1.0	50	0	91.9	78 - 122				
4-Isopropyltoluene	41.88	1.0	50	0	83.8	77 - 127				
4-Methyl-2-pentanone	93.32	2.0	100	0	93.3	67 - 130				
Acetone	67.51	2.0	100	0	67.5	39 - 160				
Benzene	42.22	1.0	50	0	84.4	79 - 120				
Bromobenzene	36.64	1.0	50	0	73.3	80 - 120				S
Bromochloromethane	43.67	1.0	50	0	87.3	78 - 123				
Bromodichloromethane	43.78	1.0	50	0	87.6	79 - 125				
Bromoform	43.62	1.0	50	0	87.2	66 - 130				
Bromomethane	36.39	1.0	50	0	72.8	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060697-09MS** Units: **ug/L** Analysis Date: **22-Jun-2018 17:40**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622174** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	72.91	2.0	100	0	72.9	64 - 133				
Carbon tetrachloride	50.97	1.0	50	0	102	72 - 136				
Chlorobenzene	41.59	1.0	50	0	83.2	82 - 118				
Chloroethane	38.34	1.0	50	0	76.7	60 - 138				
Chloroform	41.55	1.0	50	0	83.1	79 - 124				
Chloromethane	35.66	1.0	50	0	71.3	50 - 139				
cis-1,2-Dichloroethene	42.44	1.0	50	0	84.9	78 - 123				
cis-1,3-Dichloropropene	44.45	1.0	50	0	88.9	75 - 124				
Dibromochloromethane	42.4	1.0	50	0	84.8	74 - 126				
Dibromomethane	45.74	1.0	50	0	91.5	79 - 123				
Dichlorodifluoromethane	36.36	1.0	50	0	72.7	32 - 152				
Ethylbenzene	42.5	1.0	50	0	85.0	79 - 121				
Hexachlorobutadiene	41.35	1.0	50	0	82.7	66 - 134				
Isopropylbenzene	45.35	1.0	50	1.106	88.5	72 - 131				
m,p-Xylene	83.61	2.0	100	0	83.6	80 - 121				
Methylene chloride	34.25	2.0	50	0	68.5	74 - 124				S
Naphthalene	39.84	1.0	50	0	79.7	61 - 128				
n-Butylbenzene	44.85	1.0	50	0	89.7	75 - 128				
n-Propylbenzene	44.17	1.0	50	0	88.3	76 - 126				
o-Xylene	42	1.0	50	0	84.0	78 - 122				
sec-Butylbenzene	42.45	1.0	50	0	84.9	77 - 126				
Styrene	42.26	1.0	50	0	84.5	78 - 123				
tert-Butylbenzene	47.98	1.0	50	0	96.0	78 - 124				
Tetrachloroethene	42.94	1.0	50	0	85.9	74 - 129				
Toluene	41.13	1.0	50	0	82.3	80 - 121				
trans-1,2-Dichloroethene	42	1.0	50	0	84.0	75 - 124				
trans-1,3-Dichloropropene	47.06	1.0	50	0	94.1	73 - 127				
Trichlorofluoromethane	35.82	1.0	50	0	71.6	65 - 141				
Vinyl chloride	42.33	1.0	50	0	84.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.57*	*1.0*	*50*	*0*	*89.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.8*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*48.37*	*1.0*	*50*	*0*	*96.7*	*80 - 119*				
Surr: Toluene-d8	*51.7*	*1.0*	*50*	*0*	*103*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060697-09MSD** Units: **ug/L** Analysis Date: **22-Jun-2018 18:06**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622175** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	41.34	1.0	50	0	82.7	78 - 124	42.66	3.13	20	
1,1,1-Trichloroethane	43.31	1.0	50	0	86.6	74 - 131	43.53	0.499	20	
1,1,2,2-Tetrachloroethane	40.9	1.0	50	0	81.8	71 - 121	38.85	5.12	20	
1,1,2-Trichloroethane	40.82	1.0	50	0	81.6	80 - 119	42.03	2.93	20	
1,1-Dichloroethane	43.22	1.0	50	0	86.4	77 - 125	43.39	0.382	20	
1,1-Dichloroethene	44.08	1.0	50	0	88.2	71 - 131	39.33	11.4	20	
1,1-Dichloropropene	40.14	1.0	50	0	80.3	78 - 125	40.86	1.79	20	
1,2,3-Trichlorobenzene	41.14	1.0	50	0	82.3	69 - 129	41.06	0.215	20	
1,2,3-Trichloropropane	39.41	1.0	50	0	78.8	73 - 122	37.99	3.68	20	
1,2,4-Trichlorobenzene	40.35	1.0	50	0	80.7	69 - 130	38.57	4.5	20	
1,2,4-Trimethylbenzene	37.26	1.0	50	0.5757	73.4	76 - 124	39.13	4.89	20	S
1,2-Dibromo-3-chloropropane	39.51	1.0	50	0	79.0	62 - 128	43.75	10.2	20	
1,2-Dibromoethane	40.82	1.0	50	0	81.6	77 - 121	43.37	6.05	20	
1,2-Dichlorobenzene	38.6	1.0	50	0	77.2	80 - 119	39.61	2.6	20	S
1,2-Dichloroethane	44.31	1.0	50	0	88.6	73 - 128	44.17	0.302	20	
1,2-Dichloropropane	40.78	1.0	50	0	81.6	78 - 122	41.54	1.83	20	
1,3,5-Trimethylbenzene	48.61	1.0	50	0	97.2	75 - 124	47.86	1.55	20	
1,3-Dichlorobenzene	38.81	1.0	50	0	77.6	80 - 119	39.62	2.07	20	S
1,3-Dichloropropane	42.09	1.0	50	0	84.2	80 - 119	42.68	1.38	20	
1,4-Dichlorobenzene	39.02	1.0	50	0	78.0	79 - 118	39.85	2.11	20	S
2,2-Dichloropropane	40.34	1.0	50	0	80.7	60 - 139	41.26	2.26	20	
2-Butanone	99.59	2.0	100	0	99.6	56 - 143	96.15	3.51	20	
2-Chlorotoluene	46	1.0	50	0	92.0	79 - 122	45.87	0.272	20	
2-Hexanone	103.4	2.0	100	0	103	57 - 139	105.5	1.98	20	
4-Chlorotoluene	45.98	1.0	50	0	92.0	78 - 122	45.93	0.0974	20	
4-Isopropyltoluene	39.43	1.0	50	0	78.9	77 - 127	41.88	6.02	20	
4-Methyl-2-pentanone	92.86	2.0	100	0	92.9	67 - 130	93.32	0.495	20	
Acetone	93.66	2.0	100	0	93.7	39 - 160	67.51	32.4	20	R
Benzene	40.93	1.0	50	0	81.9	79 - 120	42.22	3.1	20	
Bromobenzene	39.51	1.0	50	0	79.0	80 - 120	36.64	7.52	20	S
Bromochloromethane	44.29	1.0	50	0	88.6	78 - 123	43.67	1.42	20	
Bromodichloromethane	43.07	1.0	50	0	86.1	79 - 125	43.78	1.64	20	
Bromoform	42.85	1.0	50	0	85.7	66 - 130	43.62	1.77	20	
Bromomethane	34.79	1.0	50	0	69.6	53 - 141	36.39	4.5	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: HS18060725

QC BATCH REPORT

Batch ID: R318525 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060697-09MSD** Units: **ug/L** Analysis Date: **22-Jun-2018 18:06**
Client ID: Run ID: **VOA2_318525** SeqNo: **4622175** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	83.64	2.0	100	0	83.6	64 - 133	72.91	13.7	20	
Carbon tetrachloride	48.5	1.0	50	0	97.0	72 - 136	50.97	4.98	20	
Chlorobenzene	40.1	1.0	50	0	80.2	82 - 118	41.59	3.66	20	S
Chloroethane	37.9	1.0	50	0	75.8	60 - 138	38.34	1.17	20	
Chloroform	41.56	1.0	50	0	83.1	79 - 124	41.55	0.0297	20	
Chloromethane	37.09	1.0	50	0	74.2	50 - 139	35.66	3.95	20	
cis-1,2-Dichloroethene	42.47	1.0	50	0	84.9	78 - 123	42.44	0.0778	20	
cis-1,3-Dichloropropene	43.68	1.0	50	0	87.4	75 - 124	44.45	1.75	20	
Dibromochloromethane	41.57	1.0	50	0	83.1	74 - 126	42.4	1.98	20	
Dibromomethane	45.69	1.0	50	0	91.4	79 - 123	45.74	0.12	20	
Dichlorodifluoromethane	35.41	1.0	50	0	70.8	32 - 152	36.36	2.63	20	
Ethylbenzene	41.16	1.0	50	0	82.3	79 - 121	42.5	3.21	20	
Hexachlorobutadiene	43.65	1.0	50	0	87.3	66 - 134	41.35	5.42	20	
Isopropylbenzene	40.96	1.0	50	1.106	79.7	72 - 131	45.35	10.2	20	
m,p-Xylene	79.98	2.0	100	0	80.0	80 - 121	83.61	4.44	20	S
Methylene chloride	39.35	2.0	50	0	78.7	74 - 124	34.25	13.8	20	
Naphthalene	42.22	1.0	50	0	84.4	61 - 128	39.84	5.78	20	
n-Butylbenzene	41.47	1.0	50	0	82.9	75 - 128	44.85	7.83	20	
n-Propylbenzene	45.21	1.0	50	0	90.4	76 - 126	44.17	2.34	20	
o-Xylene	40.71	1.0	50	0	81.4	78 - 122	42	3.14	20	
sec-Butylbenzene	39.48	1.0	50	0	79.0	77 - 126	42.45	7.27	20	
Styrene	40.88	1.0	50	0	81.8	78 - 123	42.26	3.33	20	
tert-Butylbenzene	45.32	1.0	50	0	90.6	78 - 124	47.98	5.71	20	
Tetrachloroethene	40.83	1.0	50	0	81.7	74 - 129	42.94	5.03	20	
Toluene	39.54	1.0	50	0	79.1	80 - 121	41.13	3.94	20	S
trans-1,2-Dichloroethene	43.14	1.0	50	0	86.3	75 - 124	42	2.68	20	
trans-1,3-Dichloropropene	45.65	1.0	50	0	91.3	73 - 127	47.06	3.04	20	
Trichlorofluoromethane	35.87	1.0	50	0	71.7	65 - 141	35.82	0.138	20	
Vinyl chloride	41.06	1.0	50	0	82.1	58 - 137	42.33	3.05	20	
Surr: 1,2-Dichloroethane-d4	*46.13*	*1.0*	*50*	*0*	*92.3*	*81 - 118*	*44.57*	*3.45*	*20*	
Surr: 4-Bromofluorobenzene	*47.9*	*1.0*	*50*	*0*	*95.8*	*85 - 114*	*52.8*	*9.72*	*20*	
Surr: Dibromofluoromethane	*49.01*	*1.0*	*50*	*0*	*98.0*	*80 - 119*	*48.37*	*1.3*	*20*	
Surr: Toluene-d8	*51.01*	*1.0*	*50*	*0*	*102*	*89 - 112*	*51.7*	*1.34*	*20*	

The following samples were analyzed in this batch: HS18060725-01 HS18060725-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 03-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18/24
WorkOrder: **HS18060725**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 03-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 03-Jul-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**15-Jun-2018 08:30**
Work Order:	HS18060725	Received by:	**RPG**

Checklist completed by:	*Raegen Giga* (eSignature)	15-Jun-2018 (Date)	Reviewed by:	*RJ Modashia* (eSignature) 18-Jun-2018 (Date)

Matrices: **GW** Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	1.5c/1.1c uc/c		IR 30
Cooler(s)/Kit(s):	43251		
Date/Time sample(s) sent to storage:	06/15/2018 15:30		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate

Page: ____ of ____

Project/Phase No: NWO1312.0150

HS18060725

Bhate Environmental Associates, Inc.
LHAAP 18/24

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5)

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
129_061418		6/14/18	0740	-	N		WG	6	X	X	X	X										
120_061418		6/14/18	0805	-	N		WG	5	X	X		X										
123_061418		6/14/18	0815	-	N		WG	5	X	X		X										
109_061418		6/14/18	0835		N		WG	5	X	X		X										
MW3_061418		6/14/18	0930		N		WG	5	X	X	X											
18CPTMW07_061418		6/14/18	1030	-	N		WG	5	X	X		X										
MW19_061418		6/14/18	1130	-	N		WG	5	X	X	X											
17MW08_061418		6/14/18	1225	-	N		WG	5	X	X	X											
18CPTMW26SW_061418		6/14/18	1330	-	N		WG	5	X	X		X										
TRIP BLANK		6/14/18		-	TB		W	2	X													
				-																		

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time
1. Scott Beesinger	6/14/18	1430	1. RG	6/15/18	08:30
2.			2.		
3.			3.		

43251 #30 UC 1.5 CF-0401

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel: +1 281 530 5656
Fax: +1 281 530 5887

H3251

CUSTODY SEAL
Date: 6/19/18 Time: 1430
Name: Scott Bergen
Company: Bonte

ND 06/15

HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58-RJ
RMA:

ND 06/15

FedEx Express

E

H3251

TRK# 7376 9752 9130

RETURNS MON-SAT
PRIORITY OVERNIGHT

77099

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1816951; 1816952; 1816954

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2106 (217071)

General Set Information: There were seventeen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions.
1816952001 – 10; 1816952004/1816954001/04 – 100; 1816954002/05 – 1,000. Samples 1816951001 and 1816952006 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 606014) was less than 1/2 the CRDL. The recovery for the LCS (606015) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1816951001 (Client ID: LH18/24-SP650_061318). The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafile 19JUNP17. The initial CCV (606051) analyzed on 06/20/18 for sequence 19JUN18Q.s was a corrupted file and could not be used. The LODV (1.0µg/L - 606052) that was analyzed next passes the method criteria of +/- 15%.

Thomas Bosch June 21, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 22, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1816954**
Project ID: HS18060725 061418
Purchase Order: HS18060725
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
129_061418	1816954001	06/14/18	06/16/18	
120_061418	1816954002	06/14/18	06/16/18	
123_061418	1816954003	06/14/18	06/16/18	
109_061418	1816954004	06/14/18	06/16/18	
MW3_061418	1816954005	06/14/18	06/16/18	
18cptMW07_061418	1816954006	06/14/18	06/16/18	
MW19_061418	1816954007	06/14/18	06/16/18	
17WW08_061418	1816954008	06/14/18	06/16/18	
18cptMW26SW_061418	1816954009	06/14/18	06/16/18	

ANALYTICAL REPORT

Workorder: 34-1816954
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **129_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954001 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 20:56
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**3900**	100	200	400	100	

Sample ID: **120_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954002 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 21:10
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**26000**	1000	2000	4000	1000	

Sample ID: **123_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954003 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 21:39
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**59**	1.0	2.0	4.0	1	

Sample ID: **109_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954004 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 21:53
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**4300**	100	200	400	100	

ANALYTICAL REPORT

Workorder: 34-1816954
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW3_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954005 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 22:07
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**16000**	1000	2000	4000	1000	

Sample ID: **18cptMW07_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954006 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 22:21
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	2.1	1.0	2.0	4.0	1	J

Sample ID: **MW19_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954007 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 22:35
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **17WW08_061418** | Sampling Site: NA | Collected: 06/14/2018
Lab ID: 1816954008 | Media: 125 mL Nalgene | Received: 06/16/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2106 (HBN: 217071)
Analyzed: 06/19/2018 22:49
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1816954
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID:	18cptMW26SW_061418	Sampling Site:	NA	Collected:	06/14/2018
Lab ID:	1816954009	Media:	125 mL Nalgene	Received:	06/16/2018
Matrix:	Water	Sampling Parameter:	NA		

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:**	EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch:	ELMS/2106 (HBN: 217071)	**Percent Solid:** NA
	Analyzed:	06/19/2018 23:03	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Workorder: 1816954

The following samples were analyzed and reported at various dilutions. 1816954001/04 - 100; 1816954002/05 – 1,000. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 06/21/2018 11:46	/S/ Stephen Brose 06/22/2018 14:30

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1816954
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816954

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2106 (HBN: 217071)
Analyzed By: Thomas Bosch

Blank

LMB: 606014
Analyzed: 06/19/2018 17:08
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 606015
Analyzed: 06/19/2018 17:22
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.17	5.00	103	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1816951001
Analyzed: 06/19/2018 18:06
Dilution: 5
Units: ug/L

MS: 606016
Analyzed: 06/19/2018 18:20
Dilution: 5
Units: ug/L

MSD: 606017
Analyzed: 06/19/2018 18:35
Dilution: 5
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	27.3	25	109	78.8	123.8	28.8	115	5.37	0.0	20.0

Continuing Calibration Verification

CCV: 606011
Analyzed: 06/19/2018 16:25
Units: ug/L
Criteria: ± 15%

CCV: 606018
Analyzed: 06/19/2018 20:28
Units: ug/L
Criteria: ± 15%

CCV: 606020
Analyzed: 06/19/2018 23:18
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	23.9	25.0	95.6	22.8	25.0	91.2	22.9	25.0	91.5

CCV: 606053
Analyzed: 06/20/2018 08:58
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.
Perchlorate	25.3	25.0	101

Interference Check Sample

ICSA: 606013
Analyzed: 06/19/2018 16:54
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.976	1.00	97.6

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1816954

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2106 (HBN: 217071)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

LODV:	606012			**LODV:**	606019		**LODV:**	606021	
Analyzed:	06/19/2018 16:39			**Analyzed:**	06/19/2018 20:42		**Analyzed:**	06/19/2018 23:32	
Units:	ug/L			**Units:**	ug/L		**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%		**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.06	1.00	106	0.955	1.00	95.5	1.00	1.00	100

LODV:	606052			**LODV:**	606054	
Analyzed:	06/20/2018 08:25			**Analyzed:**	06/20/2018 09:12	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.03	1.00	103	1.00	1.00	100

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/21/2018 11:47	06/22/2018 14:30

Symbols and Definitions

- ✱ - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ⬢ - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

18698/#2

1816954

ɔcontract Chain of Custody

COC ID: 9296

1816954

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact: Jumoke M. Lawal
Email: jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18060725
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060725-01**	**129_061418**	**Groundwater**	**14 Jun 2018 07:40**
	SUB_Perch-6850			25 Jun 2018
2.	**HS18060725-02**	**120_061418**	**Groundwater**	**14 Jun 2018 08:05**
	SUB_Perch-6850			25 Jun 2018
3.	**HS18060725-03**	**123_061418**	**Groundwater**	**14 Jun 2018 08:15**
	SUB_Perch-6850			25 Jun 2018
4.	**HS18060725-04**	**109_061418**	**Groundwater**	**14 Jun 2018 08:35**
	SUB_Perch-6850			25 Jun 2018
5.	**HS18060725-05**	**MW3_061418**	**Groundwater**	**14 Jun 2018 09:30**
	SUB_Perch-6850			25 Jun 2018
6.	**HS18060725-06**	**18cptMW07_061418**	**Groundwater**	**14 Jun 2018 10:30**
	SUB_Perch-6850			25 Jun 2018
7.	**HS18060725-07**	**MW19_061418**	**Groundwater**	**14 Jun 2018 11:30**
	SUB_Perch-6850			25 Jun 2018
8.	**HS18060725-08**	**17WW08_061418**	**Groundwater**	**14 Jun 2018 12:25**
	SUB_Perch-6850			25 Jun 2018
9.	**HS18060725-09**	**18cptMW26SW_061418**	**Groundwater**	**14 Jun 2018 13:30**

Subcontract Chain of Custody

COC ID: 9296

LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
ANALYSIS REQUESTED			DUE DATE
SUB_Perch-6850			25 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	6/15/18 1800
Received By:	[illegible]	Date/Time:	6/26/18 908
Cooler ID(s):	8645	Temperature(s):	2°

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060725	Split:	Workorder ID: 1816954	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/14/2018 07:40	129_061418	1816954001		Water	A	1	A
2	06/14/2018 08:05	120_061418	1816954002		Water	A	1	A
3	06/14/2018 08:15	123_061418	1816954003		Water	A	1	A
4	06/14/2018 08:35	109_061418	1816954004		Water	A	1	A
5	06/14/2018 09:30	MW3_061418	1816954005		Water	A	1	A
6	06/14/2018 10:30	18cptMW07_061418	1816954006		Water	A	1	A
7	06/14/2018 11:30	MW19_061418	1816954007		Water	A	1	A
8	06/14/2018 12:25	17WW08_061418	1816954008		Water	A	1	A
9	06/14/2018 13:30	18cptMW26SW_061418	1816954009		Water	A	1	A
10								

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ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/16/2018 09:08	ALS Sample Receiving	Sample Login
Julie Warath	6/18/18 1300	LB	storage
R.33.1	6.19.18/10.35	T.Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 816954

Date/Time of Receipt: 6/16/18 908

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8145	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) Monet Williams (Printed Name) 6/16/18 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc Revised 01/01/2018

ALS

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 15JUN18
ACTWGT: 15.35 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060725 - RJ

FedEx Express

E

J171016102001dv

TRK# 0201 4380 9530 0779

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 BTFA

84123
UT-US SLC

Part # 159469-434 RIT2 EXP 03/19

546C2/93DF/53C1

Batch Worklist

Batch: ELMS/ 2106 **Created:** 6/19/2018 15:43 **Instrument:** LCMS04 **HBN:** 217071

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1816951 [ENV_LVL4]
Workorder: 1816952 [ENV_LVL4]
Workorder: 1816954 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	606011	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018
2	606012	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
3	606013	ICS for HBN 217071 [ELMS/2106]				ICS	3		E6850..D3Q	5311		6/28/2018	6/19/2018
4	606014	LMB for HBN 217071 [ELMS/2106]				LMB	3		E6850Q413Q	5311		6/28/2018	6/19/2018
5	606015	LCS for HBN 217071 [ELMS/2106]				LCS	3		E6850Q413Q	5311		6/28/2018	6/19/2018
6	1816951001	LH18/24-SP650_061318				SAMPLE	3	1816951001-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
7	606016	LH18/24-SP650...(1816951001MS)				MS	3		E6850Q413Q	5311		6/28/2018	6/19/2018
8	606017	LH18/24-SP65...(1816951001MSD)				MSD	3		E6850Q413Q	5311		6/28/2018	6/19/2018
9	1816952001	102_061318				SAMPLE	3	1816952001-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
10	1816952002	MW12_061318				SAMPLE	3	1816952002-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
11	1816952003	MW12_061318_a				SAMPLE	3	1816952003-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
12	1816952004	18CPTMW14_061318				SAMPLE	3	1816952004-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
13	1816952005	18CPTMW24_061318				SAMPLE	3	1816952005-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
14	1816952006	C08_061318				SAMPLE	3	1816952006-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/20/2018
15	1816952007	MW16_061318				SAMPLE	3	1816952007-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
16	1816954001	129_061418				SAMPLE	3	1816954001-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
17	1816954002	120_061418				SAMPLE	3	1816954002-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
18	606018	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018
19	606019	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
20	1816954003	123_061418				SAMPLE	3	1816954003-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
21	1816954004	109_061418				SAMPLE	3	1816954004-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
22	1816954005	MW3_061418				SAMPLE	3	1816954005-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
23	1816954006	18cptMW07_061418				SAMPLE	3	1816954006-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
24	1816954007	MW19_061418				SAMPLE	3	1816954007-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
25	1816954008	17WW08_061418				SAMPLE	3	1816954008-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
26	1816954009	18cptMW26SW_061418				SAMPLE	3	1816954009-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
27	606020	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
28	606021	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
29	606052	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/20/2018
30	606053	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/20/2018
31	606054	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/20/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1816951 (001); 1816952 (001-07); 1816954 (001-09)
ELMS Batch/HBN ID: 2106 (217071)
Prep Date: 06/19/2018 Analysis Date: 06/19,20/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18P.s & 19JUN18Q.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 606015: Target = 5.0µg/L. ASTM type II water was used for LMB 606014.

MS/MSD: MS/MSD was performed on sample 1816951001 (Client ID: LH18/24-SP650_061318). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1816952001 – 10; 1816952004/1816954001/04 – 100; 1816954002/05 – 1,000. Samples 1816951001 and 1816952006 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters. The initial CCV (606051) analyzed on 06/20/18 for sequence 19JUN18Q.s was a corrupted file and could not be used. The LODV (1.0µg/L - 606052) that was analyzed next passes the method criteria of +/- 15%
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 19JUNP17.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\217071-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
~~36733~~	~~CLO4 STOCK~~	~~6850 Stock AccStd 1,000ug/mL~~	~~CLO4 STOCK~~	~~0.1 mL~~	~~10/04/2018~~

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard:	41827	**Created By:**	Thomas Bosch	**Amount:**	10 mL
MFG:	ALS/SLC	**Create Date:**	05/09/2018 10:05AM	**Expires:**	05/09/2019
MFG Lot:	TNB: 05/09/2018	**Verified By:**	Thomas Bosch	**Usable:**	Yes
Pipette ID:	Not Provided	**Verify Date:**		**Lab Lot:**	CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
~~36748~~	~~CLO4 QCSTOCK~~	~~6850 QC Stock STD 1,000ug/mL~~	~~CLO4 QC STOCK~~	~~0.1 mL~~	~~03/31/2020~~

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

Page 1 of 1

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/IND-001
Rev. 5/16

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 11, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060825**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 8 sample(s) on Jun 16, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: RJ.MODASHIA

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060825

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060825-01	18CPTMW22SW_061518	Groundwater		15-Jun-2018 08:45	16-Jun-2018 09:00	☐
HS18060825-02	MW20_061518	Groundwater		15-Jun-2018 09:30	16-Jun-2018 09:00	☐
HS18060825-03	18CPTMW22R_061518	Groundwater		15-Jun-2018 10:15	16-Jun-2018 09:00	☐
HS18060825-04	18CPTMW22DW_061518	Groundwater		15-Jun-2018 11:05	16-Jun-2018 09:00	☐
HS18060825-05	126_061518	Groundwater		15-Jun-2018 12:00	16-Jun-2018 09:00	☐
HS18060825-06	126_061518_a	Groundwater		15-Jun-2018 12:00	16-Jun-2018 09:00	☐
HS18060825-07	18CPTMW16_061518	Groundwater		15-Jun-2018 13:45	16-Jun-2018 09:00	☐
HS18060825-08	Trip Blank	Water	ALS-051618-50	15-Jun-2018 00:00	16-Jun-2018 09:00	☐

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060825

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129659

Sample ID: LCSD-129659

- LCS/LCSD RPD was above the control limits for surrogate 2-Fluorobiphenyl

GCMS Volatiles by Method SW8260

Batch ID: R318368

Sample ID: MW20_061518 (HS18060825-02)

- Surrogate Toluene-d8 exceeded recovery limits. Sample is ND.

Sample ID: 18CPTMW22SW_061518 (HS18060825-01MS)

- Numerous compounds outside recovery limits on MS/MSD due to suspect matrix effect.

Metals by Method SW7470

Batch ID: 129715

Sample ID: HS18060970-01MS

- MS and MSD are for an unrelated sample

Metals by Method SW6020

Batch ID: 129615

Sample ID: HS18060725-05MS

- MS/MSD and DUPs are for an unrelated sample

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22SW_061518
Collection Date: 15-Jun-2018 08:45

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 14:30
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 14:30
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 14:30
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 14:30
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 14:30
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22SW_061518
Collection Date: 15-Jun-2018 08:45

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 14:30
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 14:30
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:30
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Trichloroethene	**2.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	20-Jun-2018 14:30
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:30
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 14:30*
Surr: 4-Bromofluorobenzene	*97.9*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 14:30*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 14:30*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 14:30*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.43**		**0.010**	**0.010**	**0.010**	**ug/L**	1	25-Jun-2018 12:25
Surr: 2-Fluorobiphenyl	*99.3*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 12:25*
Surr: 4-Terphenyl-d14	*57.3*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 12:25*
Surr: Nitrobenzene-d5	*44.6*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 12:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22SW_061518
Collection Date: 15-Jun-2018 08:45

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.174**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:16
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:16
Arsenic	**0.000721**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:16
Barium	**0.242**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:16
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:16
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:16
Calcium	**141**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:16
Chromium	**0.0374**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:16
Cobalt	0.00100	U	0.000200	0.00100	0.00500	mg/L	1	21-Jun-2018 13:16
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 13:16
Iron	**0.109**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:16
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:16
Magnesium	**6.60**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:16
Manganese	**0.0895**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:16
Nickel	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:16
Potassium	**159**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:16
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 15:58
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:16
Sodium	**266**		**0.140**	**1.00**	**2.00**	**mg/L**	10	21-Jun-2018 15:38
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:16
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:16
Zinc	**0.00543**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:16
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 22-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	22-Jun-2018 14:00
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	05-Jul-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW20_061518
Collection Date: 15-Jun-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 16:11
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 16:11
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 16:11
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 16:11
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 16:11
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW20_061518
Collection Date: 15-Jun-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 16:11
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 16:11
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:11
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:11
Surr: 1,2-Dichloroethane-d4	*88.0*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 16:11*
Surr: 4-Bromofluorobenzene	*108*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 16:11*
Surr: Dibromofluoromethane	*96.3*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 16:11*
Surr: Toluene-d8	*114*	*S*		**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 16:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW20_061518
Collection Date: 15-Jun-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**1.15**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:18
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:18
Arsenic	**0.000508**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:18
Barium	**0.469**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:18
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:18
Cadmium	**0.000301**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:18
Calcium	**41.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:18
Chromium	**0.0140**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:18
Cobalt	**0.0219**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:18
Copper	**0.00362**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:18
Iron	**2.16**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:18
Lead	**0.00145**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:18
Magnesium	**11.3**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:18
Manganese	**0.294**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:18
Nickel	**0.554**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:18
Potassium	**0.855**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:18
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:18
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:18
Sodium	**58.9**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:18
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:18
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:18
Zinc	**0.00850**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:18
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 22-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	22-Jun-2018 14:02
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	05-Jul-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22R_061518
Collection Date: 15-Jun-2018 10:15

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 16:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 16:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 16:36
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 16:36
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 16:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22R_061518
Collection Date: 15-Jun-2018 10:15

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 16:36
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 16:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 16:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 16:36
Surr: 1,2-Dichloroethane-d4	*88.7*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 16:36*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 16:36*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 16:36*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 16:36*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	25-Jun-2018 12:46
Surr: 2-Fluorobiphenyl	*110*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 12:46*
Surr: 4-Terphenyl-d14	*110*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 12:46*
Surr: Nitrobenzene-d5	*56.1*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 12:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22R_061518
Collection Date: 15-Jun-2018 10:15

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**13.5**		**0.0900**	**0.125**	**0.500**	**mg/L**	50	21-Jun-2018 15:40
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:20
Arsenic	**0.00347**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:20
Barium	**0.280**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:20
Beryllium	**0.00150**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:20
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:20
Calcium	**2.72**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:20
Chromium	**0.0156**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:20
Cobalt	**0.0199**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:20
Copper	**0.0120**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:20
Iron	**16.8**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:20
Lead	**0.0107**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:20
Magnesium	**2.93**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:20
Manganese	**0.145**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:20
Nickel	**0.0156**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:20
Potassium	**1.35**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:20
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:20
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:20
Sodium	**23.0**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:20
Thallium	**0.000223**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:20
Vanadium	**0.0248**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:20
Zinc	**0.0473**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:20
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 22-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	22-Jun-2018 14:04
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	05-Jul-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22DW_061518
Collection Date: 15-Jun-2018 11:05

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 17:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 17:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 17:01
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 17:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 17:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22DW_061518
Collection Date: 15-Jun-2018 11:05

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 17:01
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 17:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:01
Surr: 1,2-Dichloroethane-d4	*87.5*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 17:01*
Surr: 4-Bromofluorobenzene	*99.1*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 17:01*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 17:01*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 17:01*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	25-Jun-2018 13:07
Surr: 2-Fluorobiphenyl	*103*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 13:07*
Surr: 4-Terphenyl-d14	*70.8*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 13:07*
Surr: Nitrobenzene-d5	*49.8*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 13:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW22DW_061518
Collection Date: 15-Jun-2018 11:05

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.121**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:22
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:22
Arsenic	**0.00702**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:22
Barium	**0.101**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:22
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:22
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:22
Calcium	**11.7**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:22
Chromium	0.00100	U	0.000400	0.00100	0.00400	mg/L	1	21-Jun-2018 13:22
Cobalt	**0.000655**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:22
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 13:22
Iron	**2.73**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:22
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:22
Magnesium	**5.26**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:22
Manganese	**0.101**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:22
Nickel	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:22
Potassium	**2.49**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:22
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:22
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:22
Sodium	**231**		**0.140**	**1.00**	**2.00**	**mg/L**	10	21-Jun-2018 15:42
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:22
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:22
Zinc	**0.00401**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:22
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 22-Jun-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	22-Jun-2018 14:05
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	05-Jul-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 126_061518
Collection Date: 15-Jun-2018 12:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 17:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 17:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 17:25
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 17:25
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 17:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 126_061518
Collection Date: 15-Jun-2018 12:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 17:25
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 17:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:25
Surr: 1,2-Dichloroethane-d4	*87.3*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 17:25*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 17:25*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 17:25*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 17:25*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	25-Jun-2018 13:27
Surr: 2-Fluorobiphenyl	*97.6*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 13:27*
Surr: 4-Terphenyl-d14	*97.9*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 13:27*
Surr: Nitrobenzene-d5	*52.4*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 13:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 126_061518
Collection Date: 15-Jun-2018 12:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.0446**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:24
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:24
Arsenic	**0.00266**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:24
Barium	**9.13**		**0.0950**	**0.125**	**0.200**	**mg/L**	50	21-Jun-2018 15:44
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:24
Cadmium	**0.000521**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:24
Calcium	**292**		**1.70**	**5.00**	**25.0**	**mg/L**	50	21-Jun-2018 15:44
Chromium	0.00100	U	0.000400	0.00100	0.00400	mg/L	1	21-Jun-2018 13:24
Cobalt	**0.0113**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:24
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 13:24
Iron	**2.26**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:24
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:24
Magnesium	**231**		**0.500**	**5.00**	**10.0**	**mg/L**	50	21-Jun-2018 15:44
Manganese	**0.197**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:24
Nickel	**0.0131**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:24
Potassium	**3.54**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:24
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 16:00
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:24
Sodium	**787**		**0.700**	**5.00**	**10.0**	**mg/L**	50	21-Jun-2018 15:44
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:24
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:24
Zinc	**0.0372**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:24
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 22-Jun-2018		Analyst: JBA
Mercury	**0.0000380**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	22-Jun-2018 14:11
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	05-Jul-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 126_061518_a
Collection Date: 15-Jun-2018 12:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 17:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 17:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 17:50
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 17:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 17:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 126_061518_a
Collection Date: 15-Jun-2018 12:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 17:50
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 17:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 17:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 17:50
Surr: 1,2-Dichloroethane-d4	*88.0*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 17:50*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 17:50*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 17:50*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 17:50*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	28-Jun-2018 13:37
Surr: 2-Fluorobiphenyl	*56.3*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 13:37*
Surr: 4-Terphenyl-d14	*60.4*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 13:37*
Surr: Nitrobenzene-d5	*81.4*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 13:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 126_061518_a
Collection Date: 15-Jun-2018 12:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.0405**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:26
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:26
Arsenic	**0.00281**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:26
Barium	**9.03**		**0.0950**	**0.125**	**0.200**	**mg/L**	50	21-Jun-2018 15:46
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:26
Cadmium	**0.000481**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:26
Calcium	**286**		**1.70**	**5.00**	**25.0**	**mg/L**	50	21-Jun-2018 15:46
Chromium	0.00100	U	0.000400	0.00100	0.00400	mg/L	1	21-Jun-2018 13:26
Cobalt	**0.0109**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:26
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 13:26
Iron	**2.27**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:26
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:26
Magnesium	**226**		**0.500**	**5.00**	**10.0**	**mg/L**	50	21-Jun-2018 15:46
Manganese	**0.197**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:26
Nickel	**0.0133**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:26
Potassium	**3.54**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:26
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 16:02
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:26
Sodium	**793**		**0.700**	**5.00**	**10.0**	**mg/L**	50	21-Jun-2018 15:46
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:26
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:26
Zinc	**0.0372**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:26
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 22-Jun-2018		Analyst: JBA
Mercury	**0.0000300**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	22-Jun-2018 14:12
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	05-Jul-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

ANALYTICAL REPORT

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW16_061518
Collection Date: 15-Jun-2018 13:45

WorkOrder:HS18060825
Lab ID:HS18060825-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	25-Jun-2018 14:29
Surr: 2-Fluorobiphenyl	*100*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 14:29*
Surr: 4-Terphenyl-d14	*46.4*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 14:29*
Surr: Nitrobenzene-d5	*55.5*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 14:29*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	05-Jul-2018 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 15-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 14:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	20-Jun-2018 14:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	20-Jun-2018 14:05
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 14:05
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	20-Jun-2018 14:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 15-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060825
Lab ID:HS18060825-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	20-Jun-2018 14:05
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	20-Jun-2018 14:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	20-Jun-2018 14:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	20-Jun-2018 14:05
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2018 14:05*
Surr: 4-Bromofluorobenzene	*98.5*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2018 14:05*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2018 14:05*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2018 14:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 11-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

Batch ID: 129615 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060825-01	1	10	10 (mL)	1
HS18060825-02	1	10	10 (mL)	1
HS18060825-03	1	10	10 (mL)	1
HS18060825-04	1	10	10 (mL)	1
HS18060825-05	1	10	10 (mL)	1
HS18060825-06	1	10	10 (mL)	1

Batch ID: 129659 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060825-01	1	1000	1 (mL)	0.001
HS18060825-03	1	1000	1 (mL)	0.001
HS18060825-04	1	1000	1 (mL)	0.001
HS18060825-05	1	1000	1 (mL)	0.001
HS18060825-06	1	1000	1 (mL)	0.001
HS18060825-07	1	1000	1 (mL)	0.001

Batch ID: 129715 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060825-01	1	10 (mL)	10 (mL)	1
HS18060825-02	1	10 (mL)	10 (mL)	1
HS18060825-03	1	10 (mL)	10 (mL)	1
HS18060825-04	1	10 (mL)	10 (mL)	1
HS18060825-05	1	10 (mL)	10 (mL)	1
HS18060825-06	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129615	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060825-01	18CPTMW22SW_061518	15 Jun 2018 08:45		20 Jun 2018 13:53	21 Jun 2018 15:58	1
HS18060825-01	18CPTMW22SW_061518	15 Jun 2018 08:45		20 Jun 2018 13:53	21 Jun 2018 15:38	10
HS18060825-01	18CPTMW22SW_061518	15 Jun 2018 08:45		20 Jun 2018 13:53	21 Jun 2018 13:16	1
HS18060825-02	MW20_061518	15 Jun 2018 09:30		20 Jun 2018 13:53	21 Jun 2018 13:18	1
HS18060825-03	18CPTMW22R_061518	15 Jun 2018 10:15		20 Jun 2018 13:53	21 Jun 2018 15:40	50
HS18060825-03	18CPTMW22R_061518	15 Jun 2018 10:15		20 Jun 2018 13:53	21 Jun 2018 13:20	1
HS18060825-04	18CPTMW22DW_061518	15 Jun 2018 11:05		20 Jun 2018 13:53	21 Jun 2018 15:42	10
HS18060825-04	18CPTMW22DW_061518	15 Jun 2018 11:05		20 Jun 2018 13:53	21 Jun 2018 13:22	1
HS18060825-05	126_061518	15 Jun 2018 12:00		20 Jun 2018 13:53	21 Jun 2018 16:00	1
HS18060825-05	126_061518	15 Jun 2018 12:00		20 Jun 2018 13:53	21 Jun 2018 15:44	50
HS18060825-05	126_061518	15 Jun 2018 12:00		20 Jun 2018 13:53	21 Jun 2018 13:24	1
HS18060825-06	126_061518_a	15 Jun 2018 12:00		20 Jun 2018 13:53	21 Jun 2018 16:02	1
HS18060825-06	126_061518_a	15 Jun 2018 12:00		20 Jun 2018 13:53	21 Jun 2018 15:46	50
HS18060825-06	126_061518_a	15 Jun 2018 12:00		20 Jun 2018 13:53	21 Jun 2018 13:26	1
Batch ID 129659	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060825-01	18CPTMW22SW_061518	15 Jun 2018 08:45		21 Jun 2018 10:00	25 Jun 2018 12:25	1
HS18060825-03	18CPTMW22R_061518	15 Jun 2018 10:15		21 Jun 2018 10:00	25 Jun 2018 12:46	1
HS18060825-04	18CPTMW22DW_061518	15 Jun 2018 11:05		21 Jun 2018 10:00	25 Jun 2018 13:07	1
HS18060825-05	126_061518	15 Jun 2018 12:00		21 Jun 2018 10:00	25 Jun 2018 13:27	1
HS18060825-06	126_061518_a	15 Jun 2018 12:00		21 Jun 2018 10:00	28 Jun 2018 13:37	1
HS18060825-07	18CPTMW16_061518	15 Jun 2018 13:45		21 Jun 2018 10:00	25 Jun 2018 14:29	1
Batch ID 129715	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060825-01	18CPTMW22SW_061518	15 Jun 2018 08:45		22 Jun 2018 10:11	22 Jun 2018 14:00	1
HS18060825-02	MW20_061518	15 Jun 2018 09:30		22 Jun 2018 10:11	22 Jun 2018 14:02	1
HS18060825-03	18CPTMW22R_061518	15 Jun 2018 10:15		22 Jun 2018 10:11	22 Jun 2018 14:04	1
HS18060825-04	18CPTMW22DW_061518	15 Jun 2018 11:05		22 Jun 2018 10:11	22 Jun 2018 14:05	1
HS18060825-05	126_061518	15 Jun 2018 12:00		22 Jun 2018 10:11	22 Jun 2018 14:11	1
HS18060825-06	126_061518_a	15 Jun 2018 12:00		22 Jun 2018 10:11	22 Jun 2018 14:12	1
Batch ID R318368	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060825-08	Trip Blank	15 Jun 2018 00:00			20 Jun 2018 14:05	1
Batch ID R318368	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060825-01	18CPTMW22SW_061518	15 Jun 2018 08:45			20 Jun 2018 14:30	1
HS18060825-02	MW20_061518	15 Jun 2018 09:30			20 Jun 2018 16:11	1
HS18060825-03	18CPTMW22R_061518	15 Jun 2018 10:15			20 Jun 2018 16:36	1
HS18060825-04	18CPTMW22DW_061518	15 Jun 2018 11:05			20 Jun 2018 17:01	1
HS18060825-05	126_061518	15 Jun 2018 12:00			20 Jun 2018 17:25	1
HS18060825-06	126_061518_a	15 Jun 2018 12:00			20 Jun 2018 17:50	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R319220	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060825-01	18CPTMW22SW_061518	15 Jun 2018 08:45			05 Jul 2018 17:50	1
HS18060825-02	MW20_061518	15 Jun 2018 09:30			05 Jul 2018 17:50	1
HS18060825-03	18CPTMW22R_061518	15 Jun 2018 10:15			05 Jul 2018 17:50	1
HS18060825-04	18CPTMW22DW_061518	15 Jun 2018 11:05			05 Jul 2018 17:50	1
HS18060825-05	126_061518	15 Jun 2018 12:00			05 Jul 2018 17:50	1
HS18060825-06	126_061518_a	15 Jun 2018 12:00			05 Jul 2018 17:50	1
HS18060825-07	18CPTMW16_061518	15 Jun 2018 13:45			05 Jul 2018 17:50	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:52**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619232** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.002896	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01128	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.02701	0.200								J
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.1074	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:54**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619233** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1009	0.0100	0.1	0	101	80 - 120				
Antimony	0.0511	0.00200	0.05	0	102	80 - 120				
Arsenic	0.04875	0.00200	0.05	0	97.5	80 - 120				
Barium	0.04803	0.00400	0.05	0	96.1	80 - 120				
Beryllium	0.04748	0.00200	0.05	0	95.0	80 - 120				
Cadmium	0.04859	0.00200	0.05	0	97.2	80 - 120				
Calcium	4.942	0.500	5	0	98.8	80 - 120				
Chromium	0.0485	0.00400	0.05	0	97.0	80 - 120				
Cobalt	0.04995	0.00500	0.05	0	99.9	80 - 120				
Copper	0.05088	0.00200	0.05	0	102	80 - 120				
Iron	4.893	0.200	5	0	97.9	80 - 120				
Lead	0.05088	0.00200	0.05	0	102	80 - 120				
Magnesium	4.811	0.200	5	0	96.2	80 - 120				
Manganese	0.04963	0.00500	0.05	0	99.3	80 - 120				
Nickel	0.0502	0.00200	0.05	0	100	80 - 120				
Potassium	5.037	0.200	5	0	101	80 - 120				
Selenium	0.0552	0.00200	0.05	0	110	80 - 120				
Silver	0.05032	0.00200	0.05	0	101	80 - 120				
Sodium	4.979	0.200	5	0	99.6	80 - 120				
Thallium	0.04338	0.00200	0.05	0	86.8	80 - 120				
Vanadium	0.04673	0.00500	0.05	0	93.5	80 - 120				
Zinc	0.05053	0.00400	0.05	0	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060725-05MS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:02**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619237** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.105	0.0100	0.1	0.005904	99.1	80 - 120				
Antimony	0.0519	0.00200	0.05	-0.000096	104	80 - 120				
Arsenic	0.05057	0.00200	0.05	0.000306	101	80 - 120				
Barium	0.5785	0.00400	0.05	0.5156	126	80 - 120				SO
Beryllium	0.05107	0.00200	0.05	0.000003	102	80 - 120				
Cadmium	0.05041	0.00200	0.05	0.00029	100	80 - 120				
Calcium	31.34	0.500	5	26.18	103	80 - 120				O
Chromium	0.05229	0.00400	0.05	0.007222	90.1	80 - 120				
Cobalt	0.05401	0.00500	0.05	0.005436	97.2	80 - 120				
Copper	0.05074	0.00200	0.05	0.000504	100	80 - 120				
Iron	5.52	0.200	5	0.7229	95.9	80 - 120				
Lead	0.04911	0.00200	0.05	0.00009	98.0	80 - 120				
Magnesium	20.22	0.200	5	15.4	96.5	80 - 120				
Manganese	1.101	0.00500	0.05	1.032	137	80 - 120				SO
Nickel	0.05234	0.00200	0.05	0.003916	96.8	80 - 120				
Potassium	6.307	0.200	5	1.542	95.3	80 - 120				
Selenium	0.05076	0.00200	0.05	0.000443	101	80 - 120				
Silver	0.04731	0.00200	0.05	0.000008	94.6	80 - 120				
Sodium	242.1	0.200	5	235.2	137	80 - 120				SEO
Thallium	0.04553	0.00200	0.05	0.00007	90.9	80 - 120				
Vanadium	0.0497	0.00500	0.05	-0.000427	100	80 - 120				
Zinc	0.05692	0.00400	0.05	0.006181	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060725-05MSD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:04**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619238** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1044	0.0100	0.1	0.005904	98.5	80 - 120	0.105	0.558	20	
Antimony	0.05084	0.00200	0.05	-0.000096	102	80 - 120	0.0519	2.06	20	
Arsenic	0.04978	0.00200	0.05	0.000306	99.0	80 - 120	0.05057	1.56	20	
Barium	0.5982	0.00400	0.05	0.5156	165	80 - 120	0.5785	3.35	20	SO
Beryllium	0.05207	0.00200	0.05	0.000003	104	80 - 120	0.05107	1.93	20	
Cadmium	0.04884	0.00200	0.05	0.00029	97.1	80 - 120	0.05041	3.17	20	
Calcium	32.54	0.500	5	26.18	127	80 - 120	31.34	3.77	20	SO
Chromium	0.05042	0.00400	0.05	0.007222	86.4	80 - 120	0.05229	3.63	20	
Cobalt	0.0538	0.00500	0.05	0.005436	96.7	80 - 120	0.05401	0.393	20	
Copper	0.05026	0.00200	0.05	0.000504	99.5	80 - 120	0.05074	0.951	20	
Iron	5.426	0.200	5	0.7229	94.1	80 - 120	5.52	1.71	20	
Lead	0.04811	0.00200	0.05	0.00009	96.0	80 - 120	0.04911	2.06	20	
Magnesium	20.4	0.200	5	15.4	100	80 - 120	20.22	0.889	20	
Manganese	1.099	0.00500	0.05	1.032	135	80 - 120	1.101	0.121	20	SO
Nickel	0.05334	0.00200	0.05	0.003916	98.8	80 - 120	0.05234	1.89	20	
Potassium	6.412	0.200	5	1.542	97.4	80 - 120	6.307	1.66	20	
Selenium	0.05279	0.00200	0.05	0.000443	105	80 - 120	0.05076	3.91	20	
Silver	0.04636	0.00200	0.05	0.000008	92.7	80 - 120	0.04731	2.04	20	
Sodium	245.3	0.200	5	235.2	201	80 - 120	242.1	1.31	20	SEO
Thallium	0.04533	0.00200	0.05	0.00007	90.5	80 - 120	0.04553	0.434	20	
Vanadium	0.04896	0.00500	0.05	-0.000427	98.8	80 - 120	0.0497	1.49	20	
Zinc	0.05676	0.00400	0.05	0.006181	101	80 - 120	0.05692	0.276	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:06**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619239** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09658	0.0100	0.1	0.005904	90.7	75 - 125				
Antimony	0.09212	0.00200	0.1	-0.000096	92.2	75 - 125				
Arsenic	0.0985	0.00200	0.1	0.000306	98.2	75 - 125				
Barium	0.6318	0.00400	0.1	0.5156	116	75 - 125				O
Beryllium	0.09555	0.00200	0.1	0.000003	95.6	75 - 125				
Cadmium	0.09675	0.00200	0.1	0.00029	96.5	75 - 125				
Calcium	36.95	0.500	10	26.18	108	75 - 125				
Chromium	0.1005	0.00400	0.1	0.007222	93.3	75 - 125				
Cobalt	0.1015	0.00500	0.1	0.005436	96.0	75 - 125				
Copper	0.09866	0.00200	0.1	0.000504	98.2	75 - 125				
Iron	10.25	0.200	10	0.7229	95.3	75 - 125				
Lead	0.09675	0.00200	0.1	0.00009	96.7	75 - 125				
Magnesium	24.8	0.200	10	15.4	94.0	75 - 125				
Manganese	1.165	0.00500	0.1	1.032	133	75 - 125				SO
Nickel	0.09842	0.00200	0.1	0.003916	94.5	75 - 125				
Potassium	10.9	0.200	10	1.542	93.5	75 - 125				
Selenium	0.106	0.00200	0.1	0.000443	106	75 - 125				
Silver	0.09238	0.00200	0.1	0.000008	92.4	75 - 125				
Thallium	0.09414	0.00200	0.1	0.00007	94.1	75 - 125				
Vanadium	0.0963	0.00500	0.1	-0.000427	96.7	75 - 125				
Zinc	0.107	0.00400	0.1	0.006181	101	75 - 125				

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 15:28**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619524** PrepDate: **20-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	314.2	2.00	100	222.8	91.3	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:00**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619236** PrepDate: **20-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.0125	0.0500					0.005904	0	10	U
Antimony	0.00500	0.0100					-0.000096	0	10	U
Arsenic	0.00500	0.0100					0.000306	0	10	U
Barium	0.5185	0.0200					0.5156	0.553	10	
Beryllium	0.00500	0.0100					0.000003	0	10	U
Cadmium	0.00500	0.0100					0.00029	0	10	U
Calcium	26.96	2.50					26.18	2.97	10	
Chromium	0.00713	0.0200					0.007222	0	10	J
Cobalt	0.005761	0.0250					0.005436	0	10	J
Copper	0.0100	0.0100					0.000504	0	10	U
Iron	0.7586	1.00					0.7229	0	10	J
Lead	0.00500	0.0100					0.00009	0	10	U
Magnesium	16.29	1.00					15.4	5.81	10	
Manganese	1.091	0.0250					1.032	5.71	10	
Nickel	0.00500	0.0100					0.003916	0	10	U
Selenium	0.0100	0.0100					0.000443	0	10	U
Silver	0.00500	0.0100					0.000008	0	10	U
Thallium	0.00500	0.0100					0.00007	0	10	U
Vanadium	0.00500	0.0250					-0.000427	0	10	U
Zinc	0.0125	0.0200					0.006181	0	10	U

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 15:26**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619523** PrepDate: **20-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	209.2	10.0					222.8	6.11	10	

The following samples were analyzed in this batch: HS18060825-01 HS18060825-02 HS18060825-03 HS18060825-04 HS18060825-05 HS18060825-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129715 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129715** Units: **mg/L** Analysis Date: **22-Jun-2018 13:33**
Client ID: Run ID: **HG03_318529** SeqNo: **4622339** PrepDate: **22-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129715** Units: **mg/L** Analysis Date: **22-Jun-2018 13:35**
Client ID: Run ID: **HG03_318529** SeqNo: **4622340** PrepDate: **22-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00471	0.000200	0.005	0	94.2	80 - 120				

MS Sample ID: **HS18060970-01MS** Units: **mg/L** Analysis Date: **22-Jun-2018 13:38**
Client ID: Run ID: **HG03_318529** SeqNo: **4622342** PrepDate: **22-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0012	0.000200	0.005	0.00007	22.6	75 - 125				S

MSD Sample ID: **HS18060970-01MSD** Units: **mg/L** Analysis Date: **22-Jun-2018 13:40**
Client ID: Run ID: **HG03_318529** SeqNo: **4622343** PrepDate: **22-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0012	0.000200	0.005	0.00007	22.6	75 - 125	0.0012	0	20	S

The following samples were analyzed in this batch: HS18060825-01 HS18060825-02 HS18060825-03 HS18060825-04 HS18060825-05 HS18060825-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: 129659 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 10:54**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625531** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1011*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06319*	*0*	*0.08*	*0*	*79.0*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05838*	*0*	*0.08*	*0*	*73.0*	*40 - 140*				

LCS Sample ID: **LCS-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:14**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625532** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07838	0.010	0.08	0	98.0	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08025*	*0*	*0.08*	*0*	*100*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06393*	*0*	*0.08*	*0*	*79.9*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0471*	*0*	*0.08*	*0*	*58.9*	*40 - 140*				

LCSD Sample ID: **LCSD-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:35**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625533** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07178	0.010	0.08	0	89.7	40 - 140	0.07838	8.79	20	
Surr: 2-Fluorobiphenyl	*0.1005*	*0*	*0.08*	*0*	*126*	*40 - 140*	*0.08025*	*22.4*	*20*	R
Surr: 4-Terphenyl-d14	*0.06624*	*0*	*0.08*	*0*	*82.8*	*40 - 140*	*0.06393*	*3.56*	*20*	
Surr: Nitrobenzene-d5	*0.057*	*0*	*0.08*	*0*	*71.2*	*40 - 140*	*0.0471*	*19*	*20*	

The following samples were analyzed in this batch: HS18060825-01 HS18060825-03 HS18060825-04 HS18060825-05 HS18060825-06 HS18060825-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: **R318368** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 13:14**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: R318368 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 13:14**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.47*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.88*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*50.23*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*52.69*	*1.0*	*50*	*0*	*105*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 12:24**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618345** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.46	1.0	50	0	88.9	78 - 124				
1,1,1-Trichloroethane	43.15	1.0	50	0	86.3	74 - 131				
1,1,2,2-Tetrachloroethane	41.6	1.0	50	0	83.2	71 - 121				
1,1,2-Trichloroethane	43.2	1.0	50	0	86.4	80 - 119				
1,1-Dichloroethane	43.55	1.0	50	0	87.1	77 - 125				
1,1-Dichloroethene	43.62	1.0	50	0	87.2	71 - 131				
1,1-Dichloropropene	40.16	1.0	50	0	80.3	78 - 125				
1,2,3-Trichlorobenzene	43.4	1.0	50	0	86.8	69 - 129				
1,2,3-Trichloropropane	41.69	1.0	50	0	83.4	73 - 122				
1,2,4-Trichlorobenzene	40.49	1.0	50	0	81.0	69 - 130				
1,2,4-Trimethylbenzene	39.76	1.0	50	0	79.5	76 - 124				
1,2-Dibromo-3-chloropropane	39.39	1.0	50	0	78.8	62 - 128				
1,2-Dibromoethane	45.37	1.0	50	0	90.7	77 - 121				
1,2-Dichlorobenzene	41.84	1.0	50	0	83.7	80 - 119				
1,2-Dichloroethane	46	1.0	50	0	92.0	73 - 128				
1,2-Dichloropropane	42.79	1.0	50	0	85.6	78 - 122				
1,3,5-Trimethylbenzene	48.22	1.0	50	0	96.4	75 - 124				
1,3-Dichlorobenzene	41.37	1.0	50	0	82.7	80 - 119				
1,3-Dichloropropane	44.63	1.0	50	0	89.3	80 - 119				
1,4-Dichlorobenzene	41.7	1.0	50	0	83.4	79 - 118				
2,2-Dichloropropane	42.82	1.0	50	0	85.6	60 - 139				
2-Butanone	95.45	2.0	100	0	95.5	56 - 143				
2-Chlorotoluene	47.38	1.0	50	0	94.8	79 - 122				
2-Hexanone	98.15	2.0	100	0	98.1	57 - 139				
4-Chlorotoluene	47.08	1.0	50	0	94.2	78 - 122				
4-Isopropyltoluene	42.12	1.0	50	0	84.2	77 - 127				
4-Methyl-2-pentanone	92.24	2.0	100	0	92.2	67 - 130				
Acetone	94.07	2.0	100	0	94.1	39 - 160				
Benzene	42.17	1.0	50	0	84.3	79 - 120				
Bromobenzene	40.14	1.0	50	0	80.3	80 - 120				
Bromochloromethane	46.54	1.0	50	0	93.1	78 - 123				
Bromodichloromethane	45.23	1.0	50	0	90.5	79 - 125				
Bromoform	46.11	1.0	50	0	92.2	66 - 130				
Bromomethane	43.98	1.0	50	0	88.0	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180620** Units: **ug/L** Analysis Date: **20-Jun-2018 12:24**
Client ID: Run ID: **VOA2_318368** SeqNo: **4618345** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	83.07	2.0	100	0	83.1	64 - 133				
Carbon tetrachloride	48.31	1.0	50	0	96.6	72 - 136				
Chlorobenzene	42.54	1.0	50	0	85.1	82 - 118				
Chloroethane	45.59	1.0	50	0	91.2	60 - 138				
Chloroform	42.39	1.0	50	0	84.8	79 - 124				
Chloromethane	39.45	1.0	50	0	78.9	50 - 139				
cis-1,2-Dichloroethene	42.41	1.0	50	0	84.8	78 - 123				
cis-1,3-Dichloropropene	46.88	1.0	50	0	93.8	75 - 124				
Dibromochloromethane	44.92	1.0	50	0	89.8	74 - 126				
Dibromomethane	47.47	1.0	50	0	94.9	79 - 123				
Dichlorodifluoromethane	40.96	1.0	50	0	81.9	32 - 152				
Ethylbenzene	42.27	1.0	50	0	84.5	79 - 121				
Hexachlorobutadiene	43.35	1.0	50	0	86.7	66 - 134				
Isopropylbenzene	43.38	1.0	50	0	86.8	72 - 131				
m,p-Xylene	82.6	2.0	100	0	82.6	80 - 121				
Methylene chloride	40.87	2.0	50	0	81.7	74 - 124				
Naphthalene	41.86	1.0	50	0	83.7	61 - 128				
n-Butylbenzene	45.04	1.0	50	0	90.1	75 - 128				
n-Propylbenzene	47.53	1.0	50	0	95.1	76 - 126				
o-Xylene	42.62	1.0	50	0	85.2	78 - 122				
sec-Butylbenzene	42.11	1.0	50	0	84.2	77 - 126				
Styrene	43.48	1.0	50	0	87.0	78 - 123				
tert-Butylbenzene	48.17	1.0	50	0	96.3	78 - 124				
Tetrachloroethene	42.25	1.0	50	0	84.5	74 - 129				
Toluene	41.05	1.0	50	0	82.1	80 - 121				
trans-1,2-Dichloroethene	42.88	1.0	50	0	85.8	75 - 124				
trans-1,3-Dichloropropene	48.24	1.0	50	0	96.5	73 - 127				
Trichloroethene	44.83	1.0	50	0	89.7	79 - 123				
Trichlorofluoromethane	38.78	1.0	50	0	77.6	65 - 141				
Vinyl chloride	41.4	1.0	50	0	82.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.84*	*1.0*	*50*	*0*	*87.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.17*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.62*	*1.0*	*50*	*0*	*95.2*	*80 - 119*				
Surr: Toluene-d8	*51.17*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: **R318368** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060825-01MS** Units: **ug/L** Analysis Date: **20-Jun-2018 14:55**
Client ID: **18CPTMW22SW_061518** Run ID: **VOA2_318368** SeqNo: **4618350** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	33.6	1.0	50	0	67.2	78 - 124				S
1,1,1-Trichloroethane	31.74	1.0	50	0	63.5	74 - 131				S
1,1,2,2-Tetrachloroethane	34.48	1.0	50	0	69.0	71 - 121				S
1,1,2-Trichloroethane	33.92	1.0	50	0	67.8	80 - 119				S
1,1-Dichloroethane	33.2	1.0	50	0	66.4	77 - 125				S
1,1-Dichloroethene	31.82	1.0	50	0	63.6	71 - 131				S
1,1-Dichloropropene	29.74	1.0	50	0	59.5	78 - 125				S
1,2,3-Trichlorobenzene	30.23	1.0	50	0	60.5	69 - 129				S
1,2,3-Trichloropropane	35.66	1.0	50	0	71.3	73 - 122				S
1,2,4-Trichlorobenzene	29.94	1.0	50	0	59.9	69 - 130				S
1,2,4-Trimethylbenzene	29.51	1.0	50	0	59.0	76 - 124				S
1,2-Dibromo-3-chloropropane	40.08	1.0	50	0	80.2	62 - 128				
1,2-Dibromoethane	35.47	1.0	50	0	70.9	77 - 121				S
1,2-Dichlorobenzene	30.91	1.0	50	0	61.8	80 - 119				S
1,2-Dichloroethane	35.41	1.0	50	0	70.8	73 - 128				S
1,2-Dichloropropane	32.45	1.0	50	0	64.9	78 - 122				S
1,3,5-Trimethylbenzene	35.03	1.0	50	0	70.1	75 - 124				S
1,3-Dichlorobenzene	30.45	1.0	50	0	60.9	80 - 119				S
1,3-Dichloropropane	34.42	1.0	50	0	68.8	80 - 119				S
1,4-Dichlorobenzene	30.44	1.0	50	0	60.9	79 - 118				S
2,2-Dichloropropane	31.28	1.0	50	0	62.6	60 - 139				
2-Butanone	87.99	2.0	100	0	88.0	56 - 143				
2-Chlorotoluene	34.85	1.0	50	0	69.7	79 - 122				S
2-Hexanone	89.87	2.0	100	0	89.9	57 - 139				
4-Chlorotoluene	34.4	1.0	50	0	68.8	78 - 122				S
4-Isopropyltoluene	29.66	1.0	50	0	59.3	77 - 127				S
4-Methyl-2-pentanone	81.95	2.0	100	0	81.9	67 - 130				
Acetone	88.36	2.0	100	0	88.4	39 - 160				
Benzene	31.85	1.0	50	0	63.7	79 - 120				S
Bromobenzene	29.91	1.0	50	0	59.8	80 - 120				S
Bromochloromethane	34.76	1.0	50	0	69.5	78 - 123				S
Bromodichloromethane	34.06	1.0	50	0	68.1	79 - 125				S
Bromoform	35.83	1.0	50	0	71.7	66 - 130				
Bromomethane	30.72	1.0	50	0	61.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: **R318368** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060825-01MS** Units: **ug/L** Analysis Date: **20-Jun-2018 14:55**
Client ID: **18CPTMW22SW_061518** Run ID: **VOA2_318368** SeqNo: **4618350** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	62.42	2.0	100	0	62.4	64 - 133				S
Carbon tetrachloride	34.84	1.0	50	0	69.7	72 - 136				S
Chlorobenzene	31.88	1.0	50	0	63.8	82 - 118				S
Chloroethane	31.04	1.0	50	0	62.1	60 - 138				
Chloroform	32.05	1.0	50	0	64.1	79 - 124				S
Chloromethane	27.4	1.0	50	0	54.8	50 - 139				
cis-1,2-Dichloroethene	32.82	1.0	50	0	65.6	78 - 123				S
cis-1,3-Dichloropropene	34.93	1.0	50	0	69.9	75 - 124				S
Dibromochloromethane	33.87	1.0	50	0	67.7	74 - 126				S
Dibromomethane	35.91	1.0	50	0	71.8	79 - 123				S
Dichlorodifluoromethane	23.14	1.0	50	0	46.3	32 - 152				
Ethylbenzene	31.48	1.0	50	0	63.0	79 - 121				S
Hexachlorobutadiene	27.23	1.0	50	0	54.5	66 - 134				S
Isopropylbenzene	31.85	1.0	50	0	63.7	72 - 131				S
m,p-Xylene	61.73	2.0	100	0	61.7	80 - 121				S
Methylene chloride	30.54	2.0	50	0	61.1	74 - 124				S
Naphthalene	35.74	1.0	50	0	71.5	61 - 128				
n-Butylbenzene	30.85	1.0	50	0	61.7	75 - 128				S
n-Propylbenzene	34.55	1.0	50	0	69.1	76 - 126				S
o-Xylene	31.85	1.0	50	0	63.7	78 - 122				S
sec-Butylbenzene	29.96	1.0	50	0	59.9	77 - 126				S
Styrene	32.42	1.0	50	0	64.8	78 - 123				S
tert-Butylbenzene	34.86	1.0	50	0	69.7	78 - 124				S
Tetrachloroethene	30.01	1.0	50	0	60.0	74 - 129				S
Toluene	31.25	1.0	50	0	62.5	80 - 121				S
trans-1,2-Dichloroethene	32.19	1.0	50	0	64.4	75 - 124				S
trans-1,3-Dichloropropene	35.88	1.0	50	0	71.8	73 - 127				S
Trichloroethene	33.83	1.0	50	1.964	63.7	79 - 123				S
Trichlorofluoromethane	27.2	1.0	50	0	54.4	65 - 141				S
Vinyl chloride	30.83	1.0	50	0	61.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.14*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.51*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*48.87*	*1.0*	*50*	*0*	*97.7*	*80 - 119*				
Surr: Toluene-d8	*51.87*	*1.0*	*50*	*0*	*104*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: **R318368** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS18060825-01MSD** Units: **ug/L** Analysis Date: **20-Jun-2018 15:19**
Client ID: **18CPTMW22SW_061518** Run ID: **VOA2_318368** SeqNo: **4618351** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	33.12	1.0	50	0	66.2	78 - 124	33.6	1.46	20	S
1,1,1-Trichloroethane	30.91	1.0	50	0	61.8	74 - 131	31.74	2.65	20	S
1,1,2,2-Tetrachloroethane	34.95	1.0	50	0	69.9	71 - 121	34.48	1.38	20	S
1,1,2-Trichloroethane	33.54	1.0	50	0	67.1	80 - 119	33.92	1.14	20	S
1,1-Dichloroethane	32.72	1.0	50	0	65.4	77 - 125	33.2	1.45	20	S
1,1-Dichloroethene	31.37	1.0	50	0	62.7	71 - 131	31.82	1.43	20	S
1,1-Dichloropropene	28.59	1.0	50	0	57.2	78 - 125	29.74	3.92	20	S
1,2,3-Trichlorobenzene	30.76	1.0	50	0	61.5	69 - 129	30.23	1.72	20	S
1,2,3-Trichloropropane	35.15	1.0	50	0	70.3	73 - 122	35.66	1.44	20	S
1,2,4-Trichlorobenzene	28.81	1.0	50	0	57.6	69 - 130	29.94	3.87	20	S
1,2,4-Trimethylbenzene	29.73	1.0	50	0	59.5	76 - 124	29.51	0.716	20	S
1,2-Dibromo-3-chloropropane	34.06	1.0	50	0	68.1	62 - 128	40.08	16.2	20	
1,2-Dibromoethane	35.14	1.0	50	0	70.3	77 - 121	35.47	0.931	20	S
1,2-Dichlorobenzene	31.23	1.0	50	0	62.5	80 - 119	30.91	1.03	20	S
1,2-Dichloroethane	35.1	1.0	50	0	70.2	73 - 128	35.41	0.875	20	S
1,2-Dichloropropane	31.21	1.0	50	0	62.4	78 - 122	32.45	3.92	20	S
1,3,5-Trimethylbenzene	34.97	1.0	50	0	69.9	75 - 124	35.03	0.169	20	S
1,3-Dichlorobenzene	30.1	1.0	50	0	60.2	80 - 119	30.45	1.13	20	S
1,3-Dichloropropane	34.25	1.0	50	0	68.5	80 - 119	34.42	0.503	20	S
1,4-Dichlorobenzene	30.11	1.0	50	0	60.2	79 - 118	30.44	1.07	20	S
2,2-Dichloropropane	29.7	1.0	50	0	59.4	60 - 139	31.28	5.2	20	S
2-Butanone	84.97	2.0	100	0	85.0	56 - 143	87.99	3.5	20	
2-Chlorotoluene	34.85	1.0	50	0	69.7	79 - 122	34.85	0.0249	20	S
2-Hexanone	85.17	2.0	100	0	85.2	57 - 139	89.87	5.37	20	
4-Chlorotoluene	34.56	1.0	50	0	69.1	78 - 122	34.4	0.477	20	S
4-Isopropyltoluene	29.66	1.0	50	0	59.3	77 - 127	29.66	0.0163	20	S
4-Methyl-2-pentanone	82.62	2.0	100	0	82.6	67 - 130	81.95	0.812	20	
Acetone	86.27	2.0	100	0	86.3	39 - 160	88.36	2.39	20	
Benzene	30.76	1.0	50	0	61.5	79 - 120	31.85	3.46	20	S
Bromobenzene	29.69	1.0	50	0	59.4	80 - 120	29.91	0.735	20	S
Bromochloromethane	33.74	1.0	50	0	67.5	78 - 123	34.76	2.97	20	S
Bromodichloromethane	32.7	1.0	50	0	65.4	79 - 125	34.06	4.09	20	S
Bromoform	35.68	1.0	50	0	71.4	66 - 130	35.83	0.415	20	
Bromomethane	30.27	1.0	50	0	60.5	53 - 141	30.72	1.47	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: **R318368** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS18060825-01MSD** Units: **ug/L** Analysis Date: **20-Jun-2018 15:19**
Client ID: **18CPTMW22SW_061518** Run ID: **VOA2_318368** SeqNo: **4618351** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	61.38	2.0	100	0	61.4	64 - 133	62.42	1.68	20	S
Carbon tetrachloride	33.22	1.0	50	0	66.4	72 - 136	34.84	4.76	20	S
Chlorobenzene	31.5	1.0	50	0	63.0	82 - 118	31.88	1.21	20	S
Chloroethane	33.32	1.0	50	0	66.6	60 - 138	31.04	7.1	20	
Chloroform	31.31	1.0	50	0	62.6	79 - 124	32.05	2.36	20	S
Chloromethane	27.87	1.0	50	0	55.7	50 - 139	27.4	1.69	20	
cis-1,2-Dichloroethene	32.06	1.0	50	0	64.1	78 - 123	32.82	2.35	20	S
cis-1,3-Dichloropropene	33.39	1.0	50	0	66.8	75 - 124	34.93	4.52	20	S
Dibromochloromethane	34.02	1.0	50	0	68.0	74 - 126	33.87	0.419	20	S
Dibromomethane	35	1.0	50	0	70.0	79 - 123	35.91	2.57	20	S
Dichlorodifluoromethane	22.39	1.0	50	0	44.8	32 - 152	23.14	3.33	20	
Ethylbenzene	30.88	1.0	50	0	61.8	79 - 121	31.48	1.91	20	S
Hexachlorobutadiene	25.48	1.0	50	0	51.0	66 - 134	27.23	6.65	20	S
Isopropylbenzene	31.45	1.0	50	0	62.9	72 - 131	31.85	1.27	20	S
m,p-Xylene	60.74	2.0	100	0	60.7	80 - 121	61.73	1.62	20	S
Methylene chloride	29.93	2.0	50	0	59.9	74 - 124	30.54	2	20	S
Naphthalene	34.05	1.0	50	0	68.1	61 - 128	35.74	4.83	20	
n-Butylbenzene	30.46	1.0	50	0	60.9	75 - 128	30.85	1.28	20	S
n-Propylbenzene	34.14	1.0	50	0	68.3	76 - 126	34.55	1.19	20	S
o-Xylene	31.35	1.0	50	0	62.7	78 - 122	31.85	1.59	20	S
sec-Butylbenzene	29.73	1.0	50	0	59.5	77 - 126	29.96	0.79	20	S
Styrene	32.29	1.0	50	0	64.6	78 - 123	32.42	0.386	20	S
tert-Butylbenzene	34.21	1.0	50	0	68.4	78 - 124	34.86	1.9	20	S
Tetrachloroethene	29.68	1.0	50	0	59.4	74 - 129	30.01	1.1	20	S
Toluene	30.4	1.0	50	0	60.8	80 - 121	31.25	2.76	20	S
trans-1,2-Dichloroethene	32.12	1.0	50	0	64.2	75 - 124	32.19	0.203	20	S
trans-1,3-Dichloropropene	33.79	1.0	50	0	67.6	73 - 127	35.88	6.01	20	S
Trichloroethene	32.63	1.0	50	1.964	61.3	79 - 123	33.83	3.62	20	S
Trichlorofluoromethane	25.57	1.0	50	0	51.1	65 - 141	27.2	6.16	20	S
Vinyl chloride	30.05	1.0	50	0	60.1	58 - 137	30.83	2.54	20	
Surr: 1,2-Dichloroethane-d4	*45.45*	*1.0*	*50*	*0*	*90.9*	*81 - 118*	*45.14*	*0.681*	*20*	
Surr: 4-Bromofluorobenzene	*51.21*	*1.0*	*50*	*0*	*102*	*85 - 114*	*51.51*	*0.596*	*20*	
Surr: Dibromofluoromethane	*49.24*	*1.0*	*50*	*0*	*98.5*	*80 - 119*	*48.87*	*0.756*	*20*	
Surr: Toluene-d8	*52.79*	*1.0*	*50*	*0*	*106*	*89 - 112*	*51.87*	*1.75*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060825

QC BATCH REPORT

Batch ID: R318368 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060825-01	HS18060825-02	HS18060825-03	HS18060825-04
HS18060825-05	HS18060825-06	HS18060825-08	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060825**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 11-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 11-Jul-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**16-Jun-2018 09:00**
Work Order:	HS18060825	Received by:	**JRM**

Checklist completed by:	*Paresh M. Giga* eSignature	18-Jun-2018 Date	Reviewed by: *RJ Modashia* eSignature	18-Jun-2018 Date

Matrices: **Groundwater/Water** Carrier name: **FedEx**

	Yes	No		Not Present
Shipping container/cooler in good condition?	☑	☐		☐
Custody seals intact on shipping container/cooler?	☐	☐		☑
Custody seals intact on sample bottles?	☐	☐		☑
Chain of custody present?	☑	☐		
Chain of custody signed when relinquished and received?	☑	☐		
Chain of custody agrees with sample labels?	☑	☐		
Samples in proper container/bottle?	☑	☐		
Sample containers intact?	☑	☐		
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A	☑
Sufficient sample volume for indicated test?	☑	☐		
All samples received within holding time?	☑	☐		
Container/Temp Blank temperature in compliance?	☑	☐		
Temperature(s)/Thermometer(s):	2.1c/1.5c U/C		IR25	
Cooler(s)/Kit(s):	43858			
Date/Time sample(s) sent to storage:	6/16/18 15:00			
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted	☐
Water - pH acceptable upon receipt?	☑	☐	N/A	☐
pH adjusted?	☐	☑	N/A	☐
pH adjusted by:				

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00900787

bhate ENVIRONMENTAL CONSTRUCTION GROUP

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
18CPTMW22SW_061518		6/15/18	0845	-	N		WG	6	X	X	X	X										
MW20_061518		6/15/18	0930	-	N		WG	5	X	X	X											
18CPTMW22R_061518		6/15/18	1015	-	N		WG	6	X	X	X	X										
18CPTMW22DW_061518		6/15/18	1105		N		WG	6	X	X	X	X										
126_061518		6/15/18	1200		N		WG	6	X	X	X	X										
126_061518_a		6/15/18	1200	-	FD		WG	6	X	X	X	X										
18CPTMW16_061518		6/15/18	1345	-	N		WG	2		X		X										
TRIP BLANK		6/15/18		-	TB		W	2	X													
				-																		
				-																		
				-																		

Sample Analysis Requested (5) — Quality Assurance Samples (6)

HS18060825

Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/15/18	1430	1. Jim	6/16/18	9:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No.:

Method of Shipment: _____

Fed Ex _____ Airbill _____ Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Cooler – 43858 1425
Temp – 2.1 CF-0.6

00900788

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUS
Date: 6/15/18
Name: Scott
Company: BH

STODY SEAL
Time: 1430
Beesinger
ATV

Seal Broken By:
Date: JUN 15 20

FedEx.
TRK# 0221 7376 9752 9189

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 SGRA

77099
TX-US
IAH

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817055

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2113 (218089)

General Set Information: There were seven field samples in this Work Order. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 1817055001 – 1,000. Samples 1817055002-07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:100 (samples 03 & 07) and 1:1,000 (samples 002/04-06) dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 608323) was less than 1/2 the CRDL. The recovery for the LCS (608324) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1817055002 (Client ID: MW20_061518). The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 03JULP03/07/09.

Thomas Bosch July 05, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 05, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817055**
Project ID: HS18060825 061518
Purchase Order: HS18060825
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
18CPTMW22SW_061518	1817055001	06/15/18	06/19/18	
MW20_061518	1817055002	06/15/18	06/19/18	
18CPTMW22R_061518	1817055003	06/15/18	06/19/18	
18CPTMW22DW_061518	1817055004	06/15/18	06/19/18	
126_061518	1817055005	06/15/18	06/19/18	
126_061518_a	1817055006	06/15/18	06/19/18	
18CPTMW16_061518	1817055007	06/15/18	06/19/18	

ANALYTICAL REPORT

Workorder: 34-1817055
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **18CPTMW22SW_061518** | Sampling Site: NA | Collected: 06/15/2018
Lab ID: 1817055001 | Media: 125 mL Nalgene | Received: 06/19/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2113 (HBN: 218089) | **Percent Solid:** NA
Analyzed: 07/03/2018 12:39 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**4800**	1000	2000	4000	1000	

Sample ID: **MW20_061518** | Sampling Site: NA | Collected: 06/15/2018
Lab ID: 1817055002 | Media: 125 mL Nalgene | Received: 06/19/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2113 (HBN: 218089) | **Percent Solid:** NA
Analyzed: 07/03/2018 14:54 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1000	2000	4000	1000	U

Sample ID: **18CPTMW22R_061518** | Sampling Site: NA | Collected: 06/15/2018
Lab ID: 1817055003 | Media: 125 mL Nalgene | Received: 06/19/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2113 (HBN: 218089) | **Percent Solid:** NA
Analyzed: 07/03/2018 13:07 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	100	200	400	100	U

Sample ID: **18CPTMW22DW_061518** | Sampling Site: NA | Collected: 06/15/2018
Lab ID: 1817055004 | Media: 125 mL Nalgene | Received: 06/19/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2113 (HBN: 218089) | **Percent Solid:** NA
Analyzed: 07/03/2018 15:52 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1000	2000	4000	1000	U

ANALYTICAL REPORT

Workorder: 34-1817055
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **126_061518** | Sampling Site: NA | Collected: 06/15/2018
Lab ID: 1817055005 | Media: 125 mL Nalgene | Received: 06/19/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2113 (HBN: 218089) | **Percent Solid:** NA
Analyzed: 07/03/2018 16:06 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1000	2000	4000	1000	U

Sample ID: **126_061518_a** | Sampling Site: NA | Collected: 06/15/2018
Lab ID: 1817055006 | Media: 125 mL Nalgene | Received: 06/19/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2113 (HBN: 218089) | **Percent Solid:** NA
Analyzed: 07/03/2018 16:20 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1000	2000	4000	1000	U

Sample ID: **18CPTMW16_061518** | Sampling Site: NA | Collected: 06/15/2018
Lab ID: 1817055007 | Media: 125 mL Nalgene | Received: 06/19/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2113 (HBN: 218089) | **Percent Solid:** NA
Analyzed: 07/03/2018 14:33 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	100	200	400	100	U

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 218089)

The following samples were analyzed and reported at various dilutions. 1817055001 – 1,000. Samples 1817055002-07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:100 (samples 03 & 07) and 1:1,000 (samples 002/04-06) dilutions. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/05/2018 12:56	/S/ Stephen Brose 07/05/2018 14:40

ANALYTICAL REPORT

Workorder: 34-1817055
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1817055
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817055

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2113 (HBN: 218089)
Analyzed By: Thomas Bosch

Blank

LMB: 608323
Analyzed: 07/03/2018 10:28
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 608324
Analyzed: 07/03/2018 10:42
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.47	5.00	89.4	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1817055002
Analyzed: 07/03/2018 14:54
Dilution: 1000
Units: ug/L

MS: 608471
Analyzed: 07/03/2018 15:09
Dilution: 1000
Units: ug/L

MSD: 608472
Analyzed: 07/03/2018 15:23
Dilution: 1000
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	6030	5000	121	78.8	123.8	5970	119	0.96	0.0	20.0

Continuing Calibration Verification

CCV: 608320
Analyzed: 07/03/2018 09:43
Units: ug/L
Criteria: ± 15%

CCV: 608325
Analyzed: 07/03/2018 13:21
Units: ug/L
Criteria: ± 15%

CCV: 608473
Analyzed: 07/03/2018 16:35
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	22.9	25.0	91.4	23.5	25.0	93.9	25.1	25.0	101

Interference Check Sample

ICSA: 608322
Analyzed: 07/03/2018 10:14
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.853	1.00	85.3

Limit of Detection Verification

LODV: 608321
Analyzed: 07/03/2018 09:58
Units: ug/L
Criteria: ± 50%

LODV: 608326
Analyzed: 07/03/2018 13:36
Units: ug/L
Criteria: ± 50%

LODV: 608474
Analyzed: 07/03/2018 16:49
Units: ug/L
Criteria: ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.890	1.00	89.0	0.962	1.00	96.2	1.02	1.00	102

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817055

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2113 (HBN: 218089)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Comments

The following samples were analyzed and reported at various dilutions. 1817055001 – 1,000. Samples 1817055002-07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:100 (samples 03 & 07) and 1:1,000 (samples 002/04-06) dilutions. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
07/05/2018 12:56	07/05/2018 14:40

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698/#2

00900798

1817055

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9301

1817055

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18060825
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060825-01**	**18CPTMW22SW_061518**	**Groundwater**	**15 Jun 2018 08:45**
	SUB_Perch-6850			26 Jun 2018
2.	**HS18060825-02**	**MW20_061518**	**Groundwater**	**15 Jun 2018 09:30**
	SUB_Perch-6850			26 Jun 2018
3.	**HS18060825-03**	**18CPTMW22R_061518**	**Groundwater**	**15 Jun 2018 10:15**
	SUB_Perch-6850			26 Jun 2018
4.	**HS18060825-04**	**18CPTMW22DW_061518**	**Groundwater**	**15 Jun 2018 11:05**
	SUB_Perch-6850			26 Jun 2018
5.	**HS18060825-05**	**126_061518**	**Groundwater**	**15 Jun 2018 12:00**
	SUB_Perch-6850			26 Jun 2018
6.	**HS18060825-06**	**126_061518_a**	**Groundwater**	**15 Jun 2018 12:00**
	SUB_Perch-6850			26 Jun 2018
7.	**HS18060825-07**	**18CPTMW16_061518**	**Groundwater**	**15 Jun 2018 13:45**
	SUB_Perch-6850			26 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

COC ID: 9301

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	6/18/15 1800
Received By:		Date/Time:	6/19/15 1410
Cooler ID(s):	8452	Temperature(s):	A

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060825	Split:	Workorder ID: 1817055	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/15/2018 08:45	18CPTMW22SW_061518	1817055001		Water	A	1	A
2	06/15/2018 09:30	MW20_061518	1817055002		Water	A	1	A
3	06/15/2018 10:15	18CPTMW22R_061518	1817055003		Water	A	1	A
4	06/15/2018 11:05	18CPTMW22DW_061518	1817055004		Water	A	1	A
5	06/15/2018 12:00	126_061518	1817055005		Water	A	1	A
6	06/15/2018 12:00	126_061518_a	1817055006		Water	A	1	A
7	06/15/2018 13:45	18CPTMW16_061518	1817055007		Water	A	1	A
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/19/2018 09:40	ALS Sample Receiving	Sample Login
Julie Warath	6/19/18 1320	SB	Storage
R.33.1	6.21.18/16:20	T. Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1817035

Date/Time of Receipt: 6/19/18 940

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8452	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) Meredith Edens (Printed Name) 6/19/18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

Part # 159469-434 RIT2 EXP 06/18

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 18JUN18
ACTWGT: 10.35 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

546C2/930F/53C1

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060825-RJ

FedEx Express

J171016102001uv

TUE - 19 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 1179

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2113 **Created:** 7/3/2018 09:24 **Instrument:** LCMS04 **HBN:** 218089

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1817055 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	608320	CCV for HBN 218089 [ELMS/2113]				CCV	3		E685041C3Q	5311		7/2/2018	7/3/2018
2	608321	LODV for HBN 218089 [ELMS/2113				LODV	3		E6850..D3Q	5311		7/2/2018	7/3/2018
3	608322	ICS for HBN 218089 [ELMS/2113]				ICS	3		E6850..D3Q	5311		7/2/2018	7/3/2018
4	608323	LMB for HBN 218089 [ELMS/2113]				LMB	3		E6850Q413Q	5311		7/2/2018	7/3/2018
5	608324	LCS for HBN 218089 [ELMS/2113]				LCS	3		E6850Q413Q	5311		7/2/2018	7/3/2018
6	1817055001	18CPTMW22SW_061518				SAMPLE	3	1817055001-A	E6850Q41.3	5480	7/13/2018	7/2/2018	7/3/2018
7	1817055002	MW20_061518				SAMPLE	3	1817055002-A	E6850Q41.3	5480	7/13/2018	7/2/2018	7/3/2018
8	608471	MW20_061518(1817055002MS)				MS	3		E6850Q413Q	5311		7/2/2018	7/3/2018
9	608472	MW20_061518(1817055002MSD)				MSD	3		E6850Q413Q	5311		7/2/2018	7/3/2018
10	1817055003	18CPTMW22R_061518				SAMPLE	3	1817055003-A	E6850Q41.3	5480	7/13/2018	7/2/2018	7/3/2018
11	1817055004	18CPTMW22DW_061518				SAMPLE	3	1817055004-A	E6850Q41.3	5480	7/13/2018	7/2/2018	7/3/2018
12	1817055005	126_061518				SAMPLE	3	1817055005-A	E6850Q41.3	5480	7/13/2018	7/2/2018	7/3/2018
13	1817055006	126_061518_a				SAMPLE	3	1817055006-A	E6850Q41.3	5480	7/13/2018	7/2/2018	7/3/2018
14	1817055007	18CPTMW16_061518				SAMPLE	3	1817055007-A	E6850Q41.3	5480	7/13/2018	7/2/2018	7/3/2018
15	608325	CCV for HBN 218089 [ELMS/2113]				CCV	3		E685041C3Q	5311		7/2/2018	7/3/2018
16	608326	LODV for HBN 218089 [ELMS/2113				LODV	3		E6850..D3Q	5311		7/2/2018	7/3/2018
17	608473	CCV for HBN 218089 [ELMS/2113]				CCV	3		E685041C3Q	5311		7/2/2018	7/3/2018
18	608474	LODV for HBN 218089 [ELMS/2113				LODV	3		E6850..D3Q	5311		7/2/2018	7/3/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1817055 (001-07)
ELMS Batch/HBN ID: 2113 (218089)
Prep Date: 07/02/2018 Analysis Date: 07/03/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\03JUL18P.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 608324; Target = 5.0µg/L. ASTM type II water was used for LMB 608323.

MS/MSD: MS/MSD was performed on sample 1817055002 (Client ID: MW20_061518). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions.
   1817055001 – 1,000. Samples 1817055002-07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:100 (samples 03 & 07) and 1:1,000 (samples 002/04-06) dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 03JULP03/07/09.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218089-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK	Description - 6850 WKG Std 100.ug/L

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O	Description - ASTM Type II Water

Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

ALS

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard:	**41827**	**Created By:**	Thomas Bosch	**Amount:**	10 mL
MFG:	ALS/SLC	**Create Date:**	05/09/2018 10:05AM	**Expires:**	05/09/2019
MFG Lot:	TNB: 05/09/2018	**Verified By:**	Thomas Bosch	**Usable:**	Yes
Pipette ID:	Not Provided	**Verify Date:**		**Lab Lot:**	CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

ALS

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK	Description - 6850 QC WKG STD 100ug/L

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

ALS

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L	
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025	
MFG Lot: Not Provided		Usable: Yes	
Part ID: Not Provided		Lab Lot: LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO Guide 34 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. Kings, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 11, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060947**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 8 sample(s) on Jun 20, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: RJ.MODASHIA

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060947

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060947-01	18WW19_061918	Groundwater		19-Jun-2018 09:15	20-Jun-2018 08:42	☐
HS18060947-02	18WW19_061918_a	Groundwater		19-Jun-2018 09:15	20-Jun-2018 08:42	☐
HS18060947-03	18WW20_061918	Groundwater		19-Jun-2018 10:10	20-Jun-2018 08:42	☐
HS18060947-04	AWD4_061918	Groundwater		19-Jun-2018 11:20	20-Jun-2018 08:42	☐
HS18060947-05	18WW06_061918	Groundwater		19-Jun-2018 12:25	20-Jun-2018 08:42	☐
HS18060947-06	18WW02_061918	Groundwater		19-Jun-2018 13:20	20-Jun-2018 08:42	☐
HS18060947-07	18WW14_061918	Groundwater		19-Jun-2018 14:15	20-Jun-2018 08:42	☐
HS18060947-08	Trip Blank	Water	ALS-050418-36	19-Jun-2018 00:00	20-Jun-2018 08:42	☐

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060947

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129659

Sample ID: LCSD-129659

- LCS/LCSD RPD was above the control limits for surrogate 2-Fluorobiphenyl

GCMS Volatiles by Method SW8260

Batch ID: R318560

Sample ID: 18WW19_061918 (HS18060947-01MSD)

- The recovery of the Matrix Spike Duplicate (MSD) for Hexachlorobutadiene was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference

Sample ID: Trip Blank (HS18060947-08)

- Surrogate Toluene-d8 exceeded QC limits. Sample is ND.

Metals by Method SW7470

Batch ID: 129784

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129615

Sample ID: HS18060725-05MS

- MS/MSD and DUPs are for an unrelated sample

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW19_061918
Collection Date: 19-Jun-2018 09:15

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 12:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 12:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 12:38
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 12:38
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 12:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW19_061918
Collection Date: 19-Jun-2018 09:15

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 12:38
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 12:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:38
Surr: 1,2-Dichloroethane-d4	*88.6*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 12:38*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 12:38*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 12:38*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 12:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW19_061918
Collection Date: 19-Jun-2018 09:15

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.592**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:28
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:28
Arsenic	**0.000726**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:28
Barium	**0.129**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:28
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:28
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:28
Calcium	**6.98**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:28
Chromium	**0.0127**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:28
Cobalt	**0.000584**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:28
Copper	**0.00173**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:28
Iron	**17.7**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:28
Lead	**0.00102**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:28
Magnesium	**3.25**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:28
Manganese	**0.270**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:28
Nickel	**0.00222**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:28
Potassium	**2.08**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:28
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:28
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:28
Sodium	**19.9**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:28
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:28
Vanadium	**0.00117**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:28
Zinc	**0.00762**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:28
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	29-Jun-2018 18:07
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW19_061918_a
Collection Date: 19-Jun-2018 09:15

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 15:06
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 15:06
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 15:06
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 15:06
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 15:06
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW19_061918_a
Collection Date: 19-Jun-2018 09:15

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 15:06
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 15:06
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:06
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:06
Surr: 1,2-Dichloroethane-d4	*88.7*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 15:06*
Surr: 4-Bromofluorobenzene	*92.7*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 15:06*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 15:06*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 15:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW19_061918_a
Collection Date: 19-Jun-2018 09:15

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.836**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:30
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:30
Arsenic	**0.000632**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:30
Barium	**0.127**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:30
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:30
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:30
Calcium	**7.07**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:30
Chromium	**0.0141**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:30
Cobalt	**0.000640**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:30
Copper	**0.00196**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:30
Iron	**18.6**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:30
Lead	**0.00110**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:30
Magnesium	**3.36**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:30
Manganese	**0.287**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:30
Nickel	**0.00274**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:30
Potassium	**2.15**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:30
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:30
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:30
Sodium	**20.5**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:30
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:30
Vanadium	**0.00106**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:30
Zinc	**0.00690**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:30
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	29-Jun-2018 18:09
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW20_061918
Collection Date: 19-Jun-2018 10:10

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 15:30
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 15:30
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 15:30
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 15:30
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 15:30
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW20_061918
Collection Date: 19-Jun-2018 10:10

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 15:30
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 15:30
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:30
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:30
Surr: 1,2-Dichloroethane-d4	*90.1*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 15:30*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 15:30*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 15:30*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 15:30*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	25-Jun-2018 16:12
Surr: 2-Fluorobiphenyl	*109*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:12*
Surr: 4-Terphenyl-d14	*65.7*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:12*
Surr: Nitrobenzene-d5	*60.4*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW20_061918
Collection Date: 19-Jun-2018 10:10

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.0783**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:32
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:32
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:32
Barium	**0.111**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:32
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:32
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:32
Calcium	**2.74**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:32
Chromium	**0.00471**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:32
Cobalt	**0.00126**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:32
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 13:32
Iron	**12.8**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:32
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:32
Magnesium	**1.75**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:32
Manganese	**0.182**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:32
Nickel	**0.00259**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:32
Potassium	**1.45**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:32
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:32
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:32
Sodium	**25.6**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:32
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:32
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:32
Zinc	**0.00501**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:32
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	29-Jun-2018 18:11
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: AWD4_061918
Collection Date: 19-Jun-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 15:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 15:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 15:55
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 15:55
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 15:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: AWD4_061918
Collection Date: 19-Jun-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
cis-1,2-Dichloroethene	**0.71**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Jun-2018 15:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 15:55
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 15:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 15:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Jun-2018 15:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 15:55
Surr: 1,2-Dichloroethane-d4	*88.7*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 15:55*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 15:55*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 15:55*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 15:55*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.055**		**0.010**	**0.010**	**0.010**	**ug/L**	1	25-Jun-2018 16:33
Surr: 2-Fluorobiphenyl	*108*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:33*
Surr: 4-Terphenyl-d14	*73.7*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:33*
Surr: Nitrobenzene-d5	*54.5*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: AWD4_061918
Collection Date: 19-Jun-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**1.66**		**0.0180**	**0.0250**	**0.100**	**mg/L**	10	21-Jun-2018 15:48
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:34
Arsenic	**0.000586**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:34
Barium	**0.253**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:34
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:34
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:34
Calcium	**9.37**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:34
Chromium	**1.22**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:34
Cobalt	**0.0219**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:34
Copper	**0.0148**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:34
Iron	**9.66**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:34
Lead	**0.000652**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:34
Magnesium	**5.53**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:34
Manganese	**0.179**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:34
Nickel	**1.37**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:34
Potassium	**0.647**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:34
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:34
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:34
Sodium	**56.9**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:34
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:34
Vanadium	**0.00258**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:34
Zinc	**0.00749**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:34
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	**0.0000930**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	29-Jun-2018 18:12
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW06_061918
Collection Date: 19-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 16:19
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 16:19
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 16:19
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 16:19
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 16:19
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW06_061918
Collection Date: 19-Jun-2018 12:25

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 16:19
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 16:19
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:19
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:19
Surr: 1,2-Dichloroethane-d4	*89.5*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 16:19*
Surr: 4-Bromofluorobenzene	*87.8*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 16:19*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 16:19*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 16:19*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.018**		**0.010**	**0.010**	**0.010**	**ug/L**	1	25-Jun-2018 16:53
Surr: 2-Fluorobiphenyl	*94.8*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:53*
Surr: 4-Terphenyl-d14	*70.2*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:53*
Surr: Nitrobenzene-d5	*61.8*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 16:53*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW02_061918
Collection Date: 19-Jun-2018 13:20

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 16:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 16:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 16:44
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 16:44
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 16:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW02_061918
Collection Date: 19-Jun-2018 13:20

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 16:44
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 16:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 16:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 16:44
Surr: 1,2-Dichloroethane-d4	*88.4*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 16:44*
Surr: 4-Bromofluorobenzene	*93.1*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 16:44*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 16:44*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 16:44*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.012**		**0.010**	**0.010**	**0.010**	**ug/L**	1	25-Jun-2018 17:14
Surr: 2-Fluorobiphenyl	*95.4*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 17:14*
Surr: 4-Terphenyl-d14	*65.1*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 17:14*
Surr: Nitrobenzene-d5	*59.8*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 17:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW02_061918
Collection Date: 19-Jun-2018 13:20

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.537**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:42
Antimony	**0.000755**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:42
Arsenic	**0.000533**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:42
Barium	**0.0477**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:42
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:42
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:42
Calcium	**7.27**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:42
Chromium	**0.00569**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:42
Cobalt	**0.000277**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:42
Copper	**0.00601**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:42
Iron	**2.11**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:42
Lead	**0.00136**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:42
Magnesium	**1.26**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:42
Manganese	**0.0905**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:42
Nickel	**0.00282**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:42
Potassium	**1.89**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:42
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:42
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:42
Sodium	**19.8**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:42
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:42
Vanadium	**0.000628**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:42
Zinc	**0.00605**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:42
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	**0.0000600**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	29-Jun-2018 18:14
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18WW14_061918
Collection Date: 19-Jun-2018 14:15

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**1.26**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:44
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:44
Arsenic	**0.00205**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:44
Barium	**1.02**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:44
Beryllium	**0.000202**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:44
Cadmium	**0.000580**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:44
Calcium	**41.8**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:44
Chromium	**2.05**		**0.00400**	**0.0100**	**0.0400**	**mg/L**	10	21-Jun-2018 15:50
Cobalt	**0.0106**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:44
Copper	**0.0369**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:44
Iron	**8.78**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:44
Lead	**0.00128**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:44
Magnesium	**30.7**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:44
Manganese	**0.514**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:44
Nickel	**0.304**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:44
Potassium	**3.95**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:44
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 16:04
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:44
Sodium	**109**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:44
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:44
Vanadium	**0.00956**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:44
Zinc	**0.0241**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:44
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	**0.0000410**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	29-Jun-2018 18:16
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 19-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 12:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 12:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 12:13
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 12:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 12:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 19-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060947
Lab ID:HS18060947-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 12:13
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 12:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 12:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 12:13
Surr: 1,2-Dichloroethane-d4	*88.9*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 12:13*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 12:13*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 12:13*
Surr: Toluene-d8	*112*	*S*		**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 12:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 11-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

Batch ID: 129615 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060947-01	1	10	10 (mL)	1
HS18060947-02	1	10	10 (mL)	1
HS18060947-03	1	10	10 (mL)	1
HS18060947-04	1	10	10 (mL)	1
HS18060947-06	1	10	10 (mL)	1
HS18060947-07	1	10	10 (mL)	1

Batch ID: 129659 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060947-03	1	1000	1 (mL)	0.001
HS18060947-04	1	1000	1 (mL)	0.001
HS18060947-05	1	1000	1 (mL)	0.001
HS18060947-06	1	1000	1 (mL)	0.001

Batch ID: 129784 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060947-01	1	10 (mL)	10 (mL)	1
HS18060947-02	1	10 (mL)	10 (mL)	1
HS18060947-03	1	10 (mL)	10 (mL)	1
HS18060947-04	1	10 (mL)	10 (mL)	1
HS18060947-06	1	10 (mL)	10 (mL)	1
HS18060947-07	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129615	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060947-01	18WW19_061918	19 Jun 2018 09:15		20 Jun 2018 13:53	21 Jun 2018 13:28	1
HS18060947-02	18WW19_061918_a	19 Jun 2018 09:15		20 Jun 2018 13:53	21 Jun 2018 13:30	1
HS18060947-03	18WW20_061918	19 Jun 2018 10:10		20 Jun 2018 13:53	21 Jun 2018 13:32	1
HS18060947-04	AWD4_061918	19 Jun 2018 11:20		20 Jun 2018 13:53	21 Jun 2018 15:48	10
HS18060947-04	AWD4_061918	19 Jun 2018 11:20		20 Jun 2018 13:53	21 Jun 2018 13:34	1
HS18060947-06	18WW02_061918	19 Jun 2018 13:20		20 Jun 2018 13:53	21 Jun 2018 13:42	1
HS18060947-07	18WW14_061918	19 Jun 2018 14:15		20 Jun 2018 13:53	21 Jun 2018 16:04	1
HS18060947-07	18WW14_061918	19 Jun 2018 14:15		20 Jun 2018 13:53	21 Jun 2018 15:50	10
HS18060947-07	18WW14_061918	19 Jun 2018 14:15		20 Jun 2018 13:53	21 Jun 2018 13:44	1
Batch ID 129659	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060947-03	18WW20_061918	19 Jun 2018 10:10		21 Jun 2018 10:00	25 Jun 2018 16:12	1
HS18060947-04	AWD4_061918	19 Jun 2018 11:20		21 Jun 2018 10:00	25 Jun 2018 16:33	1
HS18060947-05	18WW06_061918	19 Jun 2018 12:25		21 Jun 2018 10:00	25 Jun 2018 16:53	1
HS18060947-06	18WW02_061918	19 Jun 2018 13:20		21 Jun 2018 10:00	25 Jun 2018 17:14	1
Batch ID 129784	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060947-01	18WW19_061918	19 Jun 2018 09:15		25 Jun 2018 14:10	29 Jun 2018 18:07	1
HS18060947-02	18WW19_061918_a	19 Jun 2018 09:15		25 Jun 2018 14:10	29 Jun 2018 18:09	1
HS18060947-03	18WW20_061918	19 Jun 2018 10:10		25 Jun 2018 14:10	29 Jun 2018 18:11	1
HS18060947-04	AWD4_061918	19 Jun 2018 11:20		25 Jun 2018 14:10	29 Jun 2018 18:12	1
HS18060947-06	18WW02_061918	19 Jun 2018 13:20		25 Jun 2018 14:10	29 Jun 2018 18:14	1
HS18060947-07	18WW14_061918	19 Jun 2018 14:15		25 Jun 2018 14:10	29 Jun 2018 18:16	1
Batch ID R318560	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060947-08	Trip Blank	19 Jun 2018 00:00			24 Jun 2018 12:13	1
Batch ID R318560	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060947-01	18WW19_061918	19 Jun 2018 09:15			24 Jun 2018 12:38	1
HS18060947-02	18WW19_061918_a	19 Jun 2018 09:15			24 Jun 2018 15:06	1
HS18060947-03	18WW20_061918	19 Jun 2018 10:10			24 Jun 2018 15:30	1
HS18060947-04	AWD4_061918	19 Jun 2018 11:20			24 Jun 2018 15:55	1
HS18060947-05	18WW06_061918	19 Jun 2018 12:25			24 Jun 2018 16:19	1
HS18060947-06	18WW02_061918	19 Jun 2018 13:20			24 Jun 2018 16:44	1
Batch ID R319293	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060947-01	18WW19_061918	19 Jun 2018 09:15			06 Jul 2018 16:39	1
HS18060947-02	18WW19_061918_a	19 Jun 2018 09:15			06 Jul 2018 16:39	1
HS18060947-03	18WW20_061918	19 Jun 2018 10:10			06 Jul 2018 16:39	1
HS18060947-04	AWD4_061918	19 Jun 2018 11:20			06 Jul 2018 16:39	1
HS18060947-05	18WW06_061918	19 Jun 2018 12:25			06 Jul 2018 16:39	1
HS18060947-06	18WW02_061918	19 Jun 2018 13:20			06 Jul 2018 16:39	1
HS18060947-07	18WW14_061918	19 Jun 2018 14:15			06 Jul 2018 16:39	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:52**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619232** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.002896	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01128	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.02701	0.200								J
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.1074	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:54**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619233** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1009	0.0100	0.1	0	101	80 - 120				
Antimony	0.0511	0.00200	0.05	0	102	80 - 120				
Arsenic	0.04875	0.00200	0.05	0	97.5	80 - 120				
Barium	0.04803	0.00400	0.05	0	96.1	80 - 120				
Beryllium	0.04748	0.00200	0.05	0	95.0	80 - 120				
Cadmium	0.04859	0.00200	0.05	0	97.2	80 - 120				
Calcium	4.942	0.500	5	0	98.8	80 - 120				
Chromium	0.0485	0.00400	0.05	0	97.0	80 - 120				
Cobalt	0.04995	0.00500	0.05	0	99.9	80 - 120				
Copper	0.05088	0.00200	0.05	0	102	80 - 120				
Iron	4.893	0.200	5	0	97.9	80 - 120				
Lead	0.05088	0.00200	0.05	0	102	80 - 120				
Magnesium	4.811	0.200	5	0	96.2	80 - 120				
Manganese	0.04963	0.00500	0.05	0	99.3	80 - 120				
Nickel	0.0502	0.00200	0.05	0	100	80 - 120				
Potassium	5.037	0.200	5	0	101	80 - 120				
Selenium	0.0552	0.00200	0.05	0	110	80 - 120				
Silver	0.05032	0.00200	0.05	0	101	80 - 120				
Sodium	4.979	0.200	5	0	99.6	80 - 120				
Thallium	0.04338	0.00200	0.05	0	86.8	80 - 120				
Vanadium	0.04673	0.00500	0.05	0	93.5	80 - 120				
Zinc	0.05053	0.00400	0.05	0	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060725-05MS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:02**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619237** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.105	0.0100	0.1	0.005904	99.1	80 - 120				
Antimony	0.0519	0.00200	0.05	-0.000096	104	80 - 120				
Arsenic	0.05057	0.00200	0.05	0.000306	101	80 - 120				
Barium	0.5785	0.00400	0.05	0.5156	126	80 - 120				SO
Beryllium	0.05107	0.00200	0.05	0.000003	102	80 - 120				
Cadmium	0.05041	0.00200	0.05	0.00029	100	80 - 120				
Calcium	31.34	0.500	5	26.18	103	80 - 120				O
Chromium	0.05229	0.00400	0.05	0.007222	90.1	80 - 120				
Cobalt	0.05401	0.00500	0.05	0.005436	97.2	80 - 120				
Copper	0.05074	0.00200	0.05	0.000504	100	80 - 120				
Iron	5.52	0.200	5	0.7229	95.9	80 - 120				
Lead	0.04911	0.00200	0.05	0.00009	98.0	80 - 120				
Magnesium	20.22	0.200	5	15.4	96.5	80 - 120				
Manganese	1.101	0.00500	0.05	1.032	137	80 - 120				SO
Nickel	0.05234	0.00200	0.05	0.003916	96.8	80 - 120				
Potassium	6.307	0.200	5	1.542	95.3	80 - 120				
Selenium	0.05076	0.00200	0.05	0.000443	101	80 - 120				
Silver	0.04731	0.00200	0.05	0.000008	94.6	80 - 120				
Sodium	242.1	0.200	5	235.2	137	80 - 120				SEO
Thallium	0.04553	0.00200	0.05	0.00007	90.9	80 - 120				
Vanadium	0.0497	0.00500	0.05	-0.000427	100	80 - 120				
Zinc	0.05692	0.00400	0.05	0.006181	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060725-05MSD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:04**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619238** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1044	0.0100	0.1	0.005904	98.5	80 - 120	0.105	0.558	20	
Antimony	0.05084	0.00200	0.05	-0.000096	102	80 - 120	0.0519	2.06	20	
Arsenic	0.04978	0.00200	0.05	0.000306	99.0	80 - 120	0.05057	1.56	20	
Barium	0.5982	0.00400	0.05	0.5156	165	80 - 120	0.5785	3.35	20	SO
Beryllium	0.05207	0.00200	0.05	0.000003	104	80 - 120	0.05107	1.93	20	
Cadmium	0.04884	0.00200	0.05	0.00029	97.1	80 - 120	0.05041	3.17	20	
Calcium	32.54	0.500	5	26.18	127	80 - 120	31.34	3.77	20	SO
Chromium	0.05042	0.00400	0.05	0.007222	86.4	80 - 120	0.05229	3.63	20	
Cobalt	0.0538	0.00500	0.05	0.005436	96.7	80 - 120	0.05401	0.393	20	
Copper	0.05026	0.00200	0.05	0.000504	99.5	80 - 120	0.05074	0.951	20	
Iron	5.426	0.200	5	0.7229	94.1	80 - 120	5.52	1.71	20	
Lead	0.04811	0.00200	0.05	0.00009	96.0	80 - 120	0.04911	2.06	20	
Magnesium	20.4	0.200	5	15.4	100	80 - 120	20.22	0.889	20	
Manganese	1.099	0.00500	0.05	1.032	135	80 - 120	1.101	0.121	20	SO
Nickel	0.05334	0.00200	0.05	0.003916	98.8	80 - 120	0.05234	1.89	20	
Potassium	6.412	0.200	5	1.542	97.4	80 - 120	6.307	1.66	20	
Selenium	0.05279	0.00200	0.05	0.000443	105	80 - 120	0.05076	3.91	20	
Silver	0.04636	0.00200	0.05	0.000008	92.7	80 - 120	0.04731	2.04	20	
Sodium	245.3	0.200	5	235.2	201	80 - 120	242.1	1.31	20	SEO
Thallium	0.04533	0.00200	0.05	0.00007	90.5	80 - 120	0.04553	0.434	20	
Vanadium	0.04896	0.00500	0.05	-0.000427	98.8	80 - 120	0.0497	1.49	20	
Zinc	0.05676	0.00400	0.05	0.006181	101	80 - 120	0.05692	0.276	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:06**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619239** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09658	0.0100	0.1	0.005904	90.7	75 - 125				
Antimony	0.09212	0.00200	0.1	-0.000096	92.2	75 - 125				
Arsenic	0.0985	0.00200	0.1	0.000306	98.2	75 - 125				
Barium	0.6318	0.00400	0.1	0.5156	116	75 - 125				O
Beryllium	0.09555	0.00200	0.1	0.000003	95.6	75 - 125				
Cadmium	0.09675	0.00200	0.1	0.00029	96.5	75 - 125				
Calcium	36.95	0.500	10	26.18	108	75 - 125				
Chromium	0.1005	0.00400	0.1	0.007222	93.3	75 - 125				
Cobalt	0.1015	0.00500	0.1	0.005436	96.0	75 - 125				
Copper	0.09866	0.00200	0.1	0.000504	98.2	75 - 125				
Iron	10.25	0.200	10	0.7229	95.3	75 - 125				
Lead	0.09675	0.00200	0.1	0.00009	96.7	75 - 125				
Magnesium	24.8	0.200	10	15.4	94.0	75 - 125				
Manganese	1.165	0.00500	0.1	1.032	133	75 - 125				SO
Nickel	0.09842	0.00200	0.1	0.003916	94.5	75 - 125				
Potassium	10.9	0.200	10	1.542	93.5	75 - 125				
Selenium	0.106	0.00200	0.1	0.000443	106	75 - 125				
Silver	0.09238	0.00200	0.1	0.000008	92.4	75 - 125				
Thallium	0.09414	0.00200	0.1	0.00007	94.1	75 - 125				
Vanadium	0.0963	0.00500	0.1	-0.000427	96.7	75 - 125				
Zinc	0.107	0.00400	0.1	0.006181	101	75 - 125				

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 15:28**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619524** PrepDate: **20-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	314.2	2.00	100	222.8	91.3	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:00**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619236** PrepDate: **20-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.0125	0.0500					0.005904	0	10	U
Antimony	0.00500	0.0100					-0.000096	0	10	U
Arsenic	0.00500	0.0100					0.000306	0	10	U
Barium	0.5185	0.0200					0.5156	0.553	10	
Beryllium	0.00500	0.0100					0.000003	0	10	U
Cadmium	0.00500	0.0100					0.00029	0	10	U
Calcium	26.96	2.50					26.18	2.97	10	
Chromium	0.00713	0.0200					0.007222	0	10	J
Cobalt	0.005761	0.0250					0.005436	0	10	J
Copper	0.0100	0.0100					0.000504	0	10	U
Iron	0.7586	1.00					0.7229	0	10	J
Lead	0.00500	0.0100					0.00009	0	10	U
Magnesium	16.29	1.00					15.4	5.81	10	
Manganese	1.091	0.0250					1.032	5.71	10	
Nickel	0.00500	0.0100					0.003916	0	10	U
Selenium	0.0100	0.0100					0.000443	0	10	U
Silver	0.00500	0.0100					0.000008	0	10	U
Thallium	0.00500	0.0100					0.00007	0	10	U
Vanadium	0.00500	0.0250					-0.000427	0	10	U
Zinc	0.0125	0.0200					0.006181	0	10	U

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 15:26**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619523** PrepDate: **20-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	209.2	10.0					222.8	6.11	10	

The following samples were analyzed in this batch: HS18060947-01 HS18060947-02 HS18060947-03 HS18060947-04 HS18060947-06 HS18060947-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129784 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129784** Units: **mg/L** Analysis Date: **29-Jun-2018 17:49**
Client ID: Run ID: **HG03_318987** SeqNo: **4631894** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000052	0.000200								J

LCS Sample ID: **LCS-129784** Units: **mg/L** Analysis Date: **29-Jun-2018 17:51**
Client ID: Run ID: **HG03_318987** SeqNo: **4631895** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00443	0.000200	0.005	0	88.6	80 - 120				

MS Sample ID: **HS18060954-05MS** Units: **mg/L** Analysis Date: **29-Jun-2018 18:31**
Client ID: Run ID: **HG03_318987** SeqNo: **4631914** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00413	0.000200	0.005	0.000007	82.5	75 - 125				

MSD Sample ID: **HS18060954-05MSD** Units: **mg/L** Analysis Date: **29-Jun-2018 18:33**
Client ID: Run ID: **HG03_318987** SeqNo: **4631915** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00422	0.000200	0.005	0.000007	84.3	75 - 125	0.00413	2.16	20	

The following samples were analyzed in this batch: HS18060947-01 HS18060947-02 HS18060947-03 HS18060947-04 HS18060947-06 HS18060947-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: 129659 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 10:54**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625531** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1011*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06319*	*0*	*0.08*	*0*	*79.0*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05838*	*0*	*0.08*	*0*	*73.0*	*40 - 140*				

LCS Sample ID: **LCS-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:14**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625532** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07838	0.010	0.08	0	98.0	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08025*	*0*	*0.08*	*0*	*100*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06393*	*0*	*0.08*	*0*	*79.9*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0471*	*0*	*0.08*	*0*	*58.9*	*40 - 140*				

LCSD Sample ID: **LCSD-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:35**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625533** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07178	0.010	0.08	0	89.7	40 - 140	0.07838	8.79	20	
Surr: 2-Fluorobiphenyl	*0.1005*	*0*	*0.08*	*0*	*126*	*40 - 140*	*0.08025*	*22.4*	*20*	R
Surr: 4-Terphenyl-d14	*0.06624*	*0*	*0.08*	*0*	*82.8*	*40 - 140*	*0.06393*	*3.56*	*20*	
Surr: Nitrobenzene-d5	*0.057*	*0*	*0.08*	*0*	*71.2*	*40 - 140*	*0.0471*	*19*	*20*	

The following samples were analyzed in this batch: HS18060947-03 HS18060947-04 HS18060947-05 HS18060947-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: **R318560** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 11:24**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623181** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 11:24**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623181** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.3*	*1.0*	*50*	*0*	*88.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.26*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*52.43*	*1.0*	*50*	*0*	*105*	*80 - 119*				
Surr: Toluene-d8	*50.01*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 10:35**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623211** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.8	1.0	50	0	95.6	78 - 124				
1,1,1-Trichloroethane	44.72	1.0	50	0	89.4	74 - 131				
1,1,2,2-Tetrachloroethane	41.75	1.0	50	0	83.5	71 - 121				
1,1,2-Trichloroethane	47.13	1.0	50	0	94.3	80 - 119				
1,1-Dichloroethane	46.51	1.0	50	0	93.0	77 - 125				
1,1-Dichloroethene	40.83	1.0	50	0	81.7	71 - 131				
1,1-Dichloropropene	41.01	1.0	50	0	82.0	78 - 125				
1,2,3-Trichlorobenzene	44	1.0	50	0	88.0	69 - 129				
1,2,3-Trichloropropane	43.29	1.0	50	0	86.6	73 - 122				
1,2,4-Trichlorobenzene	41.9	1.0	50	0	83.8	69 - 130				
1,2,4-Trimethylbenzene	41.5	1.0	50	0	83.0	76 - 124				
1,2-Dibromo-3-chloropropane	45.6	1.0	50	0	91.2	62 - 128				
1,2-Dibromoethane	46.5	1.0	50	0	93.0	77 - 121				
1,2-Dichlorobenzene	42.95	1.0	50	0	85.9	80 - 119				
1,2-Dichloroethane	47.78	1.0	50	0	95.6	73 - 128				
1,2-Dichloropropane	44.49	1.0	50	0	89.0	78 - 122				
1,3,5-Trimethylbenzene	49.99	1.0	50	0	100.0	75 - 124				
1,3-Dichlorobenzene	43.03	1.0	50	0	86.1	80 - 119				
1,3-Dichloropropane	46.05	1.0	50	0	92.1	80 - 119				
1,4-Dichlorobenzene	42.93	1.0	50	0	85.9	79 - 118				
2,2-Dichloropropane	46.35	1.0	50	0	92.7	60 - 139				
2-Butanone	96.52	2.0	100	0	96.5	56 - 143				
2-Chlorotoluene	49.49	1.0	50	0	99.0	79 - 122				
2-Hexanone	102.3	2.0	100	0	102	57 - 139				
4-Chlorotoluene	49.26	1.0	50	0	98.5	78 - 122				
4-Isopropyltoluene	43.06	1.0	50	0	86.1	77 - 127				
4-Methyl-2-pentanone	100.4	2.0	100	0	100	67 - 130				
Acetone	71.35	2.0	100	0	71.4	39 - 160				
Benzene	43.76	1.0	50	0	87.5	79 - 120				
Bromobenzene	41.18	1.0	50	0	82.4	80 - 120				
Bromochloromethane	47.93	1.0	50	0	95.9	78 - 123				
Bromodichloromethane	46.57	1.0	50	0	93.1	79 - 125				
Bromoform	49.46	1.0	50	0	98.9	66 - 130				
Bromomethane	41.72	1.0	50	0	83.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 10:35**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623211** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	77.6	2.0	100	0	77.6	64 - 133				
Carbon tetrachloride	50.5	1.0	50	0	101	72 - 136				
Chlorobenzene	44.5	1.0	50	0	89.0	82 - 118				
Chloroethane	44.35	1.0	50	0	88.7	60 - 138				
Chloroform	44.54	1.0	50	0	89.1	79 - 124				
Chloromethane	44.15	1.0	50	0	88.3	50 - 139				
cis-1,2-Dichloroethene	45.34	1.0	50	0	90.7	78 - 123				
cis-1,3-Dichloropropene	48.82	1.0	50	0	97.6	75 - 124				
Dibromochloromethane	45.5	1.0	50	0	91.0	74 - 126				
Dibromomethane	48.82	1.0	50	0	97.6	79 - 123				
Dichlorodifluoromethane	53.73	1.0	50	0	107	32 - 152				
Ethylbenzene	46.01	1.0	50	0	92.0	79 - 121				
Hexachlorobutadiene	43.51	1.0	50	0	87.0	66 - 134				
Isopropylbenzene	47.55	1.0	50	0	95.1	72 - 131				
m,p-Xylene	91.2	2.0	100	0	91.2	80 - 121				
Methylene chloride	37.04	2.0	50	0	74.1	74 - 124				
Naphthalene	44.06	1.0	50	0	88.1	61 - 128				
n-Butylbenzene	46.36	1.0	50	0	92.7	75 - 128				
n-Propylbenzene	49.5	1.0	50	0	99.0	76 - 126				
o-Xylene	46.65	1.0	50	0	93.3	78 - 122				
sec-Butylbenzene	42.53	1.0	50	0	85.1	77 - 126				
Styrene	47.88	1.0	50	0	95.8	78 - 123				
tert-Butylbenzene	49.33	1.0	50	0	98.7	78 - 124				
Tetrachloroethene	45.3	1.0	50	0	90.6	74 - 129				
Toluene	45.4	1.0	50	0	90.8	80 - 121				
trans-1,2-Dichloroethene	40.85	1.0	50	0	81.7	75 - 124				
trans-1,3-Dichloropropene	49.83	1.0	50	0	99.7	73 - 127				
Trichloroethene	45.33	1.0	50	0	90.7	79 - 123				
Trichlorofluoromethane	40.14	1.0	50	0	80.3	65 - 141				
Vinyl chloride	43.07	1.0	50	0	86.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.18*	*1.0*	*50*	*0*	*90.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.68*	*1.0*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*48.3*	*1.0*	*50*	*0*	*96.6*	*80 - 119*				
Surr: Toluene-d8	*54.13*	*1.0*	*50*	*0*	*108*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: **R318560** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060947-01MS** Units: **ug/L** Analysis Date: **24-Jun-2018 13:02**
Client ID: **18WW19_061918** Run ID: **VOA2_318560** SeqNo: **4623184** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.92	1.0	50	0	99.8	78 - 124				
1,1,1-Trichloroethane	50.69	1.0	50	0	101	74 - 131				
1,1,2,2-Tetrachloroethane	46.09	1.0	50	0	92.2	71 - 121				
1,1,2-Trichloroethane	48.05	1.0	50	0	96.1	80 - 119				
1,1-Dichloroethane	51.09	1.0	50	0	102	77 - 125				
1,1-Dichloroethene	53.38	1.0	50	0	107	71 - 131				
1,1-Dichloropropene	47.04	1.0	50	0	94.1	78 - 125				
1,2,3-Trichlorobenzene	39.83	1.0	50	0	79.7	69 - 129				
1,2,3-Trichloropropane	48.11	1.0	50	0	96.2	73 - 122				
1,2,4-Trichlorobenzene	36.31	1.0	50	0	72.6	69 - 130				
1,2,4-Trimethylbenzene	41.8	1.0	50	0	83.6	76 - 124				
1,2-Dibromo-3-chloropropane	45.6	1.0	50	0	91.2	62 - 128				
1,2-Dibromoethane	50.44	1.0	50	0	101	77 - 121				
1,2-Dichlorobenzene	44.78	1.0	50	0	89.6	80 - 119				
1,2-Dichloroethane	51.12	1.0	50	0	102	73 - 128				
1,2-Dichloropropane	48.82	1.0	50	0	97.6	78 - 122				
1,3,5-Trimethylbenzene	49.98	1.0	50	0	100.0	75 - 124				
1,3-Dichlorobenzene	44.28	1.0	50	0	88.6	80 - 119				
1,3-Dichloropropane	49.68	1.0	50	0	99.4	80 - 119				
1,4-Dichlorobenzene	44.71	1.0	50	0	89.4	79 - 118				
2,2-Dichloropropane	52.66	1.0	50	0	105	60 - 139				
2-Butanone	108.5	2.0	100	0	109	56 - 143				
2-Chlorotoluene	52.48	1.0	50	0	105	79 - 122				
2-Hexanone	109.9	2.0	100	0	110	57 - 139				
4-Chlorotoluene	52.08	1.0	50	0	104	78 - 122				
4-Isopropyltoluene	39.84	1.0	50	0	79.7	77 - 127				
4-Methyl-2-pentanone	105.5	2.0	100	0	106	67 - 130				
Acetone	111.7	2.0	100	0	112	39 - 160				
Benzene	48.37	1.0	50	0	96.7	79 - 120				
Bromobenzene	43.89	1.0	50	0	87.8	80 - 120				
Bromochloromethane	51.94	1.0	50	0	104	78 - 123				
Bromodichloromethane	50.83	1.0	50	0	102	79 - 125				
Bromoform	50.73	1.0	50	0	101	66 - 130				
Bromomethane	47.91	1.0	50	0	95.8	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: **R318560** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS18060947-01MS** Units: **ug/L** Analysis Date: **24-Jun-2018 13:02**
Client ID: **18WW19_061918** Run ID: **VOA2_318560** SeqNo: **4623184** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	99.2	2.0	100	0	99.2	64 - 133				
Carbon tetrachloride	55.39	1.0	50	0	111	72 - 136				
Chlorobenzene	47.77	1.0	50	0	95.5	82 - 118				
Chloroethane	48.97	1.0	50	0	97.9	60 - 138				
Chloroform	48.75	1.0	50	0	97.5	79 - 124				
Chloromethane	43.41	1.0	50	0	86.8	50 - 139				
cis-1,2-Dichloroethene	50.13	1.0	50	0	100	78 - 123				
cis-1,3-Dichloropropene	52.68	1.0	50	0	105	75 - 124				
Dibromochloromethane	49.07	1.0	50	0	98.1	74 - 126				
Dibromomethane	53.03	1.0	50	0	106	79 - 123				
Dichlorodifluoromethane	41.89	1.0	50	0	83.8	32 - 152				
Ethylbenzene	47.51	1.0	50	0	95.0	79 - 121				
Hexachlorobutadiene	34.74	1.0	50	0	69.5	66 - 134				
Isopropylbenzene	46.2	1.0	50	0	92.4	72 - 131				
m,p-Xylene	92.2	2.0	100	0	92.2	80 - 121				
Methylene chloride	46.39	2.0	50	0	92.8	74 - 124				
Naphthalene	42.78	1.0	50	0	85.6	61 - 128				
n-Butylbenzene	40.94	1.0	50	0	81.9	75 - 128				
n-Propylbenzene	49.75	1.0	50	0	99.5	76 - 126				
o-Xylene	47.22	1.0	50	0	94.4	78 - 122				
sec-Butylbenzene	39.72	1.0	50	0	79.4	77 - 126				
Styrene	48.16	1.0	50	0	96.3	78 - 123				
tert-Butylbenzene	46.97	1.0	50	0	93.9	78 - 124				
Tetrachloroethene	47.24	1.0	50	0	94.5	74 - 129				
Toluene	47.09	1.0	50	0	94.2	80 - 121				
trans-1,2-Dichloroethene	50.86	1.0	50	0	102	75 - 124				
trans-1,3-Dichloropropene	54.71	1.0	50	0	109	73 - 127				
Trichloroethene	50.37	1.0	50	0	101	79 - 123				
Trichlorofluoromethane	42.04	1.0	50	0	84.1	65 - 141				
Vinyl chloride	49.92	1.0	50	0	99.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.73*	*1.0*	*50*	*0*	*91.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.02*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.71*	*1.0*	*50*	*0*	*95.4*	*80 - 119*				
Surr: Toluene-d8	*50.91*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: **R318560** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS18060947-01MSD** Units: **ug/L** Analysis Date: **24-Jun-2018 13:27**
Client ID: **18WW19_061918** Run ID: **VOA2_318560** SeqNo: **4623185** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.27	1.0	50	0	96.5	78 - 124	49.92	3.37	20	
1,1,1-Trichloroethane	48.39	1.0	50	0	96.8	74 - 131	50.69	4.64	20	
1,1,2,2-Tetrachloroethane	45.71	1.0	50	0	91.4	71 - 121	46.09	0.826	20	
1,1,2-Trichloroethane	47.23	1.0	50	0	94.5	80 - 119	48.05	1.71	20	
1,1-Dichloroethane	49.03	1.0	50	0	98.1	77 - 125	51.09	4.11	20	
1,1-Dichloroethene	49.89	1.0	50	0	99.8	71 - 131	53.38	6.76	20	
1,1-Dichloropropene	45.1	1.0	50	0	90.2	78 - 125	47.04	4.21	20	
1,2,3-Trichlorobenzene	37.21	1.0	50	0	74.4	69 - 129	39.83	6.81	20	
1,2,3-Trichloropropane	48.21	1.0	50	0	96.4	73 - 122	48.11	0.211	20	
1,2,4-Trichlorobenzene	37.51	1.0	50	0	75.0	69 - 130	36.31	3.25	20	
1,2,4-Trimethylbenzene	41.88	1.0	50	0	83.8	76 - 124	41.8	0.195	20	
1,2-Dibromo-3-chloropropane	40.27	1.0	50	0	80.5	62 - 128	45.6	12.4	20	
1,2-Dibromoethane	49.69	1.0	50	0	99.4	77 - 121	50.44	1.51	20	
1,2-Dichlorobenzene	44.29	1.0	50	0	88.6	80 - 119	44.78	1.09	20	
1,2-Dichloroethane	51.12	1.0	50	0	102	73 - 128	51.12	0.00294	20	
1,2-Dichloropropane	46.88	1.0	50	0	93.8	78 - 122	48.82	4.04	20	
1,3,5-Trimethylbenzene	50.19	1.0	50	0	100	75 - 124	49.98	0.419	20	
1,3-Dichlorobenzene	44	1.0	50	0	88.0	80 - 119	44.28	0.617	20	
1,3-Dichloropropane	48.55	1.0	50	0	97.1	80 - 119	49.68	2.3	20	
1,4-Dichlorobenzene	44.2	1.0	50	0	88.4	79 - 118	44.71	1.13	20	
2,2-Dichloropropane	49.84	1.0	50	0	99.7	60 - 139	52.66	5.49	20	
2-Butanone	107.2	2.0	100	0	107	56 - 143	108.5	1.18	20	
2-Chlorotoluene	51.47	1.0	50	0	103	79 - 122	52.48	1.95	20	
2-Hexanone	107.7	2.0	100	0	108	57 - 139	109.9	2.06	20	
4-Chlorotoluene	51.27	1.0	50	0	103	78 - 122	52.08	1.56	20	
4-Isopropyltoluene	40.69	1.0	50	0	81.4	77 - 127	39.84	2.12	20	
4-Methyl-2-pentanone	104.7	2.0	100	0	105	67 - 130	105.5	0.779	20	
Acetone	113.9	2.0	100	0	114	39 - 160	111.7	1.88	20	
Benzene	46.37	1.0	50	0	92.7	79 - 120	48.37	4.22	20	
Bromobenzene	43.11	1.0	50	0	86.2	80 - 120	43.89	1.8	20	
Bromochloromethane	50.88	1.0	50	0	102	78 - 123	51.94	2.06	20	
Bromodichloromethane	49.55	1.0	50	0	99.1	79 - 125	50.83	2.55	20	
Bromoform	49.58	1.0	50	0	99.2	66 - 130	50.73	2.29	20	
Bromomethane	41.91	1.0	50	0	83.8	53 - 141	47.91	13.4	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060947-01MSD** Units: **ug/L** Analysis Date: **24-Jun-2018 13:27**
Client ID: **18WW19_061918** Run ID: **VOA2_318560** SeqNo: **4623185** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	94.29	2.0	100	0	94.3	64 - 133	99.2	5.07	20	
Carbon tetrachloride	52.73	1.0	50	0	105	72 - 136	55.39	4.91	20	
Chlorobenzene	46.05	1.0	50	0	92.1	82 - 118	47.77	3.67	20	
Chloroethane	43.73	1.0	50	0	87.5	60 - 138	48.97	11.3	20	
Chloroform	47.23	1.0	50	0	94.5	79 - 124	48.75	3.18	20	
Chloromethane	41.26	1.0	50	0	82.5	50 - 139	43.41	5.08	20	
cis-1,2-Dichloroethene	47.65	1.0	50	0	95.3	78 - 123	50.13	5.08	20	
cis-1,3-Dichloropropene	51.51	1.0	50	0	103	75 - 124	52.68	2.26	20	
Dibromochloromethane	48.11	1.0	50	0	96.2	74 - 126	49.07	1.96	20	
Dibromomethane	52.28	1.0	50	0	105	79 - 123	53.03	1.42	20	
Dichlorodifluoromethane	38.16	1.0	50	0	76.3	32 - 152	41.89	9.31	20	
Ethylbenzene	45.7	1.0	50	0	91.4	79 - 121	47.51	3.87	20	
Hexachlorobutadiene	31.96	1.0	50	0	63.9	66 - 134	34.74	8.34	20	S
Isopropylbenzene	46.19	1.0	50	0	92.4	72 - 131	46.2	0.00768	20	
m,p-Xylene	90.34	2.0	100	0	90.3	80 - 121	92.2	2.03	20	
Methylene chloride	44.37	2.0	50	0	88.7	74 - 124	46.39	4.45	20	
Naphthalene	40.78	1.0	50	0	81.6	61 - 128	42.78	4.79	20	
n-Butylbenzene	41.9	1.0	50	0	83.8	75 - 128	40.94	2.31	20	
n-Propylbenzene	49.92	1.0	50	0	99.8	76 - 126	49.75	0.359	20	
o-Xylene	46.25	1.0	50	0	92.5	78 - 122	47.22	2.09	20	
sec-Butylbenzene	40.32	1.0	50	0	80.6	77 - 126	39.72	1.5	20	
Styrene	47.24	1.0	50	0	94.5	78 - 123	48.16	1.94	20	
tert-Butylbenzene	47.94	1.0	50	0	95.9	78 - 124	46.97	2.04	20	
Tetrachloroethene	46.11	1.0	50	0	92.2	74 - 129	47.24	2.42	20	
Toluene	45.1	1.0	50	0	90.2	80 - 121	47.09	4.33	20	
trans-1,2-Dichloroethene	47.79	1.0	50	0	95.6	75 - 124	50.86	6.22	20	
trans-1,3-Dichloropropene	53.81	1.0	50	0	108	73 - 127	54.71	1.66	20	
Trichloroethene	48.79	1.0	50	0	97.6	79 - 123	50.37	3.18	20	
Trichlorofluoromethane	40.62	1.0	50	0	81.2	65 - 141	42.04	3.44	20	
Vinyl chloride	47.1	1.0	50	0	94.2	58 - 137	49.92	5.8	20	
Surr: 1,2-Dichloroethane-d4	*44.88*	*1.0*	*50*	*0*	*89.8*	*81 - 118*	*45.73*	*1.88*	*20*	
Surr: 4-Bromofluorobenzene	*52.44*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.02*	*0.798*	*20*	
Surr: Dibromofluoromethane	*48.43*	*1.0*	*50*	*0*	*96.9*	*80 - 119*	*47.71*	*1.49*	*20*	
Surr: Toluene-d8	*50.87*	*1.0*	*50*	*0*	*102*	*89 - 112*	*50.91*	*0.0945*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060947

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

The following samples were analyzed in this batch:

HS18060947-01	HS18060947-02	HS18060947-03	HS18060947-04
HS18060947-05	HS18060947-06	HS18060947-08	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060947**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 11-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 11-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18060947

Date/Time Received: **20-Jun-2018 08:42**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* eSignature — 20-Jun-2018 Date

Reviewed by: *RJ Modashia* eSignature — 20-Jun-2018 Date

Matrices: **Groundwater/Water**

Carrier name: **FedEx**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	☐ Not Present
Custody seals intact on shipping container/cooler?	☑	☐	☐ Not Present
Custody seals intact on sample bottles?	☐	☐	☑ Not Present
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	☑ N/A
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Water - VOA vials have zero headspace?	☑	☐	☐ No VOA vials submitted
Water - pH acceptable upon receipt?	☑	☐	☐ N/A
pH adjusted?	☐	☑	☐ N/A

Temperature(s)/Thermometer(s): 2.6c/2.1c U/C | IR11

Cooler(s)/Kit(s): 43476

Date/Time sample(s) sent to storage: 6/20/18 12:55

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00900865

bhate

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
18WW19_061918		6/19/18	0915	-	N		WG	5	X	X	X											
18WW19_061918_QC		6/19/18	0915	-	FD		WG	5	X	X	X											
18WW20_061918		6/19/18	1010	-	N		WG	6	X	X	X	X										
AWD4_061918		6/19/18	1120		N		WG	6	X	X	X	X										
18WW06_061918		6/19/18	1225		N		WG	5	X	X		X										
18WW02_061918		6/19/18	1320	-	N		WG	6	X	X	X	X										
18WW14_061918		6/19/18	1415	-	N		WG	2		X	X											
TRIP BLANK		6/19/18		-	TB		W	2	X													
				-																		
				-																		
				-																		

Sample Analysis Requested (5) — Quality Assurance Samples (6)

HS18060947
Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/19/18	1440	1. NR	6/20/18	08:42
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped

Method of Shipment: ____

Fed Ex ____ Airbill Number: ____

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

-13476

00900866

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

43476

CUSTODY SEAL

Date: 6/19/18 Time: 1440
Name: Santo Beeuwer
Company: BHATE

Seal Broken By:
Date: 06/20/18

43476

JUN 20 2018
JUN 20 2018

...Y GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58-RJ
RMA:

FedEx Express

E

43476

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 0221 7376 9752 9178

WED - 20 JUN 10:30A
PRIORITY OVERNIGHT

FedEx
TRK# 0221 7376 9752 9178

77099
TX-US
IAH

AB SGRA

FID 162705 19JUN18 GEO 64301/4056/8EBA

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817359; 1817361; 1817362; 1817365; 1817368

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2114 (218216)

General Set Information: There were seventeen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 608585) was less than 1/2 the CRDL. The recovery for the LCS (608586) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1817359001 (Client ID: 18WW19_061918). The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 05JULD20.

Thomas Bosch July 07, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 06, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817359**
Project ID: HS18060947 061918
Purchase Order: HS18060947
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
18WW19_061918	1817359001	06/19/18	06/21/18	
18WW19_061918-a	1817359002	06/19/18	06/21/18	
18WW20_061918	1817359003	06/19/18	06/21/18	
AWD4_061918	1817359004	06/19/18	06/21/18	
18WW06_061918	1817359005	06/19/18	06/21/18	
18WW02_061918	1817359006	06/19/18	06/21/18	
18WW14_061918	1817359007	06/19/18	06/21/18	

ANALYTICAL REPORT

Workorder: 34-1817359
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **18WW19_061918** | Sampling Site: NA | Collected: 06/19/2018
Lab ID: 1817359001 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 10:38
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18WW19_061918-a** | Sampling Site: NA | Collected: 06/19/2018
Lab ID: 1817359002 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 10:52
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18WW20_061918** | Sampling Site: NA | Collected: 06/19/2018
Lab ID: 1817359003 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 11:07
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **AWD4_061918** | Sampling Site: NA | Collected: 06/19/2018
Lab ID: 1817359004 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 11:21
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1817359
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **18WW06_061918** | Sampling Site: NA | Collected: 06/19/2018
Lab ID: 1817359005 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2114 (HBN: 218216) | **Percent Solid:** NA
Analyzed: 07/05/2018 11:35 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**2400**	100	200	400	100	

Sample ID: **18WW02_061918** | Sampling Site: NA | Collected: 06/19/2018
Lab ID: 1817359006 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2114 (HBN: 218216) | **Percent Solid:** NA
Analyzed: 07/05/2018 11:49 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **18WW14_061918** | Sampling Site: NA | Collected: 06/19/2018
Lab ID: 1817359007 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2114 (HBN: 218216) | **Percent Solid:** NA
Analyzed: 07/05/2018 12:04 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 218216)

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/06/2018 11:40	/S/ Stephen Brose 07/06/2018 13:50

ANALYTICAL REPORT

Workorder: 34-1817359
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1817359
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817359

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2114 (HBN: 218216)
Analyzed By: Thomas Bosch

Blank

LMB: 608585
Analyzed: 07/05/2018 09:23
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 608586
Analyzed: 07/05/2018 09:52
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1817359001
Analyzed: 07/05/2018 10:38
Dilution: 1
Units: ug/L

MS: 608587
Analyzed: 07/05/2018 10:10
Dilution: 1
Units: ug/L

MSD: 608588
Analyzed: 07/05/2018 10:24
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	6.14	5	123	78.8	123.8	6.18	124	0.51	0.0	20.0

Continuing Calibration Verification

CCV: 608582
Analyzed: 07/05/2018 08:52
Units: ug/L
Criteria: ± 15%

CCV: 608589
Analyzed: 07/05/2018 13:01
Units: ug/L
Criteria: ± 15%

CCV: 608591
Analyzed: 07/05/2018 15:09
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.3	25.0	105	27.1	25.0	108	26.7	25.0	107

Interference Check Sample

ICSA: 608584
Analyzed: 07/05/2018 09:38
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.861	1.00	86.1

Limit of Detection Verification

LODV: 608583
Analyzed: 07/05/2018 09:09
Units: ug/L
Criteria: ± 50%

LODV: 608590
Analyzed: 07/05/2018 13:15
Units: ug/L
Criteria: ± 50%

LODV: 608592
Analyzed: 07/05/2018 15:23
Units: ug/L
Criteria: ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.970	1.00	97.0	0.988	1.00	98.8

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817359

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Comments

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
07/06/2018 11:40	07/06/2018 13:49

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ⬢ - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1817359

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9312

1817359

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18060947
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060947-01**	**18WW19_061918**	**Groundwater**	**19 Jun 2018 09:15**
	SUB_Perch-6850			28 Jun 2018
2.	**HS18060947-02**	**18WW19_061918_a**	**Groundwater**	**19 Jun 2018 09:15**
	SUB_Perch-6850			28 Jun 2018
3.	**HS18060947-03**	**18WW20_061918**	**Groundwater**	**19 Jun 2018 10:10**
	SUB_Perch-6850			28 Jun 2018
4.	**HS18060947-04**	**AWD4_061918**	**Groundwater**	**19 Jun 2018 11:20**
	SUB_Perch-6850			28 Jun 2018
5.	**HS18060947-05**	**18WW06_061918**	**Groundwater**	**19 Jun 2018 12:25**
	SUB_Perch-6850			28 Jun 2018
6.	**HS18060947-06**	**18WW02_061918**	**Groundwater**	**19 Jun 2018 13:20**
	SUB_Perch-6850			28 Jun 2018
7.	**HS18060947-07**	**18WW14_061918**	**Groundwater**	**19 Jun 2018 14:15**
	SUB_Perch-6850			28 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

COC ID: 9312

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	6/20/18 1800
Received By:		Date/Time:	6/21/18
Cooler ID(s):	Step 3	Temperature(s):	2

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060947	Split:	Workorder ID: 1817359	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
1	06/19/2018 09:15	18WW19_061918	1817359001		Water	A	1	A
2	06/19/2018 09:15	18WW19_061918-a	1817359002		Water	A	1	A
3	06/19/2018 10:10	18WW20_061918	1817359003		Water	A	1	A
4	06/19/2018 11:20	AWD4_061918	1817359004		Water	A	1	A
5	06/19/2018 12:25	18WW06_061918	1817359005		Water	A	1	A
6	06/19/2018 13:20	18WW02_061918	1817359006		Water	A	1	A
7	06/19/2018 14:15	18WW14_061918	1817359007		Water	A	1	A
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/21/2018 08:45	ALS Sample Receiving	Sample Login
Julie Warath	6/22/18 1400	BC	storage
R. 33.1	7.3.18/08:45	T. Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

Fri, 06/22/18 1:52 PM

ALSCOCV3.1

00900879

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston Project/Task/Site: 1817359

Date/Time of Receipt: 6/21/18 845 Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:						
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8663	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) [signature] (Printed Name) 6/21/18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00900880

Part # 159469-434 RIT2 EXP 03/19

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 20JUN18
ACTWGT: 16.90 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

546C2/93DF/53C1

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060947/954 - RJ

FedEx Express

E

J171016102001uv

THU - 21 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 2418

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2114 **Created:** 7/5/2018 08:36 **Instrument:** **HBN:** 218216

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1817359 [ENV_LVL4]
Workorder: 1817361 [ENV_LVL4]
Workorder: 1817362 [ENV_LVL4]
Workorder: 1817365 [ENV_LVL4]
Workorder: 1817368 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	608582	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
2	608583	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
3	608584	ICS for HBN 218216 [ELMS/2114]				ICS	3		E6850..D3Q	5311		7/5/2018	
4	608585	LMB for HBN 218216 [ELMS/2114]				LMB	3		E6850Q413Q	5311		7/5/2018	
5	608586	LCS for HBN 218216 [ELMS/2114]				LCS	3		E6850Q413Q	5311		7/5/2018	
6	1817359001	18WW19_061918				SAMPLE	3	1817359001-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
7	608587	18WW19_061918(1817359001MS)				MS	3		E6850Q413Q	5311		7/5/2018	
8	608588	18WW19_061918(1817359001MSD)				MSD	3		E6850Q413Q	5311		7/5/2018	
9	1817359002	18WW19_061918-a				SAMPLE	3	1817359002-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
10	1817359003	18WW20_061918				SAMPLE	3	1817359003-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
11	1817359004	AWD4_061918				SAMPLE	3	1817359004-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
12	1817359005	18WW06_061918				SAMPLE	3	1817359005-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
13	1817359006	18WW02_061918				SAMPLE	3	1817359006-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
14	1817359007	18WW14_061918				SAMPLE	3	1817359007-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
15	1817361001	AWD3_061818				SAMPLE	3	1817361001-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
16	1817361002	MW7_061818				SAMPLE	3	1817361002-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
17	1817361003	18CPTMW12DW_061818				SAMPLE	3	1817361003-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
18	608589	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
19	608590	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
20	1817361004	18CPTMW12SW_061818				SAMPLE	3	1817361004-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
21	1817361005	MW13_061818				SAMPLE	3	1817361005-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
22	1817361006	C02_061818				SAMPLE	3	1817361006-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
23	1817361007	MW17_061818				SAMPLE	3	1817361007-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
24	1817362001	LH18/24_SP650_062018				SAMPLE	3	1817362001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
25	1817365001	LH18/24_SP140_062018				SAMPLE	3	1817365001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
26	1817368001	LH18/24_SP650_062018				SAMPLE	3	1817368001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
27	608591	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
28	608592	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1817359 (001-07); 1817361 9001-07); 1817362 (001); 1817365 (001); 1817368 (001) ELMS Batch/HBN ID: 2114 (218216)
Prep Date: 07/03/2018 Analysis Date: 07/05/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\05JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 608586; Target = 5.0µg/L. ASTM type II water was used for LMB 608585.

MS/MSD: MS/MSD was performed on sample 1817359001 (Client ID: 18WW19_061918). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions.
   1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 05JULP20.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218216-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Larnendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard®, Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 11, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18060954**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 8 sample(s) on Jun 20, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: RJ.MODASHIA

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060954

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060954-01	AWD3_061818	Groundwater		18-Jun-2018 08:25	20-Jun-2018 09:47	☐
HS18060954-02	MW7_061818	Groundwater		18-Jun-2018 09:20	20-Jun-2018 09:47	☐
HS18060954-03	18CPTMW12DW_061818	Groundwater		18-Jun-2018 10:15	20-Jun-2018 09:47	☐
HS18060954-04	18CPTMW12SW_061818	Groundwater		18-Jun-2018 11:10	20-Jun-2018 09:47	☐
HS18060954-05	MW13_061818	Groundwater		18-Jun-2018 12:05	20-Jun-2018 09:47	☐
HS18060954-06	C02_061818	Groundwater		18-Jun-2018 12:55	20-Jun-2018 09:47	☐
HS18060954-07	MW17_061818	Groundwater		18-Jun-2018 13:45	20-Jun-2018 09:47	☐
HS18060954-08	Trip Blank	Water	ALS-050418-43	18-Jun-2018 00:00	20-Jun-2018 09:47	☐

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18060954

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129659

Sample ID: MW7_061818 (HS18060954-02)

- The surrogate recoveries could not be determined due to dilution below the calibration range.

Batch ID: 129689

Sample ID: LCSD-129659

- LCS/LCSD RPD was above the control limits for surrogate 2-Fluorobiphenyl

GCMS Volatiles by Method SW8260

Batch ID: R318560

Sample ID: HS18060947-01MSD

- MSD is for an unrelated sample

Batch ID: R318780

Sample ID: CCV

- Naphthalene exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: VLCSW-180627

- 1,1,2,2,-Tetrachloroethenane and Naphthalene exceeded QC limits for LCS.

Metals by Method SW7470

Batch ID: 129784

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129615

Sample ID: HS18060725-05MS

- MS/MSD and DUPs for an unrelated sample

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: AWD3_061818
Collection Date: 18-Jun-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,2-Dichloroethane	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 12:24
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 12:24
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 12:24
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 12:24
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 12:24
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 12:24
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: AWD3_061818
Collection Date: 18-Jun-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
cis-1,2-Dichloroethene	**4.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 12:24
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 12:24
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 12:24
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:24
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Trichloroethene	**100**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 12:24
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:24
Surr: 1,2-Dichloroethane-d4	*92.4*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 12:24*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 12:24*
Surr: Dibromofluoromethane	*91.0*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 12:24*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 12:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: AWD3_061818
Collection Date: 18-Jun-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.980**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:46
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:46
Arsenic	**0.00142**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:46
Barium	**0.0750**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:46
Beryllium	**0.000409**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:46
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:46
Calcium	**1.15**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:46
Chromium	**1.68**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:46
Cobalt	**0.00769**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:46
Copper	**0.0212**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:46
Iron	**7.23**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:46
Lead	**0.000822**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:46
Magnesium	**0.721**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:46
Manganese	**0.0833**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:46
Nickel	**0.277**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:46
Potassium	**0.736**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:46
Selenium	**0.00365**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 16:06
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:46
Sodium	**28.5**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:46
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:46
Vanadium	**0.00559**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:46
Zinc	**0.0128**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:46
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	29-Jun-2018 18:24
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW7_061818
Collection Date: 18-Jun-2018 09:20

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,1-Dichloroethene	**1.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 13:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,2-Dichloroethane	**13**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 13:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 13:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 13:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 13:38
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 13:38
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 13:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW7_061818
Collection Date: 18-Jun-2018 09:20

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**5.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 13:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
cis-1,2-Dichloroethene	**4.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 13:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 13:38
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 13:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 13:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Trichloroethene	**420**		**2.0**	**5.0**	**10**	**ug/L**	10	27-Jun-2018 13:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 13:38
Surr: 1,2-Dichloroethane-d4	*93.2*			**0**	*81-118*	*%REC*	*10*	*27-Jun-2018 13:13*
Surr: 1,2-Dichloroethane-d4	*91.7*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 13:38*
Surr: 4-Bromofluorobenzene	*99.1*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 13:38*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*10*	*27-Jun-2018 13:13*
Surr: Dibromofluoromethane	*91.5*			**0**	*80-119*	*%REC*	*10*	*27-Jun-2018 13:13*
Surr: Dibromofluoromethane	*93.0*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 13:38*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*27-Jun-2018 13:13*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 13:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW7_061818
Collection Date: 18-Jun-2018 09:20

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**5.1**		**1.0**	**1.0**	**1.0**	**ug/L**	100	25-Jun-2018 18:16
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*25-Jun-2018 18:16*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*25-Jun-2018 18:16*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*25-Jun-2018 18:16*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW12DW_061818
Collection Date: 18-Jun-2018 10:15

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 17:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 17:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 17:09
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 17:09
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 17:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW12DW_061818
Collection Date: 18-Jun-2018 10:15

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 17:09
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 17:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:09
Surr: 1,2-Dichloroethane-d4	*89.2*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 17:09*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 17:09*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 17:09*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 17:09*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.084**		**0.010**	**0.010**	**0.010**	**ug/L**	1	25-Jun-2018 15:10
Surr: 2-Fluorobiphenyl	*109*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:10*
Surr: 4-Terphenyl-d14	*75.7*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:10*
Surr: Nitrobenzene-d5	*64.5*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW12DW_061818
Collection Date: 18-Jun-2018 10:15

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.0124**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:48
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:48
Arsenic	**0.00304**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:48
Barium	**0.124**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:48
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:48
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:48
Calcium	**6.71**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:48
Chromium	**0.00984**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:48
Cobalt	0.00100	U	0.000200	0.00100	0.00500	mg/L	1	21-Jun-2018 13:48
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 13:48
Iron	**1.10**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:48
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:48
Magnesium	**3.84**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:48
Manganese	**0.0395**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:48
Nickel	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:48
Potassium	**96.1**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:48
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:48
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:48
Sodium	**179**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:48
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:48
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:48
Zinc	**0.00336**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:48
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	29-Jun-2018 18:26
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW12SW_061818
Collection Date: 18-Jun-2018 11:10

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 17:33
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 17:33
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 17:33
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 17:33
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 17:33
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW12SW_061818
Collection Date: 18-Jun-2018 11:10

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 17:33
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 17:33
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:33
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:33
Surr: 1,2-Dichloroethane-d4	*88.6*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 17:33*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 17:33*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 17:33*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 17:33*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.050**		**0.010**	**0.010**	**0.010**	**ug/L**	1	25-Jun-2018 15:31
Surr: 2-Fluorobiphenyl	*85.7*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:31*
Surr: 4-Terphenyl-d14	*74.1*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:31*
Surr: Nitrobenzene-d5	*49.3*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW12SW_061818
Collection Date: 18-Jun-2018 11:10

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.0208**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:50
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:50
Arsenic	**0.00137**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:50
Barium	**0.810**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:50
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:50
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:50
Calcium	**54.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:50
Chromium	**0.0109**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:50
Cobalt	**0.00532**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:50
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	21-Jun-2018 13:50
Iron	**2.03**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:50
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:50
Magnesium	**33.9**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:50
Manganese	**0.835**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:50
Nickel	**0.00772**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:50
Potassium	**59.4**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:50
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 16:08
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:50
Sodium	**236**		**0.140**	**1.00**	**2.00**	**mg/L**	10	21-Jun-2018 15:52
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:50
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:50
Zinc	**0.0130**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:50
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	29-Jun-2018 18:28
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW13_061818
Collection Date: 18-Jun-2018 12:05

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 17:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 17:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 17:58
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 17:58
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 17:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW13_061818
Collection Date: 18-Jun-2018 12:05

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 17:58
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 17:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 17:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 17:58
Surr: 1,2-Dichloroethane-d4	*89.0*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 17:58*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 17:58*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 17:58*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 17:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW13_061818
Collection Date: 18-Jun-2018 12:05

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 20-Jun-2018		Analyst: JDE
Aluminum	**0.169**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	21-Jun-2018 13:52
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	21-Jun-2018 13:52
Arsenic	**0.000572**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:52
Barium	**0.574**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:52
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:52
Cadmium	**0.000228**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:52
Calcium	**29.3**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	21-Jun-2018 13:52
Chromium	**0.0461**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	21-Jun-2018 13:52
Cobalt	**0.000805**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:52
Copper	**0.00328**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	21-Jun-2018 13:52
Iron	**97.4**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:52
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	21-Jun-2018 13:52
Magnesium	**13.4**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:52
Manganese	**1.28**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	21-Jun-2018 13:52
Nickel	**0.0265**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	21-Jun-2018 13:52
Potassium	**3.76**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:52
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	21-Jun-2018 13:52
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:52
Sodium	**88.8**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	21-Jun-2018 13:52
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	21-Jun-2018 13:52
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Jun-2018 13:52
Zinc	**0.0120**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	21-Jun-2018 13:52
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 25-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	29-Jun-2018 18:29
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C02_061818
Collection Date: 18-Jun-2018 12:55

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 12:00
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 12:00
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 12:00
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 12:00
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 12:00
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C02_061818
Collection Date: 18-Jun-2018 12:55

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 12:00
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 12:00
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:00
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:00
Surr: 1,2-Dichloroethane-d4	*92.8*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 12:00*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 12:00*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 12:00*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 12:00*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

ANALYTICAL REPORT

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW17_061818
Collection Date: 18-Jun-2018 13:45

WorkOrder:HS18060954
Lab ID:HS18060954-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	25-Jun-2018 15:51
Surr: 2-Fluorobiphenyl	*96.4*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:51*
Surr: 4-Terphenyl-d14	*73.4*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:51*
Surr: Nitrobenzene-d5	*57.9*			**0**	*40-140*	*%REC*	*1*	*25-Jun-2018 15:51*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 18-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 14:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Jun-2018 14:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Jun-2018 14:41
Acetone	**6.7**		**0.40**	**1.0**	**2.0**	**ug/L**	1	24-Jun-2018 14:41
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Jun-2018 14:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 18-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18060954
Lab ID:HS18060954-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Jun-2018 14:41
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	24-Jun-2018 14:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Jun-2018 14:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Jun-2018 14:41
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1*	*24-Jun-2018 14:41*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*24-Jun-2018 14:41*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*24-Jun-2018 14:41*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*24-Jun-2018 14:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 11-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

Batch ID: 129615 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060954-01	1	10	10 (mL)	1
HS18060954-03	1	10	10 (mL)	1
HS18060954-04	1	10	10 (mL)	1
HS18060954-05	1	10	10 (mL)	1

Batch ID: 129659 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060954-02	1	1000	1 (mL)	0.001
HS18060954-03	1	1000	1 (mL)	0.001
HS18060954-04	1	1000	1 (mL)	0.001
HS18060954-07	1	1000	1 (mL)	0.001

Batch ID: 129784 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18060954-01	1	10 (mL)	10 (mL)	1
HS18060954-03	1	10 (mL)	10 (mL)	1
HS18060954-04	1	10 (mL)	10 (mL)	1
HS18060954-05	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129615	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18060954-01	AWD3_061818	18 Jun 2018 08:25		20 Jun 2018 13:53	21 Jun 2018 16:06	1
HS18060954-01	AWD3_061818	18 Jun 2018 08:25		20 Jun 2018 13:53	21 Jun 2018 13:46	1
HS18060954-03	18CPTMW12DW_061818	18 Jun 2018 10:15		20 Jun 2018 13:53	21 Jun 2018 13:48	1
HS18060954-04	18CPTMW12SW_061818	18 Jun 2018 11:10		20 Jun 2018 13:53	21 Jun 2018 16:08	1
HS18060954-04	18CPTMW12SW_061818	18 Jun 2018 11:10		20 Jun 2018 13:53	21 Jun 2018 15:52	10
HS18060954-04	18CPTMW12SW_061818	18 Jun 2018 11:10		20 Jun 2018 13:53	21 Jun 2018 13:50	1
HS18060954-05	MW13_061818	18 Jun 2018 12:05		20 Jun 2018 13:53	21 Jun 2018 13:52	1
Batch ID 129659	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18060954-02	MW7_061818	18 Jun 2018 09:20		21 Jun 2018 10:00	25 Jun 2018 18:16	100
HS18060954-03	18CPTMW12DW_061818	18 Jun 2018 10:15		21 Jun 2018 10:00	25 Jun 2018 15:10	1
HS18060954-04	18CPTMW12SW_061818	18 Jun 2018 11:10		21 Jun 2018 10:00	25 Jun 2018 15:31	1
HS18060954-07	MW17_061818	18 Jun 2018 13:45		21 Jun 2018 10:00	25 Jun 2018 15:51	1
Batch ID 129784	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18060954-01	AWD3_061818	18 Jun 2018 08:25		25 Jun 2018 14:10	29 Jun 2018 18:24	1
HS18060954-03	18CPTMW12DW_061818	18 Jun 2018 10:15		25 Jun 2018 14:10	29 Jun 2018 18:26	1
HS18060954-04	18CPTMW12SW_061818	18 Jun 2018 11:10		25 Jun 2018 14:10	29 Jun 2018 18:28	1
HS18060954-05	MW13_061818	18 Jun 2018 12:05		25 Jun 2018 14:10	29 Jun 2018 18:29	1
Batch ID R318560	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18060954-08	Trip Blank	18 Jun 2018 00:00			24 Jun 2018 14:41	1
Batch ID R318560	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060954-03	18CPTMW12DW_061818	18 Jun 2018 10:15			24 Jun 2018 17:09	1
HS18060954-04	18CPTMW12SW_061818	18 Jun 2018 11:10			24 Jun 2018 17:33	1
HS18060954-05	MW13_061818	18 Jun 2018 12:05			24 Jun 2018 17:58	1
Batch ID R318780	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18060954-01	AWD3_061818	18 Jun 2018 08:25			27 Jun 2018 12:24	1
HS18060954-02	MW7_061818	18 Jun 2018 09:20			27 Jun 2018 13:38	1
HS18060954-02	MW7_061818	18 Jun 2018 09:20			27 Jun 2018 13:13	10
HS18060954-06	C02_061818	18 Jun 2018 12:55			27 Jun 2018 12:00	1
Batch ID R319293	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18060954-01	AWD3_061818	18 Jun 2018 08:25			06 Jul 2018 16:39	1
HS18060954-02	MW7_061818	18 Jun 2018 09:20			06 Jul 2018 16:39	1
HS18060954-03	18CPTMW12DW_061818	18 Jun 2018 10:15			06 Jul 2018 16:39	1
HS18060954-04	18CPTMW12SW_061818	18 Jun 2018 11:10			06 Jul 2018 16:39	1
HS18060954-05	MW13_061818	18 Jun 2018 12:05			06 Jul 2018 16:39	1
HS18060954-06	C02_061818	18 Jun 2018 12:55			06 Jul 2018 16:39	1
HS18060954-07	MW17_061818	18 Jun 2018 13:45			06 Jul 2018 16:39	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:52**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619232** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.002896	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.01128	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.02701	0.200								J
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.1074	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129615** Units: **mg/L** Analysis Date: **21-Jun-2018 12:54**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619233** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1009	0.0100	0.1	0	101	80 - 120				
Antimony	0.0511	0.00200	0.05	0	102	80 - 120				
Arsenic	0.04875	0.00200	0.05	0	97.5	80 - 120				
Barium	0.04803	0.00400	0.05	0	96.1	80 - 120				
Beryllium	0.04748	0.00200	0.05	0	95.0	80 - 120				
Cadmium	0.04859	0.00200	0.05	0	97.2	80 - 120				
Calcium	4.942	0.500	5	0	98.8	80 - 120				
Chromium	0.0485	0.00400	0.05	0	97.0	80 - 120				
Cobalt	0.04995	0.00500	0.05	0	99.9	80 - 120				
Copper	0.05088	0.00200	0.05	0	102	80 - 120				
Iron	4.893	0.200	5	0	97.9	80 - 120				
Lead	0.05088	0.00200	0.05	0	102	80 - 120				
Magnesium	4.811	0.200	5	0	96.2	80 - 120				
Manganese	0.04963	0.00500	0.05	0	99.3	80 - 120				
Nickel	0.0502	0.00200	0.05	0	100	80 - 120				
Potassium	5.037	0.200	5	0	101	80 - 120				
Selenium	0.0552	0.00200	0.05	0	110	80 - 120				
Silver	0.05032	0.00200	0.05	0	101	80 - 120				
Sodium	4.979	0.200	5	0	99.6	80 - 120				
Thallium	0.04338	0.00200	0.05	0	86.8	80 - 120				
Vanadium	0.04673	0.00500	0.05	0	93.5	80 - 120				
Zinc	0.05053	0.00400	0.05	0	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18060725-05MS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:02**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619237** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.105	0.0100	0.1	0.005904	99.1	80 - 120				
Antimony	0.0519	0.00200	0.05	-0.000096	104	80 - 120				
Arsenic	0.05057	0.00200	0.05	0.000306	101	80 - 120				
Barium	0.5785	0.00400	0.05	0.5156	126	80 - 120				SO
Beryllium	0.05107	0.00200	0.05	0.000003	102	80 - 120				
Cadmium	0.05041	0.00200	0.05	0.00029	100	80 - 120				
Calcium	31.34	0.500	5	26.18	103	80 - 120				O
Chromium	0.05229	0.00400	0.05	0.007222	90.1	80 - 120				
Cobalt	0.05401	0.00500	0.05	0.005436	97.2	80 - 120				
Copper	0.05074	0.00200	0.05	0.000504	100	80 - 120				
Iron	5.52	0.200	5	0.7229	95.9	80 - 120				
Lead	0.04911	0.00200	0.05	0.00009	98.0	80 - 120				
Magnesium	20.22	0.200	5	15.4	96.5	80 - 120				
Manganese	1.101	0.00500	0.05	1.032	137	80 - 120				SO
Nickel	0.05234	0.00200	0.05	0.003916	96.8	80 - 120				
Potassium	6.307	0.200	5	1.542	95.3	80 - 120				
Selenium	0.05076	0.00200	0.05	0.000443	101	80 - 120				
Silver	0.04731	0.00200	0.05	0.000008	94.6	80 - 120				
Sodium	242.1	0.200	5	235.2	137	80 - 120				SEO
Thallium	0.04553	0.00200	0.05	0.00007	90.9	80 - 120				
Vanadium	0.0497	0.00500	0.05	-0.000427	100	80 - 120				
Zinc	0.05692	0.00400	0.05	0.006181	101	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18060725-05MSD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:04**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619238** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1044	0.0100	0.1	0.005904	98.5	80 - 120	0.105	0.558	20	
Antimony	0.05084	0.00200	0.05	-0.000096	102	80 - 120	0.0519	2.06	20	
Arsenic	0.04978	0.00200	0.05	0.000306	99.0	80 - 120	0.05057	1.56	20	
Barium	0.5982	0.00400	0.05	0.5156	165	80 - 120	0.5785	3.35	20	SO
Beryllium	0.05207	0.00200	0.05	0.000003	104	80 - 120	0.05107	1.93	20	
Cadmium	0.04884	0.00200	0.05	0.00029	97.1	80 - 120	0.05041	3.17	20	
Calcium	32.54	0.500	5	26.18	127	80 - 120	31.34	3.77	20	SO
Chromium	0.05042	0.00400	0.05	0.007222	86.4	80 - 120	0.05229	3.63	20	
Cobalt	0.0538	0.00500	0.05	0.005436	96.7	80 - 120	0.05401	0.393	20	
Copper	0.05026	0.00200	0.05	0.000504	99.5	80 - 120	0.05074	0.951	20	
Iron	5.426	0.200	5	0.7229	94.1	80 - 120	5.52	1.71	20	
Lead	0.04811	0.00200	0.05	0.00009	96.0	80 - 120	0.04911	2.06	20	
Magnesium	20.4	0.200	5	15.4	100	80 - 120	20.22	0.889	20	
Manganese	1.099	0.00500	0.05	1.032	135	80 - 120	1.101	0.121	20	SO
Nickel	0.05334	0.00200	0.05	0.003916	98.8	80 - 120	0.05234	1.89	20	
Potassium	6.412	0.200	5	1.542	97.4	80 - 120	6.307	1.66	20	
Selenium	0.05279	0.00200	0.05	0.000443	105	80 - 120	0.05076	3.91	20	
Silver	0.04636	0.00200	0.05	0.000008	92.7	80 - 120	0.04731	2.04	20	
Sodium	245.3	0.200	5	235.2	201	80 - 120	242.1	1.31	20	SEO
Thallium	0.04533	0.00200	0.05	0.00007	90.5	80 - 120	0.04553	0.434	20	
Vanadium	0.04896	0.00500	0.05	-0.000427	98.8	80 - 120	0.0497	1.49	20	
Zinc	0.05676	0.00400	0.05	0.006181	101	80 - 120	0.05692	0.276	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 13:06**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619239** PrepDate: **20-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09658	0.0100	0.1	0.005904	90.7	75 - 125				
Antimony	0.09212	0.00200	0.1	-0.000096	92.2	75 - 125				
Arsenic	0.0985	0.00200	0.1	0.000306	98.2	75 - 125				
Barium	0.6318	0.00400	0.1	0.5156	116	75 - 125				O
Beryllium	0.09555	0.00200	0.1	0.000003	95.6	75 - 125				
Cadmium	0.09675	0.00200	0.1	0.00029	96.5	75 - 125				
Calcium	36.95	0.500	10	26.18	108	75 - 125				
Chromium	0.1005	0.00400	0.1	0.007222	93.3	75 - 125				
Cobalt	0.1015	0.00500	0.1	0.005436	96.0	75 - 125				
Copper	0.09866	0.00200	0.1	0.000504	98.2	75 - 125				
Iron	10.25	0.200	10	0.7229	95.3	75 - 125				
Lead	0.09675	0.00200	0.1	0.00009	96.7	75 - 125				
Magnesium	24.8	0.200	10	15.4	94.0	75 - 125				
Manganese	1.165	0.00500	0.1	1.032	133	75 - 125				SO
Nickel	0.09842	0.00200	0.1	0.003916	94.5	75 - 125				
Potassium	10.9	0.200	10	1.542	93.5	75 - 125				
Selenium	0.106	0.00200	0.1	0.000443	106	75 - 125				
Silver	0.09238	0.00200	0.1	0.000008	92.4	75 - 125				
Thallium	0.09414	0.00200	0.1	0.00007	94.1	75 - 125				
Vanadium	0.0963	0.00500	0.1	-0.000427	96.7	75 - 125				
Zinc	0.107	0.00400	0.1	0.006181	101	75 - 125				

PDS Sample ID: **HS18060725-05PDS** Units: **mg/L** Analysis Date: **21-Jun-2018 15:28**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619524** PrepDate: **20-Jun-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	314.2	2.00	100	222.8	91.3	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129615 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 13:00**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619236** PrepDate: **20-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.0125	0.0500					0.005904	0	10	U
Antimony	0.00500	0.0100					-0.000096	0	10	U
Arsenic	0.00500	0.0100					0.000306	0	10	U
Barium	0.5185	0.0200					0.5156	0.553	10	
Beryllium	0.00500	0.0100					0.000003	0	10	U
Cadmium	0.00500	0.0100					0.00029	0	10	U
Calcium	26.96	2.50					26.18	2.97	10	
Chromium	0.00713	0.0200					0.007222	0	10	J
Cobalt	0.005761	0.0250					0.005436	0	10	J
Copper	0.0100	0.0100					0.000504	0	10	U
Iron	0.7586	1.00					0.7229	0	10	J
Lead	0.00500	0.0100					0.00009	0	10	U
Magnesium	16.29	1.00					15.4	5.81	10	
Manganese	1.091	0.0250					1.032	5.71	10	
Nickel	0.00500	0.0100					0.003916	0	10	U
Selenium	0.0100	0.0100					0.000443	0	10	U
Silver	0.00500	0.0100					0.000008	0	10	U
Thallium	0.00500	0.0100					0.00007	0	10	U
Vanadium	0.00500	0.0250					-0.000427	0	10	U
Zinc	0.0125	0.0200					0.006181	0	10	U

SD Sample ID: **HS18060725-05SD** Units: **mg/L** Analysis Date: **21-Jun-2018 15:26**
Client ID: Run ID: **ICPMS05_318393** SeqNo: **4619523** PrepDate: **20-Jun-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	209.2	10.0					222.8	6.11	10	

The following samples were analyzed in this batch: HS18060954-01 HS18060954-03 HS18060954-04 HS18060954-05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129784 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129784** Units: **mg/L** Analysis Date: **29-Jun-2018 17:49**
Client ID: Run ID: **HG03_318987** SeqNo: **4631894** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000052	0.000200								J

LCS Sample ID: **LCS-129784** Units: **mg/L** Analysis Date: **29-Jun-2018 17:51**
Client ID: Run ID: **HG03_318987** SeqNo: **4631895** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00443	0.000200	0.005	0	88.6	80 - 120				

MS Sample ID: **HS18060954-05MS** Units: **mg/L** Analysis Date: **29-Jun-2018 18:31**
Client ID: **MW13_061818** Run ID: **HG03_318987** SeqNo: **4631914** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00413	0.000200	0.005	0.000007	82.5	75 - 125				

MSD Sample ID: **HS18060954-05MSD** Units: **mg/L** Analysis Date: **29-Jun-2018 18:33**
Client ID: **MW13_061818** Run ID: **HG03_318987** SeqNo: **4631915** PrepDate: **25-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00422	0.000200	0.005	0.000007	84.3	75 - 125	0.00413	2.16	20	

The following samples were analyzed in this batch: HS18060954-01 HS18060954-03 HS18060954-04 HS18060954-05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: 129659 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 10:54**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625531** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1011*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06319*	*0*	*0.08*	*0*	*79.0*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05838*	*0*	*0.08*	*0*	*73.0*	*40 - 140*				

LCS Sample ID: **LCS-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:14**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625532** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07838	0.010	0.08	0	98.0	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08025*	*0*	*0.08*	*0*	*100*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06393*	*0*	*0.08*	*0*	*79.9*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0471*	*0*	*0.08*	*0*	*58.9*	*40 - 140*				

LCSD Sample ID: **LCSD-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:35**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625533** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07178	0.010	0.08	0	89.7	40 - 140	0.07838	8.79	20	
Surr: 2-Fluorobiphenyl	*0.1005*	*0*	*0.08*	*0*	*126*	*40 - 140*	*0.08025*	*22.4*	*20*	R
Surr: 4-Terphenyl-d14	*0.06624*	*0*	*0.08*	*0*	*82.8*	*40 - 140*	*0.06393*	*3.56*	*20*	
Surr: Nitrobenzene-d5	*0.057*	*0*	*0.08*	*0*	*71.2*	*40 - 140*	*0.0471*	*19*	*20*	

The following samples were analyzed in this batch: HS18060954-02 HS18060954-03 HS18060954-04 HS18060954-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: **R318560** **Instrument:** **VOA2** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 11:24**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623181** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 11:24**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623181** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.3*	*1.0*	*50*	*0*	*88.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.26*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*52.43*	*1.0*	*50*	*0*	*105*	*80 - 119*				
Surr: Toluene-d8	*50.01*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 10:35**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623211** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.8	1.0	50	0	95.6	78 - 124				
1,1,1-Trichloroethane	44.72	1.0	50	0	89.4	74 - 131				
1,1,2,2-Tetrachloroethane	41.75	1.0	50	0	83.5	71 - 121				
1,1,2-Trichloroethane	47.13	1.0	50	0	94.3	80 - 119				
1,1-Dichloroethane	46.51	1.0	50	0	93.0	77 - 125				
1,1-Dichloroethene	40.83	1.0	50	0	81.7	71 - 131				
1,1-Dichloropropene	41.01	1.0	50	0	82.0	78 - 125				
1,2,3-Trichlorobenzene	44	1.0	50	0	88.0	69 - 129				
1,2,3-Trichloropropane	43.29	1.0	50	0	86.6	73 - 122				
1,2,4-Trichlorobenzene	41.9	1.0	50	0	83.8	69 - 130				
1,2,4-Trimethylbenzene	41.5	1.0	50	0	83.0	76 - 124				
1,2-Dibromo-3-chloropropane	45.6	1.0	50	0	91.2	62 - 128				
1,2-Dibromoethane	46.5	1.0	50	0	93.0	77 - 121				
1,2-Dichlorobenzene	42.95	1.0	50	0	85.9	80 - 119				
1,2-Dichloroethane	47.78	1.0	50	0	95.6	73 - 128				
1,2-Dichloropropane	44.49	1.0	50	0	89.0	78 - 122				
1,3,5-Trimethylbenzene	49.99	1.0	50	0	100.0	75 - 124				
1,3-Dichlorobenzene	43.03	1.0	50	0	86.1	80 - 119				
1,3-Dichloropropane	46.05	1.0	50	0	92.1	80 - 119				
1,4-Dichlorobenzene	42.93	1.0	50	0	85.9	79 - 118				
2,2-Dichloropropane	46.35	1.0	50	0	92.7	60 - 139				
2-Butanone	96.52	2.0	100	0	96.5	56 - 143				
2-Chlorotoluene	49.49	1.0	50	0	99.0	79 - 122				
2-Hexanone	102.3	2.0	100	0	102	57 - 139				
4-Chlorotoluene	49.26	1.0	50	0	98.5	78 - 122				
4-Isopropyltoluene	43.06	1.0	50	0	86.1	77 - 127				
4-Methyl-2-pentanone	100.4	2.0	100	0	100	67 - 130				
Acetone	71.35	2.0	100	0	71.4	39 - 160				
Benzene	43.76	1.0	50	0	87.5	79 - 120				
Bromobenzene	41.18	1.0	50	0	82.4	80 - 120				
Bromochloromethane	47.93	1.0	50	0	95.9	78 - 123				
Bromodichloromethane	46.57	1.0	50	0	93.1	79 - 125				
Bromoform	49.46	1.0	50	0	98.9	66 - 130				
Bromomethane	41.72	1.0	50	0	83.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180624** Units: **ug/L** Analysis Date: **24-Jun-2018 10:35**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623211** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	77.6	2.0	100	0	77.6	64 - 133				
Carbon tetrachloride	50.5	1.0	50	0	101	72 - 136				
Chlorobenzene	44.5	1.0	50	0	89.0	82 - 118				
Chloroethane	44.35	1.0	50	0	88.7	60 - 138				
Chloroform	44.54	1.0	50	0	89.1	79 - 124				
Chloromethane	44.15	1.0	50	0	88.3	50 - 139				
cis-1,2-Dichloroethene	45.34	1.0	50	0	90.7	78 - 123				
cis-1,3-Dichloropropene	48.82	1.0	50	0	97.6	75 - 124				
Dibromochloromethane	45.5	1.0	50	0	91.0	74 - 126				
Dibromomethane	48.82	1.0	50	0	97.6	79 - 123				
Dichlorodifluoromethane	53.73	1.0	50	0	107	32 - 152				
Ethylbenzene	46.01	1.0	50	0	92.0	79 - 121				
Hexachlorobutadiene	43.51	1.0	50	0	87.0	66 - 134				
Isopropylbenzene	47.55	1.0	50	0	95.1	72 - 131				
m,p-Xylene	91.2	2.0	100	0	91.2	80 - 121				
Methylene chloride	37.04	2.0	50	0	74.1	74 - 124				
Naphthalene	44.06	1.0	50	0	88.1	61 - 128				
n-Butylbenzene	46.36	1.0	50	0	92.7	75 - 128				
n-Propylbenzene	49.5	1.0	50	0	99.0	76 - 126				
o-Xylene	46.65	1.0	50	0	93.3	78 - 122				
sec-Butylbenzene	42.53	1.0	50	0	85.1	77 - 126				
Styrene	47.88	1.0	50	0	95.8	78 - 123				
tert-Butylbenzene	49.33	1.0	50	0	98.7	78 - 124				
Tetrachloroethene	45.3	1.0	50	0	90.6	74 - 129				
Toluene	45.4	1.0	50	0	90.8	80 - 121				
trans-1,2-Dichloroethene	40.85	1.0	50	0	81.7	75 - 124				
trans-1,3-Dichloropropene	49.83	1.0	50	0	99.7	73 - 127				
Trichloroethene	45.33	1.0	50	0	90.7	79 - 123				
Trichlorofluoromethane	40.14	1.0	50	0	80.3	65 - 141				
Vinyl chloride	43.07	1.0	50	0	86.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.18*	*1.0*	*50*	*0*	*90.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.68*	*1.0*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*48.3*	*1.0*	*50*	*0*	*96.6*	*80 - 119*				
Surr: Toluene-d8	*54.13*	*1.0*	*50*	*0*	*108*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060947-01MS** Units: **ug/L** Analysis Date: **24-Jun-2018 13:02**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623184** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.92	1.0	50	0	99.8	78 - 124				
1,1,1-Trichloroethane	50.69	1.0	50	0	101	74 - 131				
1,1,2,2-Tetrachloroethane	46.09	1.0	50	0	92.2	71 - 121				
1,1,2-Trichloroethane	48.05	1.0	50	0	96.1	80 - 119				
1,1-Dichloroethane	51.09	1.0	50	0	102	77 - 125				
1,1-Dichloroethene	53.38	1.0	50	0	107	71 - 131				
1,1-Dichloropropene	47.04	1.0	50	0	94.1	78 - 125				
1,2,3-Trichlorobenzene	39.83	1.0	50	0	79.7	69 - 129				
1,2,3-Trichloropropane	48.11	1.0	50	0	96.2	73 - 122				
1,2,4-Trichlorobenzene	36.31	1.0	50	0	72.6	69 - 130				
1,2,4-Trimethylbenzene	41.8	1.0	50	0	83.6	76 - 124				
1,2-Dibromo-3-chloropropane	45.6	1.0	50	0	91.2	62 - 128				
1,2-Dibromoethane	50.44	1.0	50	0	101	77 - 121				
1,2-Dichlorobenzene	44.78	1.0	50	0	89.6	80 - 119				
1,2-Dichloroethane	51.12	1.0	50	0	102	73 - 128				
1,2-Dichloropropane	48.82	1.0	50	0	97.6	78 - 122				
1,3,5-Trimethylbenzene	49.98	1.0	50	0	100.0	75 - 124				
1,3-Dichlorobenzene	44.28	1.0	50	0	88.6	80 - 119				
1,3-Dichloropropane	49.68	1.0	50	0	99.4	80 - 119				
1,4-Dichlorobenzene	44.71	1.0	50	0	89.4	79 - 118				
2,2-Dichloropropane	52.66	1.0	50	0	105	60 - 139				
2-Butanone	108.5	2.0	100	0	109	56 - 143				
2-Chlorotoluene	52.48	1.0	50	0	105	79 - 122				
2-Hexanone	109.9	2.0	100	0	110	57 - 139				
4-Chlorotoluene	52.08	1.0	50	0	104	78 - 122				
4-Isopropyltoluene	39.84	1.0	50	0	79.7	77 - 127				
4-Methyl-2-pentanone	105.5	2.0	100	0	106	67 - 130				
Acetone	111.7	2.0	100	0	112	39 - 160				
Benzene	48.37	1.0	50	0	96.7	79 - 120				
Bromobenzene	43.89	1.0	50	0	87.8	80 - 120				
Bromochloromethane	51.94	1.0	50	0	104	78 - 123				
Bromodichloromethane	50.83	1.0	50	0	102	79 - 125				
Bromoform	50.73	1.0	50	0	101	66 - 130				
Bromomethane	47.91	1.0	50	0	95.8	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18060947-01MS** Units: **ug/L** Analysis Date: **24-Jun-2018 13:02**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623184** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	99.2	2.0	100	0	99.2	64 - 133				
Carbon tetrachloride	55.39	1.0	50	0	111	72 - 136				
Chlorobenzene	47.77	1.0	50	0	95.5	82 - 118				
Chloroethane	48.97	1.0	50	0	97.9	60 - 138				
Chloroform	48.75	1.0	50	0	97.5	79 - 124				
Chloromethane	43.41	1.0	50	0	86.8	50 - 139				
cis-1,2-Dichloroethene	50.13	1.0	50	0	100	78 - 123				
cis-1,3-Dichloropropene	52.68	1.0	50	0	105	75 - 124				
Dibromochloromethane	49.07	1.0	50	0	98.1	74 - 126				
Dibromomethane	53.03	1.0	50	0	106	79 - 123				
Dichlorodifluoromethane	41.89	1.0	50	0	83.8	32 - 152				
Ethylbenzene	47.51	1.0	50	0	95.0	79 - 121				
Hexachlorobutadiene	34.74	1.0	50	0	69.5	66 - 134				
Isopropylbenzene	46.2	1.0	50	0	92.4	72 - 131				
m,p-Xylene	92.2	2.0	100	0	92.2	80 - 121				
Methylene chloride	46.39	2.0	50	0	92.8	74 - 124				
Naphthalene	42.78	1.0	50	0	85.6	61 - 128				
n-Butylbenzene	40.94	1.0	50	0	81.9	75 - 128				
n-Propylbenzene	49.75	1.0	50	0	99.5	76 - 126				
o-Xylene	47.22	1.0	50	0	94.4	78 - 122				
sec-Butylbenzene	39.72	1.0	50	0	79.4	77 - 126				
Styrene	48.16	1.0	50	0	96.3	78 - 123				
tert-Butylbenzene	46.97	1.0	50	0	93.9	78 - 124				
Tetrachloroethene	47.24	1.0	50	0	94.5	74 - 129				
Toluene	47.09	1.0	50	0	94.2	80 - 121				
trans-1,2-Dichloroethene	50.86	1.0	50	0	102	75 - 124				
trans-1,3-Dichloropropene	54.71	1.0	50	0	109	73 - 127				
Trichloroethene	50.37	1.0	50	0	101	79 - 123				
Trichlorofluoromethane	42.04	1.0	50	0	84.1	65 - 141				
Vinyl chloride	49.92	1.0	50	0	99.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.73*	*1.0*	*50*	*0*	*91.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.02*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.71*	*1.0*	*50*	*0*	*95.4*	*80 - 119*				
Surr: Toluene-d8	*50.91*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060947-01MSD** Units: **ug/L** Analysis Date: **24-Jun-2018 13:27**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623185** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.27	1.0	50	0	96.5	78 - 124	49.92	3.37	20	
1,1,1-Trichloroethane	48.39	1.0	50	0	96.8	74 - 131	50.69	4.64	20	
1,1,2,2-Tetrachloroethane	45.71	1.0	50	0	91.4	71 - 121	46.09	0.826	20	
1,1,2-Trichloroethane	47.23	1.0	50	0	94.5	80 - 119	48.05	1.71	20	
1,1-Dichloroethane	49.03	1.0	50	0	98.1	77 - 125	51.09	4.11	20	
1,1-Dichloroethene	49.89	1.0	50	0	99.8	71 - 131	53.38	6.76	20	
1,1-Dichloropropene	45.1	1.0	50	0	90.2	78 - 125	47.04	4.21	20	
1,2,3-Trichlorobenzene	37.21	1.0	50	0	74.4	69 - 129	39.83	6.81	20	
1,2,3-Trichloropropane	48.21	1.0	50	0	96.4	73 - 122	48.11	0.211	20	
1,2,4-Trichlorobenzene	37.51	1.0	50	0	75.0	69 - 130	36.31	3.25	20	
1,2,4-Trimethylbenzene	41.88	1.0	50	0	83.8	76 - 124	41.8	0.195	20	
1,2-Dibromo-3-chloropropane	40.27	1.0	50	0	80.5	62 - 128	45.6	12.4	20	
1,2-Dibromoethane	49.69	1.0	50	0	99.4	77 - 121	50.44	1.51	20	
1,2-Dichlorobenzene	44.29	1.0	50	0	88.6	80 - 119	44.78	1.09	20	
1,2-Dichloroethane	51.12	1.0	50	0	102	73 - 128	51.12	0.00294	20	
1,2-Dichloropropane	46.88	1.0	50	0	93.8	78 - 122	48.82	4.04	20	
1,3,5-Trimethylbenzene	50.19	1.0	50	0	100	75 - 124	49.98	0.419	20	
1,3-Dichlorobenzene	44	1.0	50	0	88.0	80 - 119	44.28	0.617	20	
1,3-Dichloropropane	48.55	1.0	50	0	97.1	80 - 119	49.68	2.3	20	
1,4-Dichlorobenzene	44.2	1.0	50	0	88.4	79 - 118	44.71	1.13	20	
2,2-Dichloropropane	49.84	1.0	50	0	99.7	60 - 139	52.66	5.49	20	
2-Butanone	107.2	2.0	100	0	107	56 - 143	108.5	1.18	20	
2-Chlorotoluene	51.47	1.0	50	0	103	79 - 122	52.48	1.95	20	
2-Hexanone	107.7	2.0	100	0	108	57 - 139	109.9	2.06	20	
4-Chlorotoluene	51.27	1.0	50	0	103	78 - 122	52.08	1.56	20	
4-Isopropyltoluene	40.69	1.0	50	0	81.4	77 - 127	39.84	2.12	20	
4-Methyl-2-pentanone	104.7	2.0	100	0	105	67 - 130	105.5	0.779	20	
Acetone	113.9	2.0	100	0	114	39 - 160	111.7	1.88	20	
Benzene	46.37	1.0	50	0	92.7	79 - 120	48.37	4.22	20	
Bromobenzene	43.11	1.0	50	0	86.2	80 - 120	43.89	1.8	20	
Bromochloromethane	50.88	1.0	50	0	102	78 - 123	51.94	2.06	20	
Bromodichloromethane	49.55	1.0	50	0	99.1	79 - 125	50.83	2.55	20	
Bromoform	49.58	1.0	50	0	99.2	66 - 130	50.73	2.29	20	
Bromomethane	41.91	1.0	50	0	83.8	53 - 141	47.91	13.4	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18060947-01MSD** Units: **ug/L** Analysis Date: **24-Jun-2018 13:27**
Client ID: Run ID: **VOA2_318560** SeqNo: **4623185** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	94.29	2.0	100	0	94.3	64 - 133	99.2	5.07	20	
Carbon tetrachloride	52.73	1.0	50	0	105	72 - 136	55.39	4.91	20	
Chlorobenzene	46.05	1.0	50	0	92.1	82 - 118	47.77	3.67	20	
Chloroethane	43.73	1.0	50	0	87.5	60 - 138	48.97	11.3	20	
Chloroform	47.23	1.0	50	0	94.5	79 - 124	48.75	3.18	20	
Chloromethane	41.26	1.0	50	0	82.5	50 - 139	43.41	5.08	20	
cis-1,2-Dichloroethene	47.65	1.0	50	0	95.3	78 - 123	50.13	5.08	20	
cis-1,3-Dichloropropene	51.51	1.0	50	0	103	75 - 124	52.68	2.26	20	
Dibromochloromethane	48.11	1.0	50	0	96.2	74 - 126	49.07	1.96	20	
Dibromomethane	52.28	1.0	50	0	105	79 - 123	53.03	1.42	20	
Dichlorodifluoromethane	38.16	1.0	50	0	76.3	32 - 152	41.89	9.31	20	
Ethylbenzene	45.7	1.0	50	0	91.4	79 - 121	47.51	3.87	20	
Hexachlorobutadiene	31.96	1.0	50	0	63.9	66 - 134	34.74	8.34	20	S
Isopropylbenzene	46.19	1.0	50	0	92.4	72 - 131	46.2	0.00768	20	
m,p-Xylene	90.34	2.0	100	0	90.3	80 - 121	92.2	2.03	20	
Methylene chloride	44.37	2.0	50	0	88.7	74 - 124	46.39	4.45	20	
Naphthalene	40.78	1.0	50	0	81.6	61 - 128	42.78	4.79	20	
n-Butylbenzene	41.9	1.0	50	0	83.8	75 - 128	40.94	2.31	20	
n-Propylbenzene	49.92	1.0	50	0	99.8	76 - 126	49.75	0.359	20	
o-Xylene	46.25	1.0	50	0	92.5	78 - 122	47.22	2.09	20	
sec-Butylbenzene	40.32	1.0	50	0	80.6	77 - 126	39.72	1.5	20	
Styrene	47.24	1.0	50	0	94.5	78 - 123	48.16	1.94	20	
tert-Butylbenzene	47.94	1.0	50	0	95.9	78 - 124	46.97	2.04	20	
Tetrachloroethene	46.11	1.0	50	0	92.2	74 - 129	47.24	2.42	20	
Toluene	45.1	1.0	50	0	90.2	80 - 121	47.09	4.33	20	
trans-1,2-Dichloroethene	47.79	1.0	50	0	95.6	75 - 124	50.86	6.22	20	
trans-1,3-Dichloropropene	53.81	1.0	50	0	108	73 - 127	54.71	1.66	20	
Trichloroethene	48.79	1.0	50	0	97.6	79 - 123	50.37	3.18	20	
Trichlorofluoromethane	40.62	1.0	50	0	81.2	65 - 141	42.04	3.44	20	
Vinyl chloride	47.1	1.0	50	0	94.2	58 - 137	49.92	5.8	20	
Surr: 1,2-Dichloroethane-d4	*44.88*	*1.0*	*50*	*0*	*89.8*	*81 - 118*	*45.73*	*1.88*	*20*	
Surr: 4-Bromofluorobenzene	*52.44*	*1.0*	*50*	*0*	*105*	*85 - 114*	*52.02*	*0.798*	*20*	
Surr: Dibromofluoromethane	*48.43*	*1.0*	*50*	*0*	*96.9*	*80 - 119*	*47.71*	*1.49*	*20*	
Surr: Toluene-d8	*50.87*	*1.0*	*50*	*0*	*102*	*89 - 112*	*50.91*	*0.0945*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318560 **Instrument:** VOA2 **Method:** SW8260

The following samples were analyzed in this batch:

HS18060954-03	HS18060954-04	HS18060954-05	HS18060954-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: **R318780** **Instrument:** **VOA6** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.16*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.39*	*1.0*	*50*	*0*	*98.8*	*85 - 114*				
Surr: Dibromofluoromethane	*44.55*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.63	1.0	50	0	99.3	78 - 124				
1,1,1-Trichloroethane	52.25	1.0	50	0	105	74 - 131				
1,1,2,2-Tetrachloroethane	61.69	1.0	50	0	123	71 - 121				S
1,1,2-Trichloroethane	51.91	1.0	50	0	104	80 - 119				
1,1-Dichloroethane	54.56	1.0	50	0	109	77 - 125				
1,1-Dichloroethene	50.53	1.0	50	0	101	71 - 131				
1,1-Dichloropropene	50.78	1.0	50	0	102	78 - 125				
1,2,3-Trichlorobenzene	58.64	1.0	50	0	117	69 - 129				
1,2,3-Trichloropropane	58.46	1.0	50	0	117	73 - 122				
1,2,4-Trichlorobenzene	57.09	1.0	50	0	114	69 - 130				
1,2,4-Trimethylbenzene	56.94	1.0	50	0	114	76 - 124				
1,2-Dibromo-3-chloropropane	63.01	1.0	50	0	126	62 - 128				
1,2-Dibromoethane	52.75	1.0	50	0	105	77 - 121				
1,2-Dichlorobenzene	56.91	1.0	50	0	114	80 - 119				
1,2-Dichloroethane	50.51	1.0	50	0	101	73 - 128				
1,2-Dichloropropane	50.69	1.0	50	0	101	78 - 122				
1,3,5-Trimethylbenzene	56.18	1.0	50	0	112	75 - 124				
1,3-Dichlorobenzene	55.69	1.0	50	0	111	80 - 119				
1,3-Dichloropropane	56.26	1.0	50	0	113	80 - 119				
1,4-Dichlorobenzene	56.02	1.0	50	0	112	79 - 118				
2,2-Dichloropropane	56.07	1.0	50	0	112	60 - 139				
2-Butanone	113.6	2.0	100	0	114	56 - 143				
2-Chlorotoluene	56.12	1.0	50	0	112	79 - 122				
2-Hexanone	117	2.0	100	0	117	57 - 139				
4-Chlorotoluene	56.45	1.0	50	0	113	78 - 122				
4-Isopropyltoluene	52.74	1.0	50	0	105	77 - 127				
4-Methyl-2-pentanone	111.7	2.0	100	0	112	67 - 130				
Acetone	112.2	2.0	100	0	112	39 - 160				
Benzene	49.05	1.0	50	0	98.1	79 - 120				
Bromobenzene	55.92	1.0	50	0	112	80 - 120				
Bromochloromethane	48.11	1.0	50	0	96.2	78 - 123				
Bromodichloromethane	49.44	1.0	50	0	98.9	79 - 125				
Bromoform	56.08	1.0	50	0	112	66 - 130				
Bromomethane	48.56	1.0	50	0	97.1	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	95.91	2.0	100	0	95.9	64 - 133				
Carbon tetrachloride	49.55	1.0	50	0	99.1	72 - 136				
Chlorobenzene	50.24	1.0	50	0	100	82 - 118				
Chloroethane	58.38	1.0	50	0	117	60 - 138				
Chloroform	47.91	1.0	50	0	95.8	79 - 124				
Chloromethane	48.81	1.0	50	0	97.6	50 - 139				
cis-1,2-Dichloroethene	49.08	1.0	50	0	98.2	78 - 123				
cis-1,3-Dichloropropene	51.5	1.0	50	0	103	75 - 124				
Dibromochloromethane	55.72	1.0	50	0	111	74 - 126				
Dibromomethane	53.82	1.0	50	0	108	79 - 123				
Dichlorodifluoromethane	46.69	1.0	50	0	93.4	32 - 152				
Ethylbenzene	51.51	1.0	50	0	103	79 - 121				
Hexachlorobutadiene	59.72	1.0	50	0	119	66 - 134				
Isopropylbenzene	50.24	1.0	50	0	100	72 - 131				
m,p-Xylene	100.6	2.0	100	0	101	80 - 121				
Methylene chloride	52.17	2.0	50	0	104	74 - 124				
Naphthalene	66.13	1.0	50	0	132	61 - 128				S
n-Butylbenzene	58.75	1.0	50	0	117	75 - 128				
n-Propylbenzene	51.37	1.0	50	0	103	76 - 126				
o-Xylene	50.8	1.0	50	0	102	78 - 122				
sec-Butylbenzene	56.63	1.0	50	0	113	77 - 126				
Styrene	51.06	1.0	50	0	102	78 - 123				
tert-Butylbenzene	56.44	1.0	50	0	113	78 - 124				
Tetrachloroethene	50.96	1.0	50	0	102	74 - 129				
Toluene	50.72	1.0	50	0	101	80 - 121				
trans-1,2-Dichloroethene	49.08	1.0	50	0	98.2	75 - 124				
trans-1,3-Dichloropropene	52.99	1.0	50	0	106	73 - 127				
Trichloroethene	49.36	1.0	50	0	98.7	79 - 123				
Trichlorofluoromethane	55.66	1.0	50	0	111	65 - 141				
Vinyl chloride	53.46	1.0	50	0	107	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.71*	*1.0*	*50*	*0*	*91.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.92*	*1.0*	*50*	*0*	*97.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.47*	*1.0*	*50*	*0*	*90.9*	*80 - 119*				
Surr: Toluene-d8	*49.03*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627715** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.36	1.0	50	0	88.7	78 - 124				
1,1,1-Trichloroethane	41.39	1.0	50	0	82.8	74 - 131				
1,1,2,2-Tetrachloroethane	55.33	1.0	50	0	111	71 - 121				
1,1,2-Trichloroethane	47.78	1.0	50	0	95.6	80 - 119				
1,1-Dichloroethane	45.19	1.0	50	0	90.4	77 - 125				
1,1-Dichloroethene	39.64	1.0	50	0	79.3	71 - 131				
1,1-Dichloropropene	40.63	1.0	50	0	81.3	78 - 125				
1,2,3-Trichlorobenzene	45.93	1.0	50	0	91.9	69 - 129				
1,2,3-Trichloropropane	53.44	1.0	50	0	107	73 - 122				
1,2,4-Trichlorobenzene	45.91	1.0	50	0	91.8	69 - 130				
1,2,4-Trimethylbenzene	45.91	1.0	50	0	91.8	76 - 124				
1,2-Dibromo-3-chloropropane	56.05	1.0	50	0	112	62 - 128				
1,2-Dibromoethane	48.06	1.0	50	0	96.1	77 - 121				
1,2-Dichlorobenzene	47.72	1.0	50	0	95.4	80 - 119				
1,2-Dichloroethane	45.56	1.0	50	0	91.1	73 - 128				
1,2-Dichloropropane	44.84	1.0	50	0	89.7	78 - 122				
1,3,5-Trimethylbenzene	45.1	1.0	50	0	90.2	75 - 124				
1,3-Dichlorobenzene	46.2	1.0	50	0	92.4	80 - 119				
1,3-Dichloropropane	52.26	1.0	50	0	105	80 - 119				
1,4-Dichlorobenzene	46.34	1.0	50	0	92.7	79 - 118				
2,2-Dichloropropane	45.31	1.0	50	0	90.6	60 - 139				
2-Butanone	108	2.0	100	0	108	56 - 143				
2-Chlorotoluene	45.67	1.0	50	0	91.3	79 - 122				
2-Hexanone	115.1	2.0	100	0	115	57 - 139				
4-Chlorotoluene	46.56	1.0	50	0	93.1	78 - 122				
4-Isopropyltoluene	42.35	1.0	50	0	84.7	77 - 127				
4-Methyl-2-pentanone	109.5	2.0	100	0	110	67 - 130				
Acetone	102.3	2.0	100	0	102	39 - 160				
Benzene	42.2	1.0	50	0	84.4	79 - 120				
Bromobenzene	47.75	1.0	50	0	95.5	80 - 120				
Bromochloromethane	42.96	1.0	50	0	85.9	78 - 123				
Bromodichloromethane	43.52	1.0	50	0	87.0	79 - 125				
Bromoform	52.35	1.0	50	0	105	66 - 130				
Bromomethane	36.21	1.0	50	0	72.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627715** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	77.28	2.0	100	0	77.3	64 - 133				
Carbon tetrachloride	38.56	1.0	50	0	77.1	72 - 136				
Chlorobenzene	44.44	1.0	50	0	88.9	82 - 118				
Chloroethane	47.7	1.0	50	0	95.4	60 - 138				
Chloroform	42.28	1.0	50	0	84.6	79 - 124				
Chloromethane	41.46	1.0	50	0	82.9	50 - 139				
cis-1,2-Dichloroethene	43.05	1.0	50	0	86.1	78 - 123				
cis-1,3-Dichloropropene	45.15	1.0	50	0	90.3	75 - 124				
Dibromochloromethane	50.95	1.0	50	0	102	74 - 126				
Dibromomethane	49.44	1.0	50	0	98.9	79 - 123				
Dichlorodifluoromethane	28.8	1.0	50	0	57.6	32 - 152				
Ethylbenzene	43.86	1.0	50	0	87.7	79 - 121				
Hexachlorobutadiene	54.45	1.0	50	0	109	66 - 134				
Isopropylbenzene	41.98	1.0	50	0	84.0	72 - 131				
m,p-Xylene	85.62	2.0	100	0	85.6	80 - 121				
Methylene chloride	48.15	2.0	50	0	96.3	74 - 124				
Naphthalene	51.8	1.0	50	0	104	61 - 128				
n-Butylbenzene	47.44	1.0	50	0	94.9	75 - 128				
n-Propylbenzene	41.77	1.0	50	0	83.5	76 - 126				
o-Xylene	44.48	1.0	50	0	89.0	78 - 122				
sec-Butylbenzene	44.82	1.0	50	0	89.6	77 - 126				
Styrene	44.87	1.0	50	0	89.7	78 - 123				
tert-Butylbenzene	45.07	1.0	50	0	90.1	78 - 124				
Tetrachloroethene	41.69	1.0	50	0	83.4	74 - 129				
Toluene	44.47	1.0	50	0	88.9	80 - 121				
trans-1,2-Dichloroethene	41.61	1.0	50	0	83.2	75 - 124				
trans-1,3-Dichloropropene	46.88	1.0	50	0	93.8	73 - 127				
Trichloroethene	42.4	1.0	50	0	84.8	79 - 123				
Trichlorofluoromethane	40.57	1.0	50	0	81.1	65 - 141				
Vinyl chloride	40.79	1.0	50	0	81.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.37*	*1.0*	*50*	*0*	*90.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.82*	*1.0*	*50*	*0*	*99.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.95*	*1.0*	*50*	*0*	*89.9*	*80 - 119*				
Surr: Toluene-d8	*50.08*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627716** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.96	1.0	50	0	89.9	78 - 124	44.36	1.35	20	
1,1,1-Trichloroethane	45.72	1.0	50	0	91.4	74 - 131	41.39	9.94	20	
1,1,2,2-Tetrachloroethane	55.86	1.0	50	0	112	71 - 121	55.33	0.961	20	
1,1,2-Trichloroethane	46.67	1.0	50	0	93.3	80 - 119	47.78	2.36	20	
1,1-Dichloroethane	46.47	1.0	50	0	92.9	77 - 125	45.19	2.78	20	
1,1-Dichloroethene	44.11	1.0	50	0	88.2	71 - 131	39.64	10.7	20	
1,1-Dichloropropene	45.31	1.0	50	0	90.6	78 - 125	40.63	10.9	20	
1,2,3-Trichlorobenzene	50.83	1.0	50	0	102	69 - 129	45.93	10.1	20	
1,2,3-Trichloropropane	52.87	1.0	50	0	106	73 - 122	53.44	1.08	20	
1,2,4-Trichlorobenzene	49.53	1.0	50	0	99.1	69 - 130	45.91	7.59	20	
1,2,4-Trimethylbenzene	49.06	1.0	50	0	98.1	76 - 124	45.91	6.63	20	
1,2-Dibromo-3-chloropropane	60.11	1.0	50	0	120	62 - 128	56.05	6.99	20	
1,2-Dibromoethane	47.57	1.0	50	0	95.1	77 - 121	48.06	1.04	20	
1,2-Dichlorobenzene	49.79	1.0	50	0	99.6	80 - 119	47.72	4.25	20	
1,2-Dichloroethane	45.7	1.0	50	0	91.4	73 - 128	45.56	0.302	20	
1,2-Dichloropropane	45.22	1.0	50	0	90.4	78 - 122	44.84	0.843	20	
1,3,5-Trimethylbenzene	49.36	1.0	50	0	98.7	75 - 124	45.1	9.02	20	
1,3-Dichlorobenzene	48.9	1.0	50	0	97.8	80 - 119	46.2	5.68	20	
1,3-Dichloropropane	50.84	1.0	50	0	102	80 - 119	52.26	2.76	20	
1,4-Dichlorobenzene	49.15	1.0	50	0	98.3	79 - 118	46.34	5.89	20	
2,2-Dichloropropane	48.38	1.0	50	0	96.8	60 - 139	45.31	6.54	20	
2-Butanone	105	2.0	100	0	105	56 - 143	108	2.8	20	
2-Chlorotoluene	49.08	1.0	50	0	98.2	79 - 122	45.67	7.2	20	
2-Hexanone	112	2.0	100	0	112	57 - 139	115.1	2.72	20	
4-Chlorotoluene	49.3	1.0	50	0	98.6	78 - 122	46.56	5.72	20	
4-Isopropyltoluene	45.96	1.0	50	0	91.9	77 - 127	42.35	8.19	20	
4-Methyl-2-pentanone	106.9	2.0	100	0	107	67 - 130	109.5	2.46	20	
Acetone	97.77	2.0	100	0	97.8	39 - 160	102.3	4.56	20	
Benzene	43.14	1.0	50	0	86.3	79 - 120	42.2	2.22	20	
Bromobenzene	48.77	1.0	50	0	97.5	80 - 120	47.75	2.11	20	
Bromochloromethane	42.11	1.0	50	0	84.2	78 - 123	42.96	2	20	
Bromodichloromethane	43.54	1.0	50	0	87.1	79 - 125	43.52	0.0489	20	
Bromoform	51.02	1.0	50	0	102	66 - 130	52.35	2.57	20	
Bromomethane	42.91	1.0	50	0	85.8	53 - 141	36.21	16.9	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627716** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	84.92	2.0	100	0	84.9	64 - 133	77.28	9.43	20	
Carbon tetrachloride	43.9	1.0	50	0	87.8	72 - 136	38.56	12.9	20	
Chlorobenzene	45.07	1.0	50	0	90.1	82 - 118	44.44	1.39	20	
Chloroethane	50.16	1.0	50	0	100	60 - 138	47.7	5.01	20	
Chloroform	42.66	1.0	50	0	85.3	79 - 124	42.28	0.896	20	
Chloromethane	40.92	1.0	50	0	81.8	50 - 139	41.46	1.31	20	
cis-1,2-Dichloroethene	43.77	1.0	50	0	87.5	78 - 123	43.05	1.67	20	
cis-1,3-Dichloropropene	44.63	1.0	50	0	89.3	75 - 124	45.15	1.15	20	
Dibromochloromethane	50	1.0	50	0	100	74 - 126	50.95	1.87	20	
Dibromomethane	48.15	1.0	50	0	96.3	79 - 123	49.44	2.64	20	
Dichlorodifluoromethane	33.92	1.0	50	0	67.8	32 - 152	28.8	16.3	20	
Ethylbenzene	45.92	1.0	50	0	91.8	79 - 121	43.86	4.59	20	
Hexachlorobutadiene	45.99	1.0	50	0	92.0	66 - 134	54.45	16.9	20	
Isopropylbenzene	45.52	1.0	50	0	91.0	72 - 131	41.98	8.11	20	
m,p-Xylene	90.42	2.0	100	0	90.4	80 - 121	85.62	5.45	20	
Methylene chloride	47.86	2.0	50	0	95.7	74 - 124	48.15	0.596	20	
Naphthalene	59.42	1.0	50	0	119	61 - 128	51.8	13.7	20	
n-Butylbenzene	49.5	1.0	50	0	99.0	75 - 128	47.44	4.27	20	
n-Propylbenzene	45.97	1.0	50	0	91.9	76 - 126	41.77	9.57	20	
o-Xylene	45.29	1.0	50	0	90.6	78 - 122	44.48	1.82	20	
sec-Butylbenzene	48.84	1.0	50	0	97.7	77 - 126	44.82	8.57	20	
Styrene	45.49	1.0	50	0	91.0	78 - 123	44.87	1.37	20	
tert-Butylbenzene	49.44	1.0	50	0	98.9	78 - 124	45.07	9.23	20	
Tetrachloroethene	45.74	1.0	50	0	91.5	74 - 129	41.69	9.26	20	
Toluene	45.82	1.0	50	0	91.6	80 - 121	44.47	2.98	20	
trans-1,2-Dichloroethene	43.22	1.0	50	0	86.4	75 - 124	41.61	3.8	20	
trans-1,3-Dichloropropene	46.5	1.0	50	0	93.0	73 - 127	46.88	0.814	20	
Trichloroethene	43.84	1.0	50	0	87.7	79 - 123	42.4	3.34	20	
Trichlorofluoromethane	47.69	1.0	50	0	95.4	65 - 141	40.57	16.1	20	
Vinyl chloride	44.71	1.0	50	0	89.4	58 - 137	40.79	9.17	20	
Surr: 1,2-Dichloroethane-d4	*45.09*	*1.0*	*50*	*0*	*90.2*	*81 - 118*	*45.37*	*0.614*	*20*	
Surr: 4-Bromofluorobenzene	*49.22*	*1.0*	*50*	*0*	*98.4*	*85 - 114*	*49.82*	*1.22*	*20*	
Surr: Dibromofluoromethane	*45.19*	*1.0*	*50*	*0*	*90.4*	*80 - 119*	*44.95*	*0.55*	*20*	
Surr: Toluene-d8	*49.71*	*1.0*	*50*	*0*	*99.4*	*89 - 112*	*50.08*	*0.737*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18060954

QC BATCH REPORT

Batch ID: R318780 **Instrument:** VOA6 **Method:** SW8260

The following samples were analyzed in this batch: HS18060954-01 HS18060954-02 HS18060954-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18060954**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 11-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 11-Jul-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**20-Jun-2018 09:47**
Work Order:	HS18060954	Received by:	**SBM**

Checklist completed by:	*Paresh M. Giga* eSignature	20-Jun-2018 Date	Reviewed by: *RJ Modashia* eSignature	20-Jun-2018 Date

Matrices: **Groundwater/Water** Carrier name: **UPS**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	4.8c/4.3c U/c		IR11
Cooler(s)/Kit(s):	5536		
Date/Time sample(s) sent to storage:	6/20/18 13:35		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00900953

bhate ENVIRONMENTAL CONSTRUCTION ENGINEERS

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1,4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
								Sample Analysis Requested (5)											Quality Assurance Samples (6)			
AWD3_061818		6/18/18	0825	-	N		WG	5	X	X	X											
MW7_061818		6/18/18	0920	-	N		WG	5	X	X		X										
18CPTMW12DW_061818		6/18/18	1015	-	N		WG	6	X	X	X	X										
18CPTMW12SW_061818		6/18/18	1110		N		WG	6	X	X	X	X										
MW13_061818		6/18/18	1205		N		WG	5	X	X	X											
COZ_061818		6/18/18	1255	-	N		WG	4	X	X												
MW17_061818		6/18/18	1345	-	N		WG	2		X		X										
Trip Blank		6/18/18		-	N		WG	2	X													
				-																		
				-																		
				-																		

HS18060954
Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/18/18	1500	1. [signature]	6/20/18	0947
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No.:

Method of Shipment: _____

Fed Ex _____ Airbill Number:

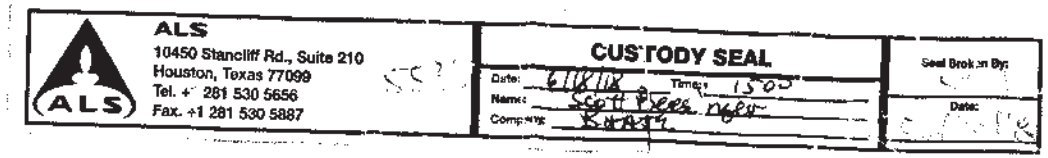
Analytical Lab: ALS 10450 Stancliff Rd. Suite 210, Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

5556

00900954



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 6/18/18 Time: 1500
Name: Scott Pleasinger
Company: BHATT

Seal Broken By:
Date:

55 36 JUN 20 2018

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WEIGHT

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TX 774 9 – 08
(420) 77099 – 4338

UPS NEXT DAY AIR
TRACKING #: J461 6879 868

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817359; 1817361; 1817362; 1817365; 1817368

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2114 (218216)

General Set Information: There were seventeen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 608585) was less than 1/2 the CRDL. The recovery for the LCS (608586) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1817359001 (Client ID: 18WW19_061918). The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafiles 05JULD20.

Thomas Bosch July 07, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 06, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817361**
Project ID: HS18060954 061819
Purchase Order: HS18060954
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
AWD3_061818	1817361001	06/18/18	06/21/18	
MW7_061818	1817361002	06/18/18	06/21/18	
18CPTMW12DW_061818	1817361003	06/18/18	06/21/18	
18CPTMW12SW_061818	1817361004	06/18/18	06/21/18	
MW13_061818	1817361005	06/18/18	06/21/18	
C02_061818	1817361006	06/18/18	06/21/18	
MW17_061818	1817361007	06/18/18	06/21/18	

ANALYTICAL REPORT

Workorder: 34-1817361
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **AWD3_061818** | Sampling Site: NA | Collected: 06/18/2018
Lab ID: 1817361001 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 12:18
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**250**	10	20	40	10	

Sample ID: **MW7_061818** | Sampling Site: NA | Collected: 06/18/2018
Lab ID: 1817361002 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 12:32
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**21000**	1000	2000	4000	1000	

Sample ID: **18CPTMW12DW_061818** | Sampling Site: NA | Collected: 06/18/2018
Lab ID: 1817361003 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 12:46
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	3.0	1.0	2.0	4.0	1	J

Sample ID: **18CPTMW12SW_061818** | Sampling Site: NA | Collected: 06/18/2018
Lab ID: 1817361004 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2114 (HBN: 218216)
Analyzed: 07/05/2018 13:29
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	1.0	1.0	2.0	4.0	1	J

ANALYTICAL REPORT

Workorder: 34-1817361
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **MW13_061818** | Sampling Site: NA | Collected: 06/18/2018
Lab ID: 1817361005 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2114 (HBN: 218216) | **Percent Solid:** NA
Analyzed: 07/05/2018 13:44 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **C02_061818** | Sampling Site: NA | Collected: 06/18/2018
Lab ID: 1817361006 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2114 (HBN: 218216) | **Percent Solid:** NA
Analyzed: 07/05/2018 13:58 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **MW17_061818** | Sampling Site: NA | Collected: 06/18/2018
Lab ID: 1817361007 | Media: 125 mL Nalgene | Received: 06/21/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2114 (HBN: 218216) | **Percent Solid:** NA
Analyzed: 07/05/2018 14:12 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 218216)

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/06/2018 11:40	/S/ Stephen Brose 07/06/2018 13:50

ANALYTICAL REPORT

Workorder: 34-1817361
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1817361
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817361

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2114 (HBN: 218216)
Analyzed By: Thomas Bosch

Blank

LMB: 608585
Analyzed: 07/05/2018 09:23
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 608586
Analyzed: 07/05/2018 09:52
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1817359001
Analyzed: 07/05/2018 10:38
Dilution: 1
Units: ug/L

MS: 608587
Analyzed: 07/05/2018 10:10
Dilution: 1
Units: ug/L

MSD: 608588
Analyzed: 07/05/2018 10:24
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	6.14	5	123	78.8	123.8	6.18	124	0.51	0.0	20.0

Continuing Calibration Verification

CCV: 608582
Analyzed: 07/05/2018 08:52
Units: ug/L
Criteria: ± 15%

CCV: 608589
Analyzed: 07/05/2018 13:01
Units: ug/L
Criteria: ± 15%

CCV: 608591
Analyzed: 07/05/2018 15:09
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.3	25.0	105	27.1	25.0	108	26.7	25.0	107

Interference Check Sample

ICSA: 608584
Analyzed: 07/05/2018 09:38
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.861	1.00	86.1

Limit of Detection Verification

LODV: 608583
Analyzed: 07/05/2018 09:09
Units: ug/L
Criteria: ± 50%

LODV: 608590
Analyzed: 07/05/2018 13:15
Units: ug/L
Criteria: ± 50%

LODV: 608592
Analyzed: 07/05/2018 15:23
Units: ug/L
Criteria: ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.970	1.00	97.0	0.988	1.00	98.8

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817361

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Comments

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
07/06/2018 11:40	07/06/2018 13:49

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ⬢ - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698/#2

1817361

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9316

1817361

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18060954
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060954-01**	**AWD3_061818**	**Groundwater**	**18 Jun 2018 08:25**
	SUB_Perch-6850			28 Jun 2018
2.	**HS18060954-02**	**MW7_061818**	**Groundwater**	**18 Jun 2018 09:20**
	SUB_Perch-6850			28 Jun 2018
3.	**HS18060954-03**	**18CPTMW12DW_061818**	**Groundwater**	**18 Jun 2018 10:15**
	SUB_Perch-6850			28 Jun 2018
4.	**HS18060954-04**	**18CPTMW12SW_061818**	**Groundwater**	**18 Jun 2018 11:10**
	SUB_Perch-6850			28 Jun 2018
5.	**HS18060954-05**	**MW13_061818**	**Groundwater**	**18 Jun 2018 12:05**
	SUB_Perch-6850			28 Jun 2018
6.	**HS18060954-06**	**C02_061818**	**Groundwater**	**18 Jun 2018 12:55**
	SUB_Perch-6850			28 Jun 2018
7.	**HS18060954-07**	**MW17_061818**	**Groundwater**	**18 Jun 2018 13:45**
	SUB_Perch-6850			28 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

COC ID: 9316

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	6/20/18 1800
Received By:		Date/Time:	6/21/18 8:45
Cooler ID(s):	8466	Temperature(s):	2°

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060954	Split:	Workorder ID: 1817361	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Requested Analysis: EPA 6850, DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/18/2018 08:25	AWD3_061818	1817361001		Water	A	1	A
2	06/18/2018 09:20	MW7_061818	1817361002		Water	A	1	A
3	06/18/2018 10:15	18CPTMW12DW_061818	1817361003		Water	A	1	A
4	06/18/2018 11:10	18CPTMW12SW_061818	1817361004		Water	A	1	A
5	06/18/2018 12:05	MW13_061818	1817361005		Water	A	1	A
6	06/18/2018 12:55	C02_061818	1817361006		Water	A	1	A
7	06/18/2018 13:45	MW17_061818	1817361007		Water	A	1	A
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/21/2018 08:45	ALS Sample Receiving	Sample Login
Julie Warath	6/22/18 1400	STB	Storage
R.33.1	7-3-18/08:45	T.Boash	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

Fri, 06/22/18 1:57 PM

ALSCOCV3.1

00900967

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1817361

Date/Time of Receipt: 6/21/18 845

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:						
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8663	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) [signature] (Printed Name) 6/21/18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00900968

Part # 159469-434 RIT2 EXP 03/19 ®

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 20JUN18
ACTWGT: 16.90 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

S46C2/93DF/53C1

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060947/954 - RJ

FedEx Express

E

J171016102001uv

THU - 21 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 2418

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2114 **Created:** 7/5/2018 08:36 **Instrument:** **HBN:** 218216

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1817359 [ENV_LVL4]
Workorder: 1817361 [ENV_LVL4]
Workorder: 1817362 [ENV_LVL4]
Workorder: 1817365 [ENV_LVL4]
Workorder: 1817368 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	608582	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
2	608583	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
3	608584	ICS for HBN 218216 [ELMS/2114]				ICS	3		E6850..D3Q	5311		7/5/2018	
4	608585	LMB for HBN 218216 [ELMS/2114]				LMB	3		E6850Q413Q	5311		7/5/2018	
5	608586	LCS for HBN 218216 [ELMS/2114]				LCS	3		E6850Q413Q	5311		7/5/2018	
6	1817359001	18WW19_061918				SAMPLE	3	1817359001-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
7	608587	18WW19_061918(1817359001MS)				MS	3		E6850Q413Q	5311		7/5/2018	
8	608588	18WW19_061918(1817359001MSD)				MSD	3		E6850Q413Q	5311		7/5/2018	
9	1817359002	18WW19_061918-a				SAMPLE	3	1817359002-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
10	1817359003	18WW20_061918				SAMPLE	3	1817359003-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
11	1817359004	AWD4_061918				SAMPLE	3	1817359004-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
12	1817359005	18WW06_061918				SAMPLE	3	1817359005-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
13	1817359006	18WW02_061918				SAMPLE	3	1817359006-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
14	1817359007	18WW14_061918				SAMPLE	3	1817359007-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
15	1817361001	AWD3_061818				SAMPLE	3	1817361001-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
16	1817361002	MW7_061818				SAMPLE	3	1817361002-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
17	1817361003	18CPTMW12DW_061818				SAMPLE	3	1817361003-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
18	608589	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
19	608590	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
20	1817361004	18CPTMW12SW_061818				SAMPLE	3	1817361004-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
21	1817361005	MW13_061818				SAMPLE	3	1817361005-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
22	1817361006	C02_061818				SAMPLE	3	1817361006-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
23	1817361007	MW17_061818				SAMPLE	3	1817361007-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
24	1817362001	LH18/24_SP650_062018				SAMPLE	3	1817362001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
25	1817365001	LH18/24_SP140_062018				SAMPLE	3	1817365001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
26	1817368001	LH18/24_SP650_062018				SAMPLE	3	1817368001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
27	608591	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
28	608592	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1817359 (001-07); 1817361 9001-07); 1817362 (001); 1817365 (001); 1817368 (001) ELMS Batch/HBN ID: 2114 (218216)
Prep Date: 07/03/2018 Analysis Date: 07/05/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\05JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 608586; Target = 5.0µg/L. ASTM type II water was used for LMB 608585.

MS/MSD: MS/MSD was performed on sample 1817359001 (Client ID: 18WW19_061918). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions.
   1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 05JULP20.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218216-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Larnendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard®, Inc.

Tel (203)786-5290
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www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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August 02, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18061144**

Revision: **1**

Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 9 sample(s) on Jun 22, 2018 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: RJ.MODASHIA

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18061144

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18061144-01	C01_062018	Groundwater		20-Jun-2018 09:25	22-Jun-2018 08:30	☐
HS18061144-02	C09_062018	Groundwater		20-Jun-2018 10:25	22-Jun-2018 08:30	☐
HS18061144-03	C06_062018	Groundwater		20-Jun-2018 11:20	22-Jun-2018 08:30	☐
HS18061144-04	MW6_062018	Groundwater		20-Jun-2018 12:20	22-Jun-2018 08:30	☐
HS18061144-05	130_062118	Groundwater		21-Jun-2018 08:15	22-Jun-2018 08:30	☐
HS18061144-06	MW9_062118	Groundwater		21-Jun-2018 09:10	22-Jun-2018 08:30	☐
HS18061144-07	18CPTMW10DW_062118	Groundwater		21-Jun-2018 10:05	22-Jun-2018 08:30	☐
HS18061144-08	18CPTMW10SW_062118	Groundwater		21-Jun-2018 11:00	22-Jun-2018 08:30	☐
HS18061144-09	Trip Blank	Water	ALS-051618-98	21-Jun-2018 00:00	22-Jun-2018 08:30	☐

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS18061144

CASE NARRATIVE

Work Order Comments

- Revision 1: Updated the sample ID from MW6_0620218 to MW6_062018

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129853

Sample ID: 18CPTMW10SW_062118 (HS18061144-08MSD

- The RPD between the MS and MSD was outside of the control limit.

GCMS Volatiles by Method SW8260

Batch ID: R318780

Sample ID: CCV

- Naphthalene exceeded %D limits for CCV. The analyte was not detected in the associated samples.

Sample ID: VLCSW-180627

- 1,1,2,2,-Tetrachloroethane and Naphthalene exceeded QC limits for LCS. The analytes were not detected in the associated samples.

Batch ID: R318858

Sample ID: VSTD050

- Naphthalene exceeded %D limits for CCV. The analyte was not detected in the associated samples.

Metals by Method SW7470

Batch ID: 130019

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 129863

Sample ID: 18CPTMW10DW_062118 (HS18061144-07)

- Sample ran at a 5x due to internal standard 6 (Beryllium) failure at a 1x.

Sample ID: C06_062018 (HS18061144-03MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Barium, Calcium, Iron, Manganese, and Sodium.

Sample ID: C06_062018 (HS18061144-03PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Barium, Iron, Manganese, and Sodium.

- The recovery of the Post Digestion Spike was outside of the control limit. Calcium.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C01_062018
Collection Date: 20-Jun-2018 09:25

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 17:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 17:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 17:20
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 17:20
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 17:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C01_062018
Collection Date: 20-Jun-2018 09:25

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 17:20
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 17:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:20
Surr: 1,2-Dichloroethane-d4	*91.3*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 17:20*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 17:20*
Surr: Dibromofluoromethane	*90.3*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 17:20*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 17:20*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C09_062018
Collection Date: 20-Jun-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 17:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 17:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 17:45
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 17:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 17:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C09_062018
Collection Date: 20-Jun-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 17:45
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 17:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 17:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 17:45
Surr: 1,2-Dichloroethane-d4	*92.3*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 17:45*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 17:45*
Surr: Dibromofluoromethane	*92.1*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 17:45*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 17:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C09_062018
Collection Date: 20-Jun-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.325**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:19
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	28-Jun-2018 14:19
Arsenic	**0.000406**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:19
Barium	**0.125**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:19
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:19
Cadmium	**0.000203**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:19
Calcium	**39.7**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:19
Chromium	**0.00271**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	28-Jun-2018 14:19
Cobalt	**0.000582**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:19
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	28-Jun-2018 14:19
Iron	**0.280**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:19
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	28-Jun-2018 15:53
Magnesium	**9.50**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:19
Manganese	**0.0365**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:19
Nickel	**0.00157**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:19
Potassium	**0.530**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:19
Selenium	**0.00131**	J	**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	28-Jun-2018 14:19
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:19
Sodium	**46.9**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:19
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:19
Vanadium	**0.00212**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:19
Zinc	**0.00397**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:19
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 02-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	02-Jul-2018 16:14
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C06_062018
Collection Date: 20-Jun-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 12:49
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 12:49
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 12:49
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 12:49
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 12:49
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C06_062018
Collection Date: 20-Jun-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 12:49
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 12:49
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 12:49
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 12:49
Surr: 1,2-Dichloroethane-d4	*93.1*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 12:49*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 12:49*
Surr: Dibromofluoromethane	*92.5*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 12:49*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 12:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: C06_062018
Collection Date: 20-Jun-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.0181**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:21
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	28-Jun-2018 14:21
Arsenic	**0.000942**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:21
Barium	**0.876**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:21
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:21
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:21
Calcium	**21.7**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:21
Chromium	0.00100	U	0.000400	0.00100	0.00400	mg/L	1	28-Jun-2018 14:21
Cobalt	**0.00173**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:21
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	28-Jun-2018 14:21
Iron	**43.7**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:21
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	28-Jun-2018 15:55
Magnesium	**9.40**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:21
Manganese	**0.760**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:21
Nickel	**0.00176**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:21
Potassium	**3.25**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:21
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	28-Jun-2018 14:21
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:21
Sodium	**168**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:21
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:21
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	28-Jun-2018 14:21
Zinc	**0.00697**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:21
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 02-Jul-2018		Analyst: JBA
Mercury	**0.000186**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	02-Jul-2018 15:48
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW6_062018
Collection Date: 20-Jun-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,1-Dichloroethane	**2.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,3-Dichlorobenzene	**0.87**	J	**0.40**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 18:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 18:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 18:10
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 18:10
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 18:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW6_062018
Collection Date: 20-Jun-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
cis-1,2-Dichloroethene	**5.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 18:10
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 18:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Trichloroethene	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:10
Vinyl chloride	**0.99**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:10
Surr: 1,2-Dichloroethane-d4	*93.0*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 18:10*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 18:10*
Surr: Dibromofluoromethane	*91.5*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 18:10*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 18:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW6_062018
Collection Date: 20-Jun-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.0103**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:35
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	28-Jun-2018 14:35
Arsenic	**0.00103**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:35
Barium	**0.780**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:35
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:35
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:35
Calcium	**26.7**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:35
Chromium	**0.0977**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	28-Jun-2018 14:35
Cobalt	**0.00132**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:35
Copper	**0.00176**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	28-Jun-2018 14:35
Iron	**0.992**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:35
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	28-Jun-2018 14:35
Magnesium	**22.6**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:35
Manganese	**0.0568**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:35
Nickel	**0.0214**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:35
Potassium	**2.22**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:35
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	28-Jun-2018 14:35
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:35
Sodium	**201**		**0.140**	**1.00**	**2.00**	**mg/L**	10	28-Jun-2018 15:41
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:35
Vanadium	**0.00130**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:35
Zinc	**0.00958**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:35
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 02-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	02-Jul-2018 16:16
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 130_062118
Collection Date: 21-Jun-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	28-Jun-2018 13:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	28-Jun-2018 13:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	28-Jun-2018 13:39
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	28-Jun-2018 13:39
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	28-Jun-2018 13:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 130_062118
Collection Date: 21-Jun-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	28-Jun-2018 13:39
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	28-Jun-2018 13:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Trichloroethene	**0.70**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	28-Jun-2018 13:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:39
Surr: 1,2-Dichloroethane-d4	*93.6*			**0**	*81-118*	*%REC*	*1*	*28-Jun-2018 13:39*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*28-Jun-2018 13:39*
Surr: Dibromofluoromethane	*91.2*			**0**	*80-119*	*%REC*	*1*	*28-Jun-2018 13:39*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*28-Jun-2018 13:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 130_062118
Collection Date: 21-Jun-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.196**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:37
Antimony	**0.000558**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:37
Arsenic	**0.00228**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:37
Barium	**0.0998**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:37
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:37
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:37
Calcium	**37.2**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:37
Chromium	**0.00172**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	28-Jun-2018 14:37
Cobalt	**0.0137**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:37
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	28-Jun-2018 14:37
Iron	**1.34**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:37
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	28-Jun-2018 14:37
Magnesium	**25.2**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:37
Manganese	**1.06**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:37
Nickel	**0.00421**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:37
Potassium	**0.607**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:37
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	28-Jun-2018 14:37
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:37
Sodium	**656**		**0.140**	**1.00**	**2.00**	**mg/L**	10	28-Jun-2018 15:43
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:37
Vanadium	**0.00213**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:37
Zinc	**0.00987**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:37
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 02-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	02-Jul-2018 16:17
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW9_062118
Collection Date: 21-Jun-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,1-Dichloroethane	**0.41**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:35
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 18:35
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 18:35
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 18:35
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 18:35
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 18:35
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW9_062118
Collection Date: 21-Jun-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**2.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:35
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
cis-1,2-Dichloroethene	**45**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:35
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 18:35
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 18:35
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 18:35
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
trans-1,2-Dichloroethene	**0.56**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 18:35
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Trichloroethene	**1,200**		**5.0**	**12**	**25**	**ug/L**	25	28-Jun-2018 16:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 18:35
Surr: 1,2-Dichloroethane-d4	*92.5*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 18:35*
Surr: 1,2-Dichloroethane-d4	*93.4*			**0**	*81-118*	*%REC*	*25*	*28-Jun-2018 16:31*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 18:35*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*28-Jun-2018 16:31*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 18:35*
Surr: Dibromofluoromethane	*92.9*			**0**	*80-119*	*%REC*	*25*	*28-Jun-2018 16:31*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 18:35*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*25*	*28-Jun-2018 16:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: MW9_062118
Collection Date: 21-Jun-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 27-Jun-2018		Analyst: ACN
1,4-Dioxane	**0.50**		**0.010**	**0.010**	**0.010**	**ug/L**	1	28-Jun-2018 14:21
Surr: 2-Fluorobiphenyl	*82.3*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 14:21*
Surr: 4-Terphenyl-d14	*73.3*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 14:21*
Surr: Nitrobenzene-d5	*83.5*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 14:21*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.0221**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:39
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	28-Jun-2018 14:39
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	28-Jun-2018 14:39
Barium	**0.0897**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:39
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:39
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:39
Calcium	**7.70**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:39
Chromium	**0.136**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	28-Jun-2018 14:39
Cobalt	**0.000476**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:39
Copper	**0.00178**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	28-Jun-2018 14:39
Iron	**0.898**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:39
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	28-Jun-2018 14:39
Magnesium	**2.43**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:39
Manganese	**0.0206**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:39
Nickel	**0.0292**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:39
Potassium	**0.459**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:39
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	28-Jun-2018 14:39
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:39
Sodium	**13.8**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:39
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:39
Vanadium	**0.00199**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:39
Zinc	**0.00307**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:39
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 02-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	02-Jul-2018 16:19
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW10DW_062118
Collection Date: 21-Jun-2018 10:05

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	28-Jun-2018 14:04
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	28-Jun-2018 14:04
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	28-Jun-2018 14:04
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	28-Jun-2018 14:04
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	28-Jun-2018 14:04
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW10DW_062118
Collection Date: 21-Jun-2018 10:05

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	28-Jun-2018 14:04
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	28-Jun-2018 14:04
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 14:04
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Trichloroethene	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	28-Jun-2018 14:04
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 14:04
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*1*	*28-Jun-2018 14:04*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*28-Jun-2018 14:04*
Surr: Dibromofluoromethane	*91.6*			**0**	*80-119*	*%REC*	*1*	*28-Jun-2018 14:04*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*28-Jun-2018 14:04*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW10DW_062118
Collection Date: 21-Jun-2018 10:05

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.201**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:41
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	28-Jun-2018 14:41
Arsenic	**0.00231**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:41
Barium	**0.119**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:41
Beryllium	0.00500	U	0.00100	0.00500	0.0100	mg/L	5	28-Jun-2018 16:05
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:41
Calcium	**7.34**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:41
Chromium	**0.00681**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	28-Jun-2018 14:41
Cobalt	**0.000471**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:41
Copper	**0.00138**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	28-Jun-2018 14:41
Iron	**3.41**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:41
Lead	**0.000748**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:41
Magnesium	**5.33**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:41
Manganese	**0.0734**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:41
Nickel	**0.00219**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:41
Potassium	**92.7**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:41
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	28-Jun-2018 14:41
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:41
Sodium	**176**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:41
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:41
Vanadium	**0.00162**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:41
Zinc	**0.00500**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:41
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 02-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	02-Jul-2018 16:21
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW10SW_062118
Collection Date: 21-Jun-2018 11:00

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	28-Jun-2018 13:14
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	28-Jun-2018 13:14
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	28-Jun-2018 13:14
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	28-Jun-2018 13:14
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	28-Jun-2018 13:14
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: 18CPTMW10SW_062118
Collection Date: 21-Jun-2018 11:00

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	28-Jun-2018 13:14
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	28-Jun-2018 13:14
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	28-Jun-2018 13:14
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	28-Jun-2018 13:14
Surr: 1,2-Dichloroethane-d4	*95.1*			**0**	*81-118*	*%REC*	*1*	*28-Jun-2018 13:14*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*28-Jun-2018 13:14*
Surr: Dibromofluoromethane	*93.4*			**0**	*80-119*	*%REC*	*1*	*28-Jun-2018 13:14*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*28-Jun-2018 13:14*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 27-Jun-2018		Analyst: ACN
1,4-Dioxane	0.010	U	0.010	0.010	0.010	ug/L	1	28-Jun-2018 14:41
Surr: 2-Fluorobiphenyl	*81.9*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 14:41*
Surr: 4-Terphenyl-d14	*93.0*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 14:41*
Surr: Nitrobenzene-d5	*53.4*			**0**	*40-140*	*%REC*	*1*	*28-Jun-2018 14:41*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 21-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 15:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 15:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 15:41
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 15:41
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 15:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: Trip Blank
Collection Date: 21-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18061144
Lab ID:HS18061144-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 15:41
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 15:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 15:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 15:41
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 15:41*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 15:41*
Surr: Dibromofluoromethane	*90.7*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 15:41*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 15:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

Batch ID: 129853 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061144-06	1	990	1 (mL)	0.00101
HS18061144-08	1	1000	1 (mL)	0.001

Batch ID: 129863 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061144-02	1	10	10 (mL)	1
HS18061144-03	1	10	10 (mL)	1
HS18061144-04	1	10	10 (mL)	1
HS18061144-05	1	10	10 (mL)	1
HS18061144-06	1	10	10 (mL)	1
HS18061144-07	1	10	10 (mL)	1

Batch ID: 130019 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061144-02	1	10 (mL)	10 (mL)	1
HS18061144-03	1	10 (mL)	10 (mL)	1
HS18061144-04	1	10 (mL)	10 (mL)	1
HS18061144-05	1	10 (mL)	10 (mL)	1
HS18061144-06	1	10 (mL)	10 (mL)	1
HS18061144-07	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129853	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS18061144-06	MW9_062118	21 Jun 2018 09:10		27 Jun 2018 10:22	28 Jun 2018 14:21	1
HS18061144-08	18CPTMW10SW_062118	21 Jun 2018 11:00		27 Jun 2018 10:22	28 Jun 2018 14:41	1
Batch ID 129863	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18061144-02	C09_062018	20 Jun 2018 10:25		27 Jun 2018 12:52	28 Jun 2018 15:53	1
HS18061144-02	C09_062018	20 Jun 2018 10:25		27 Jun 2018 12:52	28 Jun 2018 14:19	1
HS18061144-03	C06_062018	20 Jun 2018 11:20		27 Jun 2018 12:52	28 Jun 2018 15:55	1
HS18061144-03	C06_062018	20 Jun 2018 11:20		27 Jun 2018 12:52	28 Jun 2018 14:21	1
HS18061144-04	MW6_062018	20 Jun 2018 12:20		27 Jun 2018 12:52	28 Jun 2018 15:41	10
HS18061144-04	MW6_062018	20 Jun 2018 12:20		27 Jun 2018 12:52	28 Jun 2018 14:35	1
HS18061144-05	130_062118	21 Jun 2018 08:15		27 Jun 2018 12:52	28 Jun 2018 15:43	10
HS18061144-05	130_062118	21 Jun 2018 08:15		27 Jun 2018 12:52	28 Jun 2018 14:37	1
HS18061144-06	MW9_062118	21 Jun 2018 09:10		27 Jun 2018 12:52	28 Jun 2018 14:39	1
HS18061144-07	18CPTMW10DW_062118	21 Jun 2018 10:05		27 Jun 2018 12:52	28 Jun 2018 16:05	5
HS18061144-07	18CPTMW10DW_062118	21 Jun 2018 10:05		27 Jun 2018 12:52	28 Jun 2018 14:41	1
Batch ID 130019	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18061144-02	C09_062018	20 Jun 2018 10:25		02 Jul 2018 11:30	02 Jul 2018 16:14	1
HS18061144-03	C06_062018	20 Jun 2018 11:20		02 Jul 2018 11:30	02 Jul 2018 15:48	1
HS18061144-04	MW6_062018	20 Jun 2018 12:20		02 Jul 2018 11:30	02 Jul 2018 16:16	1
HS18061144-05	130_062118	21 Jun 2018 08:15		02 Jul 2018 11:30	02 Jul 2018 16:17	1
HS18061144-06	MW9_062118	21 Jun 2018 09:10		02 Jul 2018 11:30	02 Jul 2018 16:19	1
HS18061144-07	18CPTMW10DW_062118	21 Jun 2018 10:05		02 Jul 2018 11:30	02 Jul 2018 16:21	1
Batch ID R318780	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18061144-09	Trip Blank	21 Jun 2018 00:00			27 Jun 2018 15:41	1
Batch ID R318780	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18061144-01	C01_062018	20 Jun 2018 09:25			27 Jun 2018 17:20	1
HS18061144-02	C09_062018	20 Jun 2018 10:25			27 Jun 2018 17:45	1
HS18061144-03	C06_062018	20 Jun 2018 11:20			27 Jun 2018 12:49	1
HS18061144-04	MW6_062018	20 Jun 2018 12:20			27 Jun 2018 18:10	1
HS18061144-06	MW9_062118	21 Jun 2018 09:10			27 Jun 2018 18:35	1
Batch ID R318858	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18061144-05	130_062118	21 Jun 2018 08:15			28 Jun 2018 13:39	1
HS18061144-06	MW9_062118	21 Jun 2018 09:10			28 Jun 2018 16:31	25
HS18061144-07	18CPTMW10DW_062118	21 Jun 2018 10:05			28 Jun 2018 14:04	1
HS18061144-08	18CPTMW10SW_062118	21 Jun 2018 11:00			28 Jun 2018 13:14	1

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ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R319262	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18061144-01	C01_062018	20 Jun 2018 09:25			06 Jul 2018 13:28	1
HS18061144-02	C09_062018	20 Jun 2018 10:25			06 Jul 2018 13:28	1
HS18061144-03	C06_062018	20 Jun 2018 11:20			06 Jul 2018 13:28	1
HS18061144-04	MW6_062018	20 Jun 2018 12:20			06 Jul 2018 13:28	1
HS18061144-05	130_062118	21 Jun 2018 08:15			06 Jul 2018 13:28	1
HS18061144-06	MW9_062118	21 Jun 2018 09:10			06 Jul 2018 13:28	1
HS18061144-07	18CPTMW10DW_062118	21 Jun 2018 10:05			06 Jul 2018 13:28	1
HS18061144-08	18CPTMW10SW_062118	21 Jun 2018 11:00			06 Jul 2018 13:28	1

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 14:11**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629417** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004584	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Magnesium	0.01223	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.04625	0.200								J
Silver	0.00100	0.00200								U
Sodium	0.09338	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

MBLK Sample ID: **MBLK-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 15:35**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629703** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.00100	0.00200								U
Selenium	0.00200	0.00200								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 14:13**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629418** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09554	0.0100	0.1	0	95.5	80 - 120				
Antimony	0.04608	0.00200	0.05	0	92.2	80 - 120				
Arsenic	0.04772	0.00200	0.05	0	95.4	80 - 120				
Barium	0.04474	0.00400	0.05	0	89.5	80 - 120				
Beryllium	0.04665	0.00200	0.05	0	93.3	80 - 120				
Cadmium	0.04513	0.00200	0.05	0	90.3	80 - 120				
Calcium	4.46	0.500	5	0	89.2	80 - 120				
Chromium	0.04598	0.00400	0.05	0	92.0	80 - 120				
Cobalt	0.0477	0.00500	0.05	0	95.4	80 - 120				
Copper	0.04555	0.00200	0.05	0	91.1	80 - 120				
Iron	4.547	0.200	5	0	90.9	80 - 120				
Magnesium	4.62	0.200	5	0	92.4	80 - 120				
Manganese	0.04681	0.00500	0.05	0	93.6	80 - 120				
Nickel	0.04683	0.00200	0.05	0	93.7	80 - 120				
Potassium	4.675	0.200	5	0	93.5	80 - 120				
Selenium	0.05137	0.00200	0.05	0	103	80 - 120				
Silver	0.04446	0.00200	0.05	0	88.9	80 - 120				
Sodium	4.819	0.200	5	0	96.4	80 - 120				
Thallium	0.04118	0.00200	0.05	0	82.4	80 - 120				
Vanadium	0.04549	0.00500	0.05	0	91.0	80 - 120				
Zinc	0.0471	0.00400	0.05	0	94.2	80 - 120				

LCS Sample ID: **LCS-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 15:31**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629701** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0492	0.00200	0.05	0	98.4	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 129863 **Instrument:** ICPMS05 **Method:** SW6020

MS Sample ID: **HS18061144-03MS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:25**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629424** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1159	0.0100	0.1	0.01811	97.8	80 - 120				
Antimony	0.04647	0.00200	0.05	0.000166	92.6	80 - 120				
Arsenic	0.05012	0.00200	0.05	0.000942	98.4	80 - 120				
Barium	0.9189	0.00400	0.05	0.8762	85.2	80 - 120				O
Beryllium	0.05133	0.00200	0.05	0.000058	103	80 - 120				
Cadmium	0.04673	0.00200	0.05	0.000135	93.2	80 - 120				
Calcium	25.49	0.500	5	21.67	76.4	80 - 120				SO
Chromium	0.0461	0.00400	0.05	0.000398	91.4	80 - 120				
Cobalt	0.04756	0.00500	0.05	0.001732	91.6	80 - 120				
Copper	0.04531	0.00200	0.05	0.000306	90.0	80 - 120				
Iron	48.58	0.200	5	43.7	97.6	80 - 120				O
Magnesium	13.7	0.200	5	9.403	85.9	80 - 120				
Manganese	0.7838	0.00500	0.05	0.76	47.6	80 - 120				SO
Nickel	0.04588	0.00200	0.05	0.001762	88.2	80 - 120				
Potassium	7.682	0.200	5	3.253	88.6	80 - 120				
Selenium	0.0512	0.00200	0.05	0.000787	101	80 - 120				
Silver	0.0439	0.00200	0.05	0.000004	87.8	80 - 120				
Sodium	169.5	0.200	5	167.9	31.9	80 - 120				SO
Thallium	0.0407	0.00200	0.05	-0.000001	81.4	80 - 120				
Vanadium	0.04581	0.00500	0.05	-0.000169	92.0	80 - 120				
Zinc	0.05591	0.00400	0.05	0.006966	97.9	80 - 120				

MS Sample ID: **HS18061144-03MS** Units: **mg/L** Analysis Date: **28-Jun-2018 15:59**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629715** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04461	0.00200	0.05	0.000218	88.8	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 129863 **Instrument:** ICPMS05 **Method:** SW6020

MSD Sample ID: **HS18061144-03MSD** Units: **mg/L** Analysis Date: **28-Jun-2018 14:27**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629425** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1158	0.0100	0.1	0.01811	97.6	80 - 120	0.1159	0.167	20	
Antimony	0.04778	0.00200	0.05	0.000166	95.2	80 - 120	0.04647	2.78	20	
Arsenic	0.05144	0.00200	0.05	0.000942	101	80 - 120	0.05012	2.61	20	
Barium	0.9105	0.00400	0.05	0.8762	68.5	80 - 120	0.9189	0.915	20	SO
Beryllium	0.05152	0.00200	0.05	0.000058	103	80 - 120	0.05133	0.358	20	
Cadmium	0.04696	0.00200	0.05	0.000135	93.7	80 - 120	0.04673	0.491	20	
Calcium	26.19	0.500	5	21.67	90.5	80 - 120	25.49	2.73	20	O
Chromium	0.04584	0.00400	0.05	0.000398	90.9	80 - 120	0.0461	0.572	20	
Cobalt	0.0495	0.00500	0.05	0.001732	95.5	80 - 120	0.04756	4.01	20	
Copper	0.04718	0.00200	0.05	0.000306	93.8	80 - 120	0.04531	4.05	20	
Iron	49.99	0.200	5	43.7	126	80 - 120	48.58	2.84	20	SO
Magnesium	14.26	0.200	5	9.403	97.1	80 - 120	13.7	4	20	
Manganese	0.8212	0.00500	0.05	0.76	122	80 - 120	0.7838	4.65	20	SO
Nickel	0.04932	0.00200	0.05	0.001762	95.1	80 - 120	0.04588	7.23	20	
Potassium	7.833	0.200	5	3.253	91.6	80 - 120	7.682	1.94	20	
Selenium	0.05266	0.00200	0.05	0.000787	104	80 - 120	0.0512	2.82	20	
Silver	0.04311	0.00200	0.05	0.000004	86.2	80 - 120	0.0439	1.8	20	
Sodium	178.1	0.200	5	167.9	204	80 - 120	169.5	4.96	20	SO
Thallium	0.04314	0.00200	0.05	-0.000001	86.3	80 - 120	0.0407	5.82	20	
Vanadium	0.04641	0.00500	0.05	-0.000169	93.2	80 - 120	0.04581	1.29	20	
Zinc	0.05601	0.00400	0.05	0.006966	98.1	80 - 120	0.05591	0.175	20	

MSD Sample ID: **HS18061144-03MSD** Units: **mg/L** Analysis Date: **28-Jun-2018 16:01**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629716** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0461	0.00200	0.05	0.000218	91.8	80 - 120	0.04461	3.28	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 129863 **Instrument:** ICPMS05 **Method:** SW6020

PDS Sample ID: **HS18061144-03PDS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:29**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629426** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1056	0.0100	0.1	0.01811	87.5	75 - 125				
Antimony	0.08158	0.00200	0.1	0.000166	81.4	75 - 125				
Arsenic	0.09628	0.00200	0.1	0.000942	95.3	75 - 125				
Barium	0.9026	0.00400	0.1	0.8762	26.3	75 - 125				SO
Beryllium	0.1004	0.00200	0.1	0.000058	100	75 - 125				
Cadmium	0.09053	0.00200	0.1	0.000135	90.4	75 - 125				
Calcium	28.58	0.500	10	21.67	69.1	75 - 125				S
Chromium	0.08566	0.00400	0.1	0.000398	85.3	75 - 125				
Cobalt	0.0919	0.00500	0.1	0.001732	90.2	75 - 125				
Copper	0.08764	0.00200	0.1	0.000306	87.3	75 - 125				
Iron	49.07	0.200	10	43.7	53.7	75 - 125				SO
Magnesium	17.44	0.200	10	9.403	80.3	75 - 125				
Manganese	0.7728	0.00500	0.1	0.76	12.8	75 - 125				SO
Nickel	0.09047	0.00200	0.1	0.001762	88.7	75 - 125				
Potassium	11.81	0.200	10	3.253	85.5	75 - 125				
Selenium	0.1001	0.00200	0.1	0.000787	99.4	75 - 125				
Silver	0.08301	0.00200	0.1	0.000004	83.0	75 - 125				
Sodium	165.4	0.200	10	167.9	-24.2	75 - 125				SO
Thallium	0.08666	0.00200	0.1	-0.000001	86.7	75 - 125				
Vanadium	0.08879	0.00500	0.1	-0.000169	89.0	75 - 125				
Zinc	0.1003	0.00400	0.1	0.006966	93.3	75 - 125				

PDS Sample ID: **HS18061144-03PDS** Units: **mg/L** Analysis Date: **28-Jun-2018 16:03**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629717** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.08799	0.00200	0.1	0.000218	87.8	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 129863 **Instrument:** ICPMS05 **Method:** SW6020

SD Sample ID: **HS18061144-03SD** Units: **mg/L** Analysis Date: **28-Jun-2018 14:23**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629423** PrepDate: **27-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02585	0.0500					0.01811	0	10	J
Antimony	0.00500	0.0100					0.000166	0	10	U
Arsenic	0.00500	0.0100					0.000942	0	10	U
Barium	0.8204	0.0200					0.8762	6.37	10	
Beryllium	0.00500	0.0100					0.000058	0	10	U
Cadmium	0.00500	0.0100					0.000135	0	10	U
Calcium	21.85	2.50					21.67	0.846	10	
Chromium	0.00500	0.0200					0.000398	0	10	U
Cobalt	0.001628	0.0250					0.001732	0	10	J
Copper	0.0100	0.0100					0.000306	0	10	U
Iron	45.43	1.00					43.7	3.95	10	
Magnesium	9.874	1.00					9.403	5	10	
Manganese	0.7468	0.0250					0.76	1.74	10	
Nickel	0.00500	0.0100					0.001762	0	10	U
Potassium	3.485	1.00					3.253	7.13	10	
Selenium	0.0100	0.0100					0.000787	0	10	U
Silver	0.00500	0.0100					0.000004	0	10	U
Sodium	174.1	1.00					167.9	3.74	10	
Thallium	0.00500	0.0100					-0.000001	0	10	U
Vanadium	0.00500	0.0250					-0.000169	0	10	U
Zinc	0.01108	0.0200					0.006966	0	10	J

SD Sample ID: **HS18061144-03SD** Units: **mg/L** Analysis Date: **28-Jun-2018 15:57**
Client ID: **C06_062018** Run ID: **ICPMS05_318820** SeqNo: **4629714** PrepDate: **27-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Lead	0.00500	0.0100					0.000218	0	10	U

The following samples were analyzed in this batch: HS18061144-02 HS18061144-03 HS18061144-04 HS18061144-05 HS18061144-06 HS18061144-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 130019 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-130019** Units: **mg/L** Analysis Date: **02-Jul-2018 15:11**
Client ID: Run ID: **HG03_319028** SeqNo: **4633488** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-130019** Units: **mg/L** Analysis Date: **02-Jul-2018 15:47**
Client ID: Run ID: **HG03_319028** SeqNo: **4633491** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00456	0.000200	0.005	0	91.2	80 - 120				

MS Sample ID: **HS18061241-01MS** Units: **mg/L** Analysis Date: **02-Jul-2018 15:55**
Client ID: Run ID: **HG03_319028** SeqNo: **4633496** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00437	0.000200	0.005	0.000233	82.7	75 - 125				

MS Sample ID: **HS18061144-03MS** Units: **mg/L** Analysis Date: **02-Jul-2018 15:50**
Client ID: **C06_062018** Run ID: **HG03_319028** SeqNo: **4633493** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00454	0.000200	0.005	0.000186	87.1	75 - 125				

MSD Sample ID: **HS18061241-01MSD** Units: **mg/L** Analysis Date: **02-Jul-2018 15:57**
Client ID: Run ID: **HG03_319028** SeqNo: **4633497** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00459	0.000200	0.005	0.000233	87.1	75 - 125	0.00437	4.91	20	

MSD Sample ID: **HS18061144-03MSD** Units: **mg/L** Analysis Date: **02-Jul-2018 15:52**
Client ID: **C06_062018** Run ID: **HG03_319028** SeqNo: **4633494** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00463	0.000200	0.005	0.000186	88.9	75 - 125	0.00454	1.96	20	

The following samples were analyzed in this batch: HS18061144-02 HS18061144-03 HS18061144-04 HS18061144-05 HS18061144-06 HS18061144-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: 129853 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129853** Units: **ug/L** Analysis Date: **28-Jun-2018 12:56**
Client ID: Run ID: **SV-5_318915** SeqNo: **4630579** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1007*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.08539*	*0*	*0.08*	*0*	*107*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.06246*	*0*	*0.08*	*0*	*78.1*	*40 - 140*				

LCS Sample ID: **LCS-129853** Units: **ug/L** Analysis Date: **28-Jun-2018 13:16**
Client ID: Run ID: **SV-5_318915** SeqNo: **4630580** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07518	0.010	0.08	0	94.0	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08902*	*0*	*0.08*	*0*	*111*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06661*	*0*	*0.08*	*0*	*83.3*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04552*	*0*	*0.08*	*0*	*56.9*	*40 - 140*				

MS Sample ID: **HS18061144-08MS** Units: **ug/L** Analysis Date: **28-Jun-2018 15:09**
Client ID: **18CPTMW10SW_062118** Run ID: **SV-5_318915** SeqNo: **4630583** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.05113	0.010	0.08081	0	63.3	40 - 140				
Surr: 2-Fluorobiphenyl	*0.06107*	*0*	*0.08081*	*0*	*75.6*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.08297*	*0*	*0.08081*	*0*	*103*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04879*	*0*	*0.08081*	*0*	*60.4*	*40 - 140*				

MSD Sample ID: **HS18061144-08MSD** Units: **ug/L** Analysis Date: **28-Jun-2018 15:29**
Client ID: **18CPTMW10SW_062118** Run ID: **SV-5_318915** SeqNo: **4630584** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.05678	0.010	0.08	0	71.0	40 - 140	0.05113	10.5	20	
Surr: 2-Fluorobiphenyl	*0.05146*	*0*	*0.08*	*0*	*64.3*	*40 - 140*	*0.06107*	*17.1*	*20*	
Surr: 4-Terphenyl-d14	*0.07969*	*0*	*0.08*	*0*	*99.6*	*40 - 140*	*0.08297*	*4.03*	*20*	
Surr: Nitrobenzene-d5	*0.06642*	*0*	*0.08*	*0*	*83.0*	*40 - 140*	*0.04879*	*30.6*	*20*	R

The following samples were analyzed in this batch: HS18061144-06 HS18061144-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: **R318780** **Instrument:** **VOA6** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument:** VOA6 **Method:** SW8260

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.16*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.39*	*1.0*	*50*	*0*	*98.8*	*85 - 114*				
Surr: Dibromofluoromethane	*44.55*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.63	1.0	50	0	99.3	78 - 124				
1,1,1-Trichloroethane	52.25	1.0	50	0	105	74 - 131				
1,1,2,2-Tetrachloroethane	61.69	1.0	50	0	123	71 - 121				S
1,1,2-Trichloroethane	51.91	1.0	50	0	104	80 - 119				
1,1-Dichloroethane	54.56	1.0	50	0	109	77 - 125				
1,1-Dichloroethene	50.53	1.0	50	0	101	71 - 131				
1,1-Dichloropropene	50.78	1.0	50	0	102	78 - 125				
1,2,3-Trichlorobenzene	58.64	1.0	50	0	117	69 - 129				
1,2,3-Trichloropropane	58.46	1.0	50	0	117	73 - 122				
1,2,4-Trichlorobenzene	57.09	1.0	50	0	114	69 - 130				
1,2,4-Trimethylbenzene	56.94	1.0	50	0	114	76 - 124				
1,2-Dibromo-3-chloropropane	63.01	1.0	50	0	126	62 - 128				
1,2-Dibromoethane	52.75	1.0	50	0	105	77 - 121				
1,2-Dichlorobenzene	56.91	1.0	50	0	114	80 - 119				
1,2-Dichloroethane	50.51	1.0	50	0	101	73 - 128				
1,2-Dichloropropane	50.69	1.0	50	0	101	78 - 122				
1,3,5-Trimethylbenzene	56.18	1.0	50	0	112	75 - 124				
1,3-Dichlorobenzene	55.69	1.0	50	0	111	80 - 119				
1,3-Dichloropropane	56.26	1.0	50	0	113	80 - 119				
1,4-Dichlorobenzene	56.02	1.0	50	0	112	79 - 118				
2,2-Dichloropropane	56.07	1.0	50	0	112	60 - 139				
2-Butanone	113.6	2.0	100	0	114	56 - 143				
2-Chlorotoluene	56.12	1.0	50	0	112	79 - 122				
2-Hexanone	117	2.0	100	0	117	57 - 139				
4-Chlorotoluene	56.45	1.0	50	0	113	78 - 122				
4-Isopropyltoluene	52.74	1.0	50	0	105	77 - 127				
4-Methyl-2-pentanone	111.7	2.0	100	0	112	67 - 130				
Acetone	112.2	2.0	100	0	112	39 - 160				
Benzene	49.05	1.0	50	0	98.1	79 - 120				
Bromobenzene	55.92	1.0	50	0	112	80 - 120				
Bromochloromethane	48.11	1.0	50	0	96.2	78 - 123				
Bromodichloromethane	49.44	1.0	50	0	98.9	79 - 125				
Bromoform	56.08	1.0	50	0	112	66 - 130				
Bromomethane	48.56	1.0	50	0	97.1	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	95.91	2.0	100	0	95.9	64 - 133				
Carbon tetrachloride	49.55	1.0	50	0	99.1	72 - 136				
Chlorobenzene	50.24	1.0	50	0	100	82 - 118				
Chloroethane	58.38	1.0	50	0	117	60 - 138				
Chloroform	47.91	1.0	50	0	95.8	79 - 124				
Chloromethane	48.81	1.0	50	0	97.6	50 - 139				
cis-1,2-Dichloroethene	49.08	1.0	50	0	98.2	78 - 123				
cis-1,3-Dichloropropene	51.5	1.0	50	0	103	75 - 124				
Dibromochloromethane	55.72	1.0	50	0	111	74 - 126				
Dibromomethane	53.82	1.0	50	0	108	79 - 123				
Dichlorodifluoromethane	46.69	1.0	50	0	93.4	32 - 152				
Ethylbenzene	51.51	1.0	50	0	103	79 - 121				
Hexachlorobutadiene	59.72	1.0	50	0	119	66 - 134				
Isopropylbenzene	50.24	1.0	50	0	100	72 - 131				
m,p-Xylene	100.6	2.0	100	0	101	80 - 121				
Methylene chloride	52.17	2.0	50	0	104	74 - 124				
Naphthalene	66.13	1.0	50	0	132	61 - 128				S
n-Butylbenzene	58.75	1.0	50	0	117	75 - 128				
n-Propylbenzene	51.37	1.0	50	0	103	76 - 126				
o-Xylene	50.8	1.0	50	0	102	78 - 122				
sec-Butylbenzene	56.63	1.0	50	0	113	77 - 126				
Styrene	51.06	1.0	50	0	102	78 - 123				
tert-Butylbenzene	56.44	1.0	50	0	113	78 - 124				
Tetrachloroethene	50.96	1.0	50	0	102	74 - 129				
Toluene	50.72	1.0	50	0	101	80 - 121				
trans-1,2-Dichloroethene	49.08	1.0	50	0	98.2	75 - 124				
trans-1,3-Dichloropropene	52.99	1.0	50	0	106	73 - 127				
Trichloroethene	49.36	1.0	50	0	98.7	79 - 123				
Trichlorofluoromethane	55.66	1.0	50	0	111	65 - 141				
Vinyl chloride	53.46	1.0	50	0	107	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.71*	*1.0*	*50*	*0*	*91.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.92*	*1.0*	*50*	*0*	*97.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.47*	*1.0*	*50*	*0*	*90.9*	*80 - 119*				
Surr: Toluene-d8	*49.03*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: **C06_062018** Run ID: **VOA6_318780** SeqNo: **4627715** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.36	1.0	50	0	88.7	78 - 124				
1,1,1-Trichloroethane	41.39	1.0	50	0	82.8	74 - 131				
1,1,2,2-Tetrachloroethane	55.33	1.0	50	0	111	71 - 121				
1,1,2-Trichloroethane	47.78	1.0	50	0	95.6	80 - 119				
1,1-Dichloroethane	45.19	1.0	50	0	90.4	77 - 125				
1,1-Dichloroethene	39.64	1.0	50	0	79.3	71 - 131				
1,1-Dichloropropene	40.63	1.0	50	0	81.3	78 - 125				
1,2,3-Trichlorobenzene	45.93	1.0	50	0	91.9	69 - 129				
1,2,3-Trichloropropane	53.44	1.0	50	0	107	73 - 122				
1,2,4-Trichlorobenzene	45.91	1.0	50	0	91.8	69 - 130				
1,2,4-Trimethylbenzene	45.91	1.0	50	0	91.8	76 - 124				
1,2-Dibromo-3-chloropropane	56.05	1.0	50	0	112	62 - 128				
1,2-Dibromoethane	48.06	1.0	50	0	96.1	77 - 121				
1,2-Dichlorobenzene	47.72	1.0	50	0	95.4	80 - 119				
1,2-Dichloroethane	45.56	1.0	50	0	91.1	73 - 128				
1,2-Dichloropropane	44.84	1.0	50	0	89.7	78 - 122				
1,3,5-Trimethylbenzene	45.1	1.0	50	0	90.2	75 - 124				
1,3-Dichlorobenzene	46.2	1.0	50	0	92.4	80 - 119				
1,3-Dichloropropane	52.26	1.0	50	0	105	80 - 119				
1,4-Dichlorobenzene	46.34	1.0	50	0	92.7	79 - 118				
2,2-Dichloropropane	45.31	1.0	50	0	90.6	60 - 139				
2-Butanone	108	2.0	100	0	108	56 - 143				
2-Chlorotoluene	45.67	1.0	50	0	91.3	79 - 122				
2-Hexanone	115.1	2.0	100	0	115	57 - 139				
4-Chlorotoluene	46.56	1.0	50	0	93.1	78 - 122				
4-Isopropyltoluene	42.35	1.0	50	0	84.7	77 - 127				
4-Methyl-2-pentanone	109.5	2.0	100	0	110	67 - 130				
Acetone	102.3	2.0	100	0	102	39 - 160				
Benzene	42.2	1.0	50	0	84.4	79 - 120				
Bromobenzene	47.75	1.0	50	0	95.5	80 - 120				
Bromochloromethane	42.96	1.0	50	0	85.9	78 - 123				
Bromodichloromethane	43.52	1.0	50	0	87.0	79 - 125				
Bromoform	52.35	1.0	50	0	105	66 - 130				
Bromomethane	36.21	1.0	50	0	72.4	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: **C06_062018** Run ID: **VOA6_318780** SeqNo: **4627715** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	77.28	2.0	100	0	77.3	64 - 133				
Carbon tetrachloride	38.56	1.0	50	0	77.1	72 - 136				
Chlorobenzene	44.44	1.0	50	0	88.9	82 - 118				
Chloroethane	47.7	1.0	50	0	95.4	60 - 138				
Chloroform	42.28	1.0	50	0	84.6	79 - 124				
Chloromethane	41.46	1.0	50	0	82.9	50 - 139				
cis-1,2-Dichloroethene	43.05	1.0	50	0	86.1	78 - 123				
cis-1,3-Dichloropropene	45.15	1.0	50	0	90.3	75 - 124				
Dibromochloromethane	50.95	1.0	50	0	102	74 - 126				
Dibromomethane	49.44	1.0	50	0	98.9	79 - 123				
Dichlorodifluoromethane	28.8	1.0	50	0	57.6	32 - 152				
Ethylbenzene	43.86	1.0	50	0	87.7	79 - 121				
Hexachlorobutadiene	54.45	1.0	50	0	109	66 - 134				
Isopropylbenzene	41.98	1.0	50	0	84.0	72 - 131				
m,p-Xylene	85.62	2.0	100	0	85.6	80 - 121				
Methylene chloride	48.15	2.0	50	0	96.3	74 - 124				
Naphthalene	51.8	1.0	50	0	104	61 - 128				
n-Butylbenzene	47.44	1.0	50	0	94.9	75 - 128				
n-Propylbenzene	41.77	1.0	50	0	83.5	76 - 126				
o-Xylene	44.48	1.0	50	0	89.0	78 - 122				
sec-Butylbenzene	44.82	1.0	50	0	89.6	77 - 126				
Styrene	44.87	1.0	50	0	89.7	78 - 123				
tert-Butylbenzene	45.07	1.0	50	0	90.1	78 - 124				
Tetrachloroethene	41.69	1.0	50	0	83.4	74 - 129				
Toluene	44.47	1.0	50	0	88.9	80 - 121				
trans-1,2-Dichloroethene	41.61	1.0	50	0	83.2	75 - 124				
trans-1,3-Dichloropropene	46.88	1.0	50	0	93.8	73 - 127				
Trichloroethene	42.4	1.0	50	0	84.8	79 - 123				
Trichlorofluoromethane	40.57	1.0	50	0	81.1	65 - 141				
Vinyl chloride	40.79	1.0	50	0	81.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.37*	*1.0*	*50*	*0*	*90.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.82*	*1.0*	*50*	*0*	*99.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.95*	*1.0*	*50*	*0*	*89.9*	*80 - 119*				
Surr: Toluene-d8	*50.08*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: **C06_062018** Run ID: **VOA6_318780** SeqNo: **4627716** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.96	1.0	50	0	89.9	78 - 124	44.36	1.35	20	
1,1,1-Trichloroethane	45.72	1.0	50	0	91.4	74 - 131	41.39	9.94	20	
1,1,2,2-Tetrachloroethane	55.86	1.0	50	0	112	71 - 121	55.33	0.961	20	
1,1,2-Trichloroethane	46.67	1.0	50	0	93.3	80 - 119	47.78	2.36	20	
1,1-Dichloroethane	46.47	1.0	50	0	92.9	77 - 125	45.19	2.78	20	
1,1-Dichloroethene	44.11	1.0	50	0	88.2	71 - 131	39.64	10.7	20	
1,1-Dichloropropene	45.31	1.0	50	0	90.6	78 - 125	40.63	10.9	20	
1,2,3-Trichlorobenzene	50.83	1.0	50	0	102	69 - 129	45.93	10.1	20	
1,2,3-Trichloropropane	52.87	1.0	50	0	106	73 - 122	53.44	1.08	20	
1,2,4-Trichlorobenzene	49.53	1.0	50	0	99.1	69 - 130	45.91	7.59	20	
1,2,4-Trimethylbenzene	49.06	1.0	50	0	98.1	76 - 124	45.91	6.63	20	
1,2-Dibromo-3-chloropropane	60.11	1.0	50	0	120	62 - 128	56.05	6.99	20	
1,2-Dibromoethane	47.57	1.0	50	0	95.1	77 - 121	48.06	1.04	20	
1,2-Dichlorobenzene	49.79	1.0	50	0	99.6	80 - 119	47.72	4.25	20	
1,2-Dichloroethane	45.7	1.0	50	0	91.4	73 - 128	45.56	0.302	20	
1,2-Dichloropropane	45.22	1.0	50	0	90.4	78 - 122	44.84	0.843	20	
1,3,5-Trimethylbenzene	49.36	1.0	50	0	98.7	75 - 124	45.1	9.02	20	
1,3-Dichlorobenzene	48.9	1.0	50	0	97.8	80 - 119	46.2	5.68	20	
1,3-Dichloropropane	50.84	1.0	50	0	102	80 - 119	52.26	2.76	20	
1,4-Dichlorobenzene	49.15	1.0	50	0	98.3	79 - 118	46.34	5.89	20	
2,2-Dichloropropane	48.38	1.0	50	0	96.8	60 - 139	45.31	6.54	20	
2-Butanone	105	2.0	100	0	105	56 - 143	108	2.8	20	
2-Chlorotoluene	49.08	1.0	50	0	98.2	79 - 122	45.67	7.2	20	
2-Hexanone	112	2.0	100	0	112	57 - 139	115.1	2.72	20	
4-Chlorotoluene	49.3	1.0	50	0	98.6	78 - 122	46.56	5.72	20	
4-Isopropyltoluene	45.96	1.0	50	0	91.9	77 - 127	42.35	8.19	20	
4-Methyl-2-pentanone	106.9	2.0	100	0	107	67 - 130	109.5	2.46	20	
Acetone	97.77	2.0	100	0	97.8	39 - 160	102.3	4.56	20	
Benzene	43.14	1.0	50	0	86.3	79 - 120	42.2	2.22	20	
Bromobenzene	48.77	1.0	50	0	97.5	80 - 120	47.75	2.11	20	
Bromochloromethane	42.11	1.0	50	0	84.2	78 - 123	42.96	2	20	
Bromodichloromethane	43.54	1.0	50	0	87.1	79 - 125	43.52	0.0489	20	
Bromoform	51.02	1.0	50	0	102	66 - 130	52.35	2.57	20	
Bromomethane	42.91	1.0	50	0	85.8	53 - 141	36.21	16.9	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: **C06_062018** Run ID: **VOA6_318780** SeqNo: **4627716** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	84.92	2.0	100	0	84.9	64 - 133	77.28	9.43	20	
Carbon tetrachloride	43.9	1.0	50	0	87.8	72 - 136	38.56	12.9	20	
Chlorobenzene	45.07	1.0	50	0	90.1	82 - 118	44.44	1.39	20	
Chloroethane	50.16	1.0	50	0	100	60 - 138	47.7	5.01	20	
Chloroform	42.66	1.0	50	0	85.3	79 - 124	42.28	0.896	20	
Chloromethane	40.92	1.0	50	0	81.8	50 - 139	41.46	1.31	20	
cis-1,2-Dichloroethene	43.77	1.0	50	0	87.5	78 - 123	43.05	1.67	20	
cis-1,3-Dichloropropene	44.63	1.0	50	0	89.3	75 - 124	45.15	1.15	20	
Dibromochloromethane	50	1.0	50	0	100	74 - 126	50.95	1.87	20	
Dibromomethane	48.15	1.0	50	0	96.3	79 - 123	49.44	2.64	20	
Dichlorodifluoromethane	33.92	1.0	50	0	67.8	32 - 152	28.8	16.3	20	
Ethylbenzene	45.92	1.0	50	0	91.8	79 - 121	43.86	4.59	20	
Hexachlorobutadiene	45.99	1.0	50	0	92.0	66 - 134	54.45	16.9	20	
Isopropylbenzene	45.52	1.0	50	0	91.0	72 - 131	41.98	8.11	20	
m,p-Xylene	90.42	2.0	100	0	90.4	80 - 121	85.62	5.45	20	
Methylene chloride	47.86	2.0	50	0	95.7	74 - 124	48.15	0.596	20	
Naphthalene	59.42	1.0	50	0	119	61 - 128	51.8	13.7	20	
n-Butylbenzene	49.5	1.0	50	0	99.0	75 - 128	47.44	4.27	20	
n-Propylbenzene	45.97	1.0	50	0	91.9	76 - 126	41.77	9.57	20	
o-Xylene	45.29	1.0	50	0	90.6	78 - 122	44.48	1.82	20	
sec-Butylbenzene	48.84	1.0	50	0	97.7	77 - 126	44.82	8.57	20	
Styrene	45.49	1.0	50	0	91.0	78 - 123	44.87	1.37	20	
tert-Butylbenzene	49.44	1.0	50	0	98.9	78 - 124	45.07	9.23	20	
Tetrachloroethene	45.74	1.0	50	0	91.5	74 - 129	41.69	9.26	20	
Toluene	45.82	1.0	50	0	91.6	80 - 121	44.47	2.98	20	
trans-1,2-Dichloroethene	43.22	1.0	50	0	86.4	75 - 124	41.61	3.8	20	
trans-1,3-Dichloropropene	46.5	1.0	50	0	93.0	73 - 127	46.88	0.814	20	
Trichloroethene	43.84	1.0	50	0	87.7	79 - 123	42.4	3.34	20	
Trichlorofluoromethane	47.69	1.0	50	0	95.4	65 - 141	40.57	16.1	20	
Vinyl chloride	44.71	1.0	50	0	89.4	58 - 137	40.79	9.17	20	
Surr: 1,2-Dichloroethane-d4	*45.09*	*1.0*	*50*	*0*	*90.2*	*81 - 118*	*45.37*	*0.614*	*20*	
Surr: 4-Bromofluorobenzene	*49.22*	*1.0*	*50*	*0*	*98.4*	*85 - 114*	*49.82*	*1.22*	*20*	
Surr: Dibromofluoromethane	*45.19*	*1.0*	*50*	*0*	*90.4*	*80 - 119*	*44.95*	*0.55*	*20*	
Surr: Toluene-d8	*49.71*	*1.0*	*50*	*0*	*99.4*	*89 - 112*	*50.08*	*0.737*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

The following samples were analyzed in this batch:

HS18061144-01	HS18061144-02	HS18061144-03	HS18061144-04
HS18061144-06	HS18061144-09		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

MBLK Sample ID: **VBLKW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 11:36**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629357** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

MBLK Sample ID: **VBLKW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 11:36**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629357** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.65*	*1.0*	*50*	*0*	*93.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.22*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*45.66*	*1.0*	*50*	*0*	*91.3*	*80 - 119*				
Surr: Toluene-d8	*50.54*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

LCS Sample ID: **VLCSW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629356** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.54	1.0	50	0	93.1	78 - 124				
1,1,1-Trichloroethane	46.02	1.0	50	0	92.0	74 - 131				
1,1,2,2-Tetrachloroethane	58.13	1.0	50	0	116	71 - 121				
1,1,2-Trichloroethane	48.98	1.0	50	0	98.0	80 - 119				
1,1-Dichloroethane	48.37	1.0	50	0	96.7	77 - 125				
1,1-Dichloroethene	45.07	1.0	50	0	90.1	71 - 131				
1,1-Dichloropropene	45.3	1.0	50	0	90.6	78 - 125				
1,2,3-Trichlorobenzene	53.42	1.0	50	0	107	69 - 129				
1,2,3-Trichloropropane	55.68	1.0	50	0	111	73 - 122				
1,2,4-Trichlorobenzene	51.3	1.0	50	0	103	69 - 130				
1,2,4-Trimethylbenzene	49.6	1.0	50	0	99.2	76 - 124				
1,2-Dibromo-3-chloropropane	62.43	1.0	50	0	125	62 - 128				
1,2-Dibromoethane	49.97	1.0	50	0	99.9	77 - 121				
1,2-Dichlorobenzene	52.19	1.0	50	0	104	80 - 119				
1,2-Dichloroethane	47.57	1.0	50	0	95.1	73 - 128				
1,2-Dichloropropane	48.17	1.0	50	0	96.3	78 - 122				
1,3,5-Trimethylbenzene	49.12	1.0	50	0	98.2	75 - 124				
1,3-Dichlorobenzene	50.78	1.0	50	0	102	80 - 119				
1,3-Dichloropropane	53.75	1.0	50	0	107	80 - 119				
1,4-Dichlorobenzene	50.4	1.0	50	0	101	79 - 118				
2,2-Dichloropropane	49.62	1.0	50	0	99.2	60 - 139				
2-Butanone	108.8	2.0	100	0	109	56 - 143				
2-Chlorotoluene	50.29	1.0	50	0	101	79 - 122				
2-Hexanone	113.6	2.0	100	0	114	57 - 139				
4-Chlorotoluene	50.92	1.0	50	0	102	78 - 122				
4-Isopropyltoluene	44.88	1.0	50	0	89.8	77 - 127				
4-Methyl-2-pentanone	109.1	2.0	100	0	109	67 - 130				
Acetone	108	2.0	100	0	108	39 - 160				
Benzene	45.35	1.0	50	0	90.7	79 - 120				
Bromobenzene	51.41	1.0	50	0	103	80 - 120				
Bromochloromethane	43.83	1.0	50	0	87.7	78 - 123				
Bromodichloromethane	46.6	1.0	50	0	93.2	79 - 125				
Bromoform	54.3	1.0	50	0	109	66 - 130				
Bromomethane	45.76	1.0	50	0	91.5	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

LCS Sample ID: **VLCSW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629356** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	84.83	2.0	100	0	84.8	64 - 133				
Carbon tetrachloride	43.18	1.0	50	0	86.4	72 - 136				
Chlorobenzene	46.65	1.0	50	0	93.3	82 - 118				
Chloroethane	53.69	1.0	50	0	107	60 - 138				
Chloroform	45.17	1.0	50	0	90.3	79 - 124				
Chloromethane	48.56	1.0	50	0	97.1	50 - 139				
cis-1,2-Dichloroethene	45.15	1.0	50	0	90.3	78 - 123				
cis-1,3-Dichloropropene	47.52	1.0	50	0	95.0	75 - 124				
Dibromochloromethane	52.19	1.0	50	0	104	74 - 126				
Dibromomethane	51.79	1.0	50	0	104	79 - 123				
Dichlorodifluoromethane	39.41	1.0	50	0	78.8	32 - 152				
Ethylbenzene	47.22	1.0	50	0	94.4	79 - 121				
Hexachlorobutadiene	48.97	1.0	50	0	97.9	66 - 134				
Isopropylbenzene	44.67	1.0	50	0	89.3	72 - 131				
m,p-Xylene	91.3	2.0	100	0	91.3	80 - 121				
Methylene chloride	48.63	2.0	50	0	97.3	74 - 124				
Naphthalene	62.32	1.0	50	0	125	61 - 128				
n-Butylbenzene	49.62	1.0	50	0	99.2	75 - 128				
n-Propylbenzene	43.93	1.0	50	0	87.9	76 - 126				
o-Xylene	46.93	1.0	50	0	93.9	78 - 122				
sec-Butylbenzene	47.33	1.0	50	0	94.7	77 - 126				
Styrene	47.68	1.0	50	0	95.4	78 - 123				
tert-Butylbenzene	48.28	1.0	50	0	96.6	78 - 124				
Tetrachloroethene	43.98	1.0	50	0	88.0	74 - 129				
Toluene	46.47	1.0	50	0	92.9	80 - 121				
trans-1,2-Dichloroethene	44.6	1.0	50	0	89.2	75 - 124				
trans-1,3-Dichloropropene	50.14	1.0	50	0	100	73 - 127				
Trichloroethene	45.05	1.0	50	0	90.1	79 - 123				
Trichlorofluoromethane	45.18	1.0	50	0	90.4	65 - 141				
Vinyl chloride	48.05	1.0	50	0	96.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.2*	*1.0*	*50*	*0*	*92.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.88*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.56*	*1.0*	*50*	*0*	*91.1*	*80 - 119*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: **R318858** **Instrument:** **VOA6** **Method:** **SW8260**

MS Sample ID: **HS18061144-08MS** Units: **ug/L** Analysis Date: **28-Jun-2018 14:52**
Client ID: **18CPTMW10SW_062118** Run ID: **VOA6_318858** SeqNo: **4629862** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.01	1.0	50	0	86.0	78 - 124				
1,1,1-Trichloroethane	41.45	1.0	50	0	82.9	74 - 131				
1,1,2,2-Tetrachloroethane	56.11	1.0	50	0	112	71 - 121				
1,1,2-Trichloroethane	46.92	1.0	50	0	93.8	80 - 119				
1,1-Dichloroethane	45.49	1.0	50	0	91.0	77 - 125				
1,1-Dichloroethene	38.65	1.0	50	0	77.3	71 - 131				
1,1-Dichloropropene	39.85	1.0	50	0	79.7	78 - 125				
1,2,3-Trichlorobenzene	44.43	1.0	50	0	88.9	69 - 129				
1,2,3-Trichloropropane	53.57	1.0	50	0	107	73 - 122				
1,2,4-Trichlorobenzene	43.83	1.0	50	0	87.7	69 - 130				
1,2,4-Trimethylbenzene	45.27	1.0	50	0	90.5	76 - 124				
1,2-Dibromo-3-chloropropane	59.36	1.0	50	0	119	62 - 128				
1,2-Dibromoethane	46.78	1.0	50	0	93.6	77 - 121				
1,2-Dichlorobenzene	47	1.0	50	0	94.0	80 - 119				
1,2-Dichloroethane	44.4	1.0	50	0	88.8	73 - 128				
1,2-Dichloropropane	43.66	1.0	50	0	87.3	78 - 122				
1,3,5-Trimethylbenzene	44.51	1.0	50	0	89.0	75 - 124				
1,3-Dichlorobenzene	45.54	1.0	50	0	91.1	80 - 119				
1,3-Dichloropropane	51	1.0	50	0	102	80 - 119				
1,4-Dichlorobenzene	45.74	1.0	50	0	91.5	79 - 118				
2,2-Dichloropropane	43.43	1.0	50	0	86.9	60 - 139				
2-Butanone	111.3	2.0	100	0	111	56 - 143				
2-Chlorotoluene	45.33	1.0	50	0	90.7	79 - 122				
2-Hexanone	117.2	2.0	100	0	117	57 - 139				
4-Chlorotoluene	45.9	1.0	50	0	91.8	78 - 122				
4-Isopropyltoluene	39.69	1.0	50	0	79.4	77 - 127				
4-Methyl-2-pentanone	110.5	2.0	100	0	111	67 - 130				
Acetone	103.8	2.0	100	0	104	39 - 160				
Benzene	41.1	1.0	50	0	82.2	79 - 120				
Bromobenzene	47.48	1.0	50	0	95.0	80 - 120				
Bromochloromethane	40.7	1.0	50	0	81.4	78 - 123				
Bromodichloromethane	42.56	1.0	50	0	85.1	79 - 125				
Bromoform	51.29	1.0	50	0	103	66 - 130				
Bromomethane	32.88	1.0	50	0	65.8	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS18061144-08MS** Units: **ug/L** Analysis Date: **28-Jun-2018 14:52**
Client ID: **18CPTMW10SW_062118** Run ID: **VOA6_318858** SeqNo: **4629862** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	75.92	2.0	100	0	75.9	64 - 133				
Carbon tetrachloride	38.09	1.0	50	0	76.2	72 - 136				
Chlorobenzene	43.02	1.0	50	0	86.0	82 - 118				
Chloroethane	46.71	1.0	50	0	93.4	60 - 138				
Chloroform	41.3	1.0	50	0	82.6	79 - 124				
Chloromethane	39.75	1.0	50	0	79.5	50 - 139				
cis-1,2-Dichloroethene	41.76	1.0	50	0	83.5	78 - 123				
cis-1,3-Dichloropropene	44.52	1.0	50	0	89.0	75 - 124				
Dibromochloromethane	49.07	1.0	50	0	98.1	74 - 126				
Dibromomethane	48.85	1.0	50	0	97.7	79 - 123				
Dichlorodifluoromethane	28.76	1.0	50	0	57.5	32 - 152				
Ethylbenzene	42.36	1.0	50	0	84.7	79 - 121				
Hexachlorobutadiene	37.54	1.0	50	0	75.1	66 - 134				
Isopropylbenzene	40.46	1.0	50	0	80.9	72 - 131				
m,p-Xylene	82.92	2.0	100	0	82.9	80 - 121				
Methylene chloride	47.31	2.0	50	0	94.6	74 - 124				
Naphthalene	52.25	1.0	50	0	105	61 - 128				
n-Butylbenzene	42.3	1.0	50	0	84.6	75 - 128				
n-Propylbenzene	39.33	1.0	50	0	78.7	76 - 126				
o-Xylene	42.75	1.0	50	0	85.5	78 - 122				
sec-Butylbenzene	41.6	1.0	50	0	83.2	77 - 126				
Styrene	43.7	1.0	50	0	87.4	78 - 123				
tert-Butylbenzene	43.45	1.0	50	0	86.9	78 - 124				
Tetrachloroethene	40.03	1.0	50	0	80.1	74 - 129				
Toluene	42.57	1.0	50	0	85.1	80 - 121				
trans-1,2-Dichloroethene	40.61	1.0	50	0	81.2	75 - 124				
trans-1,3-Dichloropropene	46.11	1.0	50	0	92.2	73 - 127				
Trichloroethene	40.83	1.0	50	0	81.7	79 - 123				
Trichlorofluoromethane	39.94	1.0	50	0	79.9	65 - 141				
Vinyl chloride	39.78	1.0	50	0	79.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.51*	*1.0*	*50*	*0*	*91.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.17*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*45.54*	*1.0*	*50*	*0*	*91.1*	*80 - 119*				
Surr: Toluene-d8	*49.63*	*1.0*	*50*	*0*	*99.3*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061144-08MSD** Units: **ug/L** Analysis Date: **28-Jun-2018 15:17**
Client ID: **18CPTMW10SW_062118** Run ID: **VOA6_318858** SeqNo: **4629863** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.08	1.0	50	0	86.2	78 - 124	43.01	0.159	20	
1,1,1-Trichloroethane	40.93	1.0	50	0	81.9	74 - 131	41.45	1.25	20	
1,1,2,2-Tetrachloroethane	56.8	1.0	50	0	114	71 - 121	56.11	1.22	20	
1,1,2-Trichloroethane	46.44	1.0	50	0	92.9	80 - 119	46.92	1.02	20	
1,1-Dichloroethane	45.52	1.0	50	0	91.0	77 - 125	45.49	0.0672	20	
1,1-Dichloroethene	38.95	1.0	50	0	77.9	71 - 131	38.65	0.782	20	
1,1-Dichloropropene	39.17	1.0	50	0	78.3	78 - 125	39.85	1.72	20	
1,2,3-Trichlorobenzene	47.77	1.0	50	0	95.5	69 - 129	44.43	7.25	20	
1,2,3-Trichloropropane	54.28	1.0	50	0	109	73 - 122	53.57	1.32	20	
1,2,4-Trichlorobenzene	45.81	1.0	50	0	91.6	69 - 130	43.83	4.41	20	
1,2,4-Trimethylbenzene	45.11	1.0	50	0	90.2	76 - 124	45.27	0.357	20	
1,2-Dibromo-3-chloropropane	61.43	1.0	50	0	123	62 - 128	59.36	3.42	20	
1,2-Dibromoethane	47.06	1.0	50	0	94.1	77 - 121	46.78	0.606	20	
1,2-Dichlorobenzene	47.67	1.0	50	0	95.3	80 - 119	47	1.41	20	
1,2-Dichloroethane	43.92	1.0	50	0	87.8	73 - 128	44.4	1.07	20	
1,2-Dichloropropane	43.79	1.0	50	0	87.6	78 - 122	43.66	0.306	20	
1,3,5-Trimethylbenzene	44.62	1.0	50	0	89.2	75 - 124	44.51	0.24	20	
1,3-Dichlorobenzene	45.6	1.0	50	0	91.2	80 - 119	45.54	0.12	20	
1,3-Dichloropropane	50.4	1.0	50	0	101	80 - 119	51	1.18	20	
1,4-Dichlorobenzene	46.04	1.0	50	0	92.1	79 - 118	45.74	0.656	20	
2,2-Dichloropropane	43.27	1.0	50	0	86.5	60 - 139	43.43	0.368	20	
2-Butanone	112.4	2.0	100	0	112	56 - 143	111.3	1.01	20	
2-Chlorotoluene	45.19	1.0	50	0	90.4	79 - 122	45.33	0.308	20	
2-Hexanone	118.5	2.0	100	0	118	57 - 139	117.2	1.12	20	
4-Chlorotoluene	46.3	1.0	50	0	92.6	78 - 122	45.9	0.863	20	
4-Isopropyltoluene	39.68	1.0	50	0	79.4	77 - 127	39.69	0.0169	20	
4-Methyl-2-pentanone	110.4	2.0	100	0	110	67 - 130	110.5	0.0612	20	
Acetone	106.6	2.0	100	0	107	39 - 160	103.8	2.7	20	
Benzene	40.64	1.0	50	0	81.3	79 - 120	41.1	1.12	20	
Bromobenzene	46.77	1.0	50	0	93.5	80 - 120	47.48	1.51	20	
Bromochloromethane	40.83	1.0	50	0	81.7	78 - 123	40.7	0.33	20	
Bromodichloromethane	42.96	1.0	50	0	85.9	79 - 125	42.56	0.939	20	
Bromoform	51.63	1.0	50	0	103	66 - 130	51.29	0.662	20	
Bromomethane	39.02	1.0	50	0	78.0	53 - 141	32.88	17.1	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061144-08MSD** Units: **ug/L** Analysis Date: **28-Jun-2018 15:17**
Client ID: **18CPTMW10SW_062118** Run ID: **VOA6_318858** SeqNo: **4629863** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	75.49	2.0	100	0	75.5	64 - 133	75.92	0.558	20	
Carbon tetrachloride	37.55	1.0	50	0	75.1	72 - 136	38.09	1.43	20	
Chlorobenzene	42.93	1.0	50	0	85.9	82 - 118	43.02	0.202	20	
Chloroethane	46.35	1.0	50	0	92.7	60 - 138	46.71	0.772	20	
Chloroform	41	1.0	50	0	82.0	79 - 124	41.3	0.721	20	
Chloromethane	41.07	1.0	50	0	82.1	50 - 139	39.75	3.25	20	
cis-1,2-Dichloroethene	41.57	1.0	50	0	83.1	78 - 123	41.76	0.457	20	
cis-1,3-Dichloropropene	43.77	1.0	50	0	87.5	75 - 124	44.52	1.68	20	
Dibromochloromethane	48.74	1.0	50	0	97.5	74 - 126	49.07	0.669	20	
Dibromomethane	48.12	1.0	50	0	96.2	79 - 123	48.85	1.52	20	
Dichlorodifluoromethane	27.42	1.0	50	0	54.8	32 - 152	28.76	4.79	20	
Ethylbenzene	42.14	1.0	50	0	84.3	79 - 121	42.36	0.524	20	
Hexachlorobutadiene	36.8	1.0	50	0	73.6	66 - 134	37.54	1.99	20	
Isopropylbenzene	40.42	1.0	50	0	80.8	72 - 131	40.46	0.0955	20	
m,p-Xylene	83.53	2.0	100	0	83.5	80 - 121	82.92	0.738	20	
Methylene chloride	47.18	2.0	50	0	94.4	74 - 124	47.31	0.275	20	
Naphthalene	59.34	1.0	50	0	119	61 - 128	52.25	12.7	20	
n-Butylbenzene	41.93	1.0	50	0	83.9	75 - 128	42.3	0.888	20	
n-Propylbenzene	39.53	1.0	50	0	79.1	76 - 126	39.33	0.513	20	
o-Xylene	42.69	1.0	50	0	85.4	78 - 122	42.75	0.155	20	
sec-Butylbenzene	41.83	1.0	50	0	83.7	77 - 126	41.6	0.559	20	
Styrene	43.61	1.0	50	0	87.2	78 - 123	43.7	0.206	20	
tert-Butylbenzene	43.31	1.0	50	0	86.6	78 - 124	43.45	0.314	20	
Tetrachloroethene	39.7	1.0	50	0	79.4	74 - 129	40.03	0.826	20	
Toluene	42.24	1.0	50	0	84.5	80 - 121	42.57	0.77	20	
trans-1,2-Dichloroethene	40.42	1.0	50	0	80.8	75 - 124	40.61	0.481	20	
trans-1,3-Dichloropropene	46.21	1.0	50	0	92.4	73 - 127	46.11	0.207	20	
Trichloroethene	40.22	1.0	50	0	80.4	79 - 123	40.83	1.48	20	
Trichlorofluoromethane	39.02	1.0	50	0	78.0	65 - 141	39.94	2.33	20	
Vinyl chloride	40	1.0	50	0	80.0	58 - 137	39.78	0.555	20	
Surr: 1,2-Dichloroethane-d4	*45.91*	*1.0*	*50*	*0*	*91.8*	*81 - 118*	*45.51*	*0.882*	*20*	
Surr: 4-Bromofluorobenzene	*49.56*	*1.0*	*50*	*0*	*99.1*	*85 - 114*	*50.17*	*1.23*	*20*	
Surr: Dibromofluoromethane	*45.86*	*1.0*	*50*	*0*	*91.7*	*80 - 119*	*45.54*	*0.683*	*20*	
Surr: Toluene-d8	*49.55*	*1.0*	*50*	*0*	*99.1*	*89 - 112*	*49.63*	*0.162*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

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ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS18061144

QC BATCH REPORT

Batch ID: R318858 **Instrument:** VOA6 **Method:** SW8260

The following samples were analyzed in this batch:

HS18061144-05	HS18061144-06	HS18061144-07	HS18061144-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

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ALS Group Houston, Corp Date: 02-Aug-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS18061144**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

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Date: 02-Aug-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**22-Jun-2018 08:30**
Work Order:	HS18061144	Received by:	**RPG**

Checklist completed by:	*Paresh M. Giga* eSignature	22-Jun-2018 Date	Reviewed by: *RJ Modashia* eSignature	22-Jun-2018 Date

Matrices: **Groundwater/Water** Carrier name: **FedEx**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	5.7c/5.1c U/c		IR25
Cooler(s)/Kit(s):	43883		
Date/Time sample(s) sent to storage:	6/22/18 16:30		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

bhate
ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) | Quality Assurance Samples (6)

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
C01_062018		6/20/18	0925	-	N		WG	4	X	X						
C09_062018		6/20/18	1025	-	N		WG	5	X	X	X					
C06_062018		6/20/18	1120	-	N		WG	5	X	X	X					
C06_062018_MS		6/20/18	1120		MS		WG	5	X	X	X					
C06_062018_SD		6/20/18	1120		SD		WG	5	X	X	X					
MW6_062018		6/20/18	1220	-	N		WG	5	X	X	X					
130_062118		6/21/18	0815	-	N		WG	5	X	X	X					
MW9_062118		6/21/18	0910	-	N		WG	6	X	X	X	X				
18CPTMW10DW_062118		6/21/18	1005	-	N		WG	5	X	X	X					
18CPTMW10SW_062118		6/21/18	1100	-	N		WG	5	X	X		X				
18CPTMW10SW_062118_MS		6/21/18	1100	-	MS		WG	5	X	X		X				

HS18061144
Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/21/18	1430	1. R Giga	6/22/18	08:30
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped

Method of Shipment: ____

Fed Ex ____ Airbill

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: RG Delivery Date/Time: 06/22/18 08:30

No.: Number: 7376 9751 2735

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Cooler # 43883

IR# 25
CF-0.6

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bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) | Quality Assurance Samples (6)

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
18CpTmw10SW_062118_SD		6/21/18	1100	-	SD		WG	5	X	X		X										
TRip Blank		6/21/18		-	TB		W	2	X													
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		

HS18061144
Bhate Environmental Associates, Inc.
LHAAP 18 24

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/21/18	1430	1. R Cigar	6/22/18	08:30
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number: 7376 9751 2735

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN SONIA WEST Lab Recipient: RR Delivery Date/Time: 06/22/18 08:30

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e) Cooler # 43883

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

3RM 25
CLF-0.6

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ALS
10450 S[illegible] Medias[illegible]
Hous[illegible]
Tel. +1 281 530 5656
Fax. +1 281 530 58[illegible]

43883

CUSTODY SEAL

Date: 6/21/18 Time: 1430
Name: Scott Beesinger
Company: BHATY

Seal Broken By:
Date: 6/22/18

43883 JUN 22 2018

10450 STAN[illegible] ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-SW
RMA:

FedEx Express
E

TRK# 7376 9751 2735
0221

RETURNS MON-SAT
PRIORITY OVERNIGHT
FRI - 22 JUN 10:30A
PRIORITY OVERNIGHT

FedEx
TRK# 7376 9751 2735
0221

77099
TX-US
IAH

AB SGRA

[illegible] 21JUN18 GGGA 546C1/48TS/8C8A

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Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817707

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2116 (218290)

General Set Information: There were eight field samples in this Work Order. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Samples 1817707006/08 were analyzed and reported at 1:100 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 608786) was less than 1/2 the CRDL. The recovery for the LCS (608787) was within acceptable parameters.

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MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) were performed on samples 1817707004/05 and 1817707011/12 (Client ID's: C06_062018 and 18CPTMW10SW_062118). The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.

Thomas Bosch July 07, 2018
Analyst Date

RIGHT SOLUTIONS | RIGHT PARTNER

ANALYTICAL REPORT

Report Date: July 06, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817707**
Project ID: HS18061144 062018
Purchase Order: HS18061144
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
C01_062018	1817707001	06/20/18	06/23/18	
C09_062018	1817707002	06/20/18	06/23/18	
C06_062018	1817707003	06/20/18	06/23/18	
MW6_062018	1817707006	06/20/18	06/23/18	
130_062118	1817707007	06/21/18	06/23/18	
MW9_062118	1817707008	06/21/18	06/23/18	
18CPTMW10DW_062118	1817707009	06/21/18	06/23/18	
18CPTMW10SW_062118	1817707010	06/21/18	06/23/18	

Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
C06_062018MS	1817707004	06/20/18	06/23/18	
C06_062018MSD	1817707005	06/20/18	06/23/18	
18CPTMW10SW_062118MS	1817707011	06/21/18	06/23/18	
18CPTMW10SW_062118MSD	1817707012	06/21/18	06/23/18	

***Client QC is reported as part of the Quality Control results report, if requested.**

ANALYTICAL REPORT

Workorder: 34-1817707
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **C01_062018** | Sampling Site: NA | Collected: 06/20/2018
Lab ID: 1817707001 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 17:29
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **C09_062018** | Sampling Site: NA | Collected: 06/20/2018
Lab ID: 1817707002 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 17:43
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **C06_062018** | Sampling Site: NA | Collected: 06/20/2018
Lab ID: 1817707003 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 17:57
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **MW6_062018** | Sampling Site: NA | Collected: 06/20/2018
Lab ID: 1817707006 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 18:40
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**5600**	100	200	400	100	

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ANALYTICAL REPORT

Workorder: 34-1817707
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **130_062118** | Sampling Site: NA | Collected: 06/21/2018
Lab ID: 1817707007 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 18:54
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**5.6**	1.0	2.0	4.0	1	

Sample ID: **MW9_062118** | Sampling Site: NA | Collected: 06/21/2018
Lab ID: 1817707008 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 19:09
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**590**	100	200	400	100	

Sample ID: **18CPTMW10DW_062118** | Sampling Site: NA | Collected: 06/21/2018
Lab ID: 1817707009 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 19:23
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**12**	1.0	2.0	4.0	1	

Sample ID: **18CPTMW10SW_062118** | Sampling Site: NA | Collected: 06/21/2018
Lab ID: 1817707010 | Media: 125 mL Nalgene | Received: 06/23/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2116 (HBN: 218290)
Analyzed: 07/05/2018 19:37
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-1817707
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 218290)

Samples 1817707006/08 were analyzed and reported at 1:100 dilutions. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/06/2018 08:41	/S/ Stephen Brose 07/06/2018 10:50

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1817707
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817707

Limits: Client SOW/Contract Specified
Basis: DoD QSM

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: EPA 6850
Batch: ELMS/2116 (HBN: 218290)
Analyzed By: Thomas Bosch

Blank

LMB: 608786
Analyzed: 07/05/2018 16:24
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 608787
Analyzed: 07/05/2018 16:38
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.68	5.00	93.7	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1817707003		MS: 1817707004					MSD: 1817707005				
Analyzed: 07/05/2018 17:57		Analyzed: 07/05/2018 18:12					Analyzed: 07/05/2018 18:26				
Dilution: 1		Dilution: 1					Dilution: 1				
Units: ug/L		Units: ug/L					Units: ug/L				
Analyte	**Result**	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Perchlorate	ND	5.34	5	107	78.8	123.8	5.17	103	3.3	0.0	20.0

Sample: 1817707010		MS: 1817707011					MSD: 1817707012				
Analyzed: 07/05/2018 19:37		Analyzed: 07/05/2018 19:51					Analyzed: 07/05/2018 20:06				
Dilution: 1		Dilution: 1					Dilution: 1				
Units: ug/L		Units: ug/L					Units: ug/L				
Analyte	**Result**	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Perchlorate	ND	5.16	5	103	78.8	123.8	5.44	109	5.34	0.0	20.0

Continuing Calibration Verification

CCV: 608783				CCV: 608788		
Analyzed: 07/05/2018 15:41				Analyzed: 07/05/2018 20:20		
Units: ug/L				Units: ug/L		
Criteria: ± 15%				Criteria: ± 15%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	27.6	25.0	111	27.5	25.0	110

Interference Check Sample

ICSA: 608785
Analyzed: 07/05/2018 16:09
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.896	1.00	89.6

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Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817707

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2116 (HBN: 218290)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

LODV: 608784 **Analyzed:** 07/05/2018 15:55 **Units:** ug/L **Criteria:** ± 50%				**LODV:** 608789 **Analyzed:** 07/05/2018 20:34 **Units:** ug/L **Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.980	1.00	98.0	0.997	1.00	99.7

Comments

Samples 1817707006/08 were analyzed and reported at 1:100 dilutions. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch 07/06/2018 08:41	/S/ Stephen Brose 07/06/2018 10:50

Symbols and Definitions

- ✱ - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

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W 1817707

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9331

1817707

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18061144
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE	
	ANALYSIS REQUESTED			DUE DATE	
1.	**HS18061144-01**	**C01_062018**	**Groundwater**	**20 Jun 2018 09:25**	
	SUB_Perch-6850			02 Jul 2018	
2.	**HS18061144-02**	**C09_062018**	**Groundwater**	**20 Jun 2018 10:25**	
	SUB_Perch-6850			02 Jul 2018	
3.	**HS18061144-03**	**C06_062018**	**Groundwater**	**20 Jun 2018 11:20**	MS/MSD
	SUB_Perch-6850			02 Jul 2018	
4.	**HS18061144-04**	**MW6_0620218**	**Groundwater**	**20 Jun 2018 12:20**	
	SUB_Perch-6850			02 Jul 2018	
5.	**HS18061144-05**	**K130_062118**	**Groundwater**	**21 Jun 2018 08:15**	
	SUB_Perch-6850			02 Jul 2018	
6.	**HS18061144-06**	**MW9_062118**	**Groundwater**	**21 Jun 2018 09:10**	
	SUB_Perch-6850			02 Jul 2018	
7.	**HS18061144-07**	**18CPTMW10DW_062118**	**Groundwater**	**21 Jun 2018 10:05**	
	SUB_Perch-6850			02 Jul 2018	
8.	**HS18061144-08**	**18CPTMW10SW_062118**	**Groundwater**	**21 Jun 2018 11:00**	MS/MSD
	SUB_Perch-6850			02 Jul 2018	

MS/MSD

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Subcontract Chain of Custody

COC ID: 9331

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
Please analyze MS/MSD on the following samples
HS18061144-03 & HS18061144-08.

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	6/22/18 1800.
Received By:		Date/Time:	6/23/18/930
Cooler ID(s):	8672	Temperature(s):	2°

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ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061144	Split:	Workorder ID: 1817707	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/20/2018 09:25	C01_062018	1817707001		Water	A	1	A
2	06/20/2018 10:25	C09_062018	1817707002		Water	A	1	A
3	06/20/2018 11:20	C06_062018	1817707003		Water	A	1	A
4	06/20/2018 11:20	C06_062018MS	1817707004	MS	Water	A	1	A
5	06/20/2018 11:20	C06_062018MSD	1817707005	MSD	Water	A	1	A
6	06/20/2018 12:20	MW6_062018	1817707006		Water	A	1	A
7	06/21/2018 08:15	130_062118	1817707007		Water	A	1	A
8	06/21/2018 09:10	MW9_062118	1817707008		Water	A	1	A
9	06/21/2018 10:05	18CPTMW10DW_062118	1817707009		Water	A	1	A
10	06/21/2018 11:00	18CPTMW10SW_062118	1817707010		Water	A	1	A

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/23/2018 09:20	ALS Sample Receiving	Sample Login
[signature]	6/26/18 1300	14B	Storage
R.33.1	7.3.18/13:30	~~R-3~~ T. Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

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ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061144	Split:	Workorder ID: 1817707	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Containers

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count	EPA 6850, DoD QSM
11	06/21/2018 11:00	18CPTMW10SW_062118MS	1817707011	MS	Water	A	1	A
12	06/21/2018 11:00	18CPTMW10SW_062118MSD	1817707012	MSD	Water	A	1	A
13								
14								
15								
16								
17								
18								
19								
20								

Requested Analysis

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/23/2018 09:20	ALS Sample Receiving	Sample Login
Julie Warath 6/26/18 1300		14B	storage
R.33.1	7.3.18/13:30	T.Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

RIGHT SOLUTIONS | RIGHT PARTNER

Kevin Griffiths

From: RJ Modashia
Sent: Monday, June 25, 2018 7:40 AM
To: Kevin Griffiths
Subject: HS18061144
Attachments: HS18061144 - SubCOC_9331.pdf

Kevin,

I just got a request to update the sample ID on HS18061144-05. It should be "130_062118" instead of "I30_062118"

Please update it on your end as well

Thanks,

RJ Modashia
Project Manager, Environmental
Houston Laboratory

T +1 281 530 5656 D +1 281 575 2279
F +1 281 530 5887
rj.modashia@alsglobal.com
10450 Stancliff Road, Suite 210
Houston, TX 77099

Click here to learn more about our sample miniaturization initiative!

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How to pack an ALS Environmental Sample Cooler
Collecting a Sample Using the Terra Core™ Sampling Kit

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ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1817707

Date/Time of Receipt: 6/23/18 920

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8672	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Meredith Elkins (Signature) Meredith Elkins (Printed Name) 6/23/18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc Revised 01/01/2018

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ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 22JUN18
ACTWGT: 19.30 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18061144 - RJ

546C2/93BF/53C1

FedEx Express

J7710161020001uv

TRK# 0201 4380 9530 2716

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BTFA

84123
UT-US SLC

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Batch Worklist

Batch: ELMS/ 2116 | Created: 7/5/2018 13:57 | Instrument: | HBN: 218290

Rule: EPA 6850, DoD QSM Water | Analyst: T. Bosch | Status: WP

Workorder: 1817707 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	608783	CCV for HBN 218290 [ELMS/2116]				CCV	3		E685041C3Q	5311		7/6/2018	
2	608784	LODV for HBN 218290 [ELMS/2116				LODV	3		E6850..D3Q	5311		7/6/2018	
3	608785	ICS for HBN 218290 [ELMS/2116]				ICS	3		E6850..D3Q	5311		7/6/2018	
4	608786	LMB for HBN 218290 [ELMS/2116]				LMB	3		E6850Q413Q	5311		7/6/2018	
5	608787	LCS for HBN 218290 [ELMS/2116]				LCS	3		E6850Q413Q	5311		7/6/2018	
6	1817707001	C01_062018				SAMPLE	3	1817707001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
7	1817707002	C09_062018				SAMPLE	3	1817707002-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
8	1817707003	C06_062018				SAMPLE	3	1817707003-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
9	1817707004	C06_062018MS				MS	3	1817707004-A	E6850Q413Q	5480		7/6/2018	
10	1817707005	C06_062018MSD				MSD	3	1817707005-A	E6850Q413Q	5480		7/6/2018	
11	1817707006	MW6_062018				SAMPLE	3	1817707006-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
12	1817707007	130_062118				SAMPLE	3	1817707007-A	E6850Q41.3	5480	7/19/2018	7/6/2018	
13	1817707008	MW9_062118				SAMPLE	3	1817707008-A	E6850Q41.3	5480	7/19/2018	7/6/2018	
14	1817707009	18CPTMW10DW_062118				SAMPLE	3	1817707009-A	E6850Q41.3	5480	7/19/2018	7/6/2018	
15	1817707010	18CPTMW10SW_062118				SAMPLE	3	1817707010-A	E6850Q41.3	5480	7/19/2018	7/6/2018	
16	1817707011	18CPTMW10SW_062118MS				MS	3	1817707011-A	E6850Q413Q	5480		7/6/2018	
17	1817707012	18CPTMW10SW_062118MSD				MSD	3	1817707012-A	E6850Q413Q	5480		7/6/2018	
18	608788	CCV for HBN 218290 [ELMS/2116]				CCV	3		E685041C3Q	5311		7/6/2018	
19	608789	LODV for HBN 218290 [ELMS/2116				LODV	3		E6850..D3Q	5311		7/6/2018	

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

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ALS Work Order #'s & Sample #( )'s: 1817707 (001-12)
ELMS Batch/HBN ID: 2116 (218089)
Prep Date: 07/03/2018 Analysis Date: 07/05/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\05JUL18P.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: **LCMS04** Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 608787; Target = 5.0µg/L. ASTM type II water was used for LMB 608786.

MS/MSD: MS/MSD was performed on samples 1817707004/05 and 1817707011/12 (Client ID's: C06_062018 and 18CPTMW10SW_062118). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. Samples 1817707006/08 were analyzed and reported at 1:100 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218290-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

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ALS

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

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STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

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STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

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STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

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STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

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STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O	Description - ASTM Type II Water

Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO 17025 TESTING LABORATORY

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

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Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 16, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18061493**

Laboratory Results for: **LHAAP 18 24 - ICT's**

Dear Marcia,

ALS Environmental received 20 sample(s) on Jun 29, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Work Order: HS18061493

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18061493-01	ICT2_062818	Groundwater		28-Jun-2018 06:55	29-Jun-2018 08:45	☐
HS18061493-02	ICT4_062818	Groundwater		28-Jun-2018 07:00	29-Jun-2018 08:45	☐
HS18061493-03	ICT7_062818	Groundwater		28-Jun-2018 07:05	29-Jun-2018 08:45	☐
HS18061493-04	ICT8_062818	Groundwater		28-Jun-2018 07:10	29-Jun-2018 08:45	☐
HS18061493-05	ICT8_062818_a	Groundwater		28-Jun-2018 07:10	29-Jun-2018 08:45	☐
HS18061493-06	ICT11_062818	Groundwater		28-Jun-2018 07:20	29-Jun-2018 08:45	☐
HS18061493-07	ICT12B_062818	Groundwater		28-Jun-2018 07:25	29-Jun-2018 08:45	☐
HS18061493-08	ICT12C_062818	Groundwater		28-Jun-2018 07:35	29-Jun-2018 08:45	☐
HS18061493-09	ICT12D_062818	Groundwater		28-Jun-2018 07:40	29-Jun-2018 08:45	☐
HS18061493-10	ICT12E_062818	Groundwater		28-Jun-2018 07:45	29-Jun-2018 08:45	☐
HS18061493-11	ICT13A_062818	Groundwater		28-Jun-2018 07:50	29-Jun-2018 08:45	☐
HS18061493-12	ICT13B_062818	Groundwater		28-Jun-2018 08:00	29-Jun-2018 08:45	☐
HS18061493-13	ICT13B_062818_a	Groundwater		28-Jun-2018 08:00	29-Jun-2018 08:45	☐
HS18061493-14	ICT13D_062818	Groundwater		28-Jun-2018 08:05	29-Jun-2018 08:45	☐
HS18061493-15	ICT13E_062818	Groundwater		28-Jun-2018 08:10	29-Jun-2018 08:45	☐
HS18061493-16	ICT13F_062818	Groundwater		28-Jun-2018 08:20	29-Jun-2018 08:45	☐
HS18061493-17	ICT14B_062818	Groundwater		28-Jun-2018 08:25	29-Jun-2018 08:45	☐
HS18061493-18	ICT14C_062818	Groundwater		28-Jun-2018 08:35	29-Jun-2018 08:45	☐
HS18061493-19	ICT14D_062818	Groundwater		28-Jun-2018 08:50	29-Jun-2018 08:45	☐
HS18061493-20	Trip Blank	Water	ALS-041918-58	28-Jun-2018 00:00	29-Jun-2018 08:45	☐

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Work Order: HS18061493

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R319098

Sample ID: ICT7_062818 (HS18061493-03MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. for Bromomethane. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: ICT7_062818 (HS18061493-03MSD)

- The RPD between the MS and MSD was outside of the control limit for Bromomethane

Sample ID: VSTD050

- 1,2-Dibromo-3-chloroprop andNaphthalene exceeded %D limits for CCV. Samples are ND for these compounds.

Batch ID: R319138

Sample ID: VLCSW-180703

- 1,1,2,2-Tetrachloroethane and Naphthalene exceeded QC limits for LCS.

Sample ID: VSTD050

- 1,2-Dibromo-3-chloropropane and Naphthalene exceeded % D limits for CCV. Samples are ND for these compounds.

Sample ID: ICT14C_062818 (HS18061493-18MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. for cis-1,2-Dichloroethene, Methylene chloride, Trichloroethene.. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: ICT14C_062818 (HS18061493-18MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits for cis-1,2-Dichloroethene, Methylene chloride, Trichloroethene. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Batch ID: R319171,R319233

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470

Batch ID: 130255

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 130292

Sample ID: HS18061529-18MS

- MS and MSD are for an unrelated sample

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Work Order: HS18061493

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 129997

Sample ID: ICT14C_062818 (HS18061493-18MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Aluminum, Barium, Calcium, Iron, Magnesium, Manganese, and Sodium.

Sample ID: ICT14C_062818 (HS18061493-18PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Aluminum, Calcium, Chromium, Iron, Magnesium, and Manganese.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT2_062818
Collection Date: 28-Jun-2018 06:55

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,1-Dichloroethane	**0.47**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
1,1-Dichloroethene	**3.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,2-Dichloroethane	**49**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 20:12
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Jul-2018 20:12
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Jul-2018 20:12
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 20:12
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Jul-2018 20:12
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT2_062818
Collection Date: 28-Jun-2018 06:55

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**0.78**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
cis-1,2-Dichloroethene	**66**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 20:12
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 20:12
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 20:12
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Tetrachloroethene	**1.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
trans-1,2-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Trichloroethene	**750**		**1.0**	**2.5**	**5.0**	**ug/L**	5	02-Jul-2018 18:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 20:12
Vinyl chloride	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 20:12
Surr: 1,2-Dichloroethane-d4	*93.9*			**0**	*81-118*	*%REC*	*5*	*02-Jul-2018 18:25*
Surr: 1,2-Dichloroethane-d4	*89.2*			**0**	*81-118*	*%REC*	*1*	*03-Jul-2018 20:12*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*5*	*02-Jul-2018 18:25*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*03-Jul-2018 20:12*
Surr: Dibromofluoromethane	*92.4*			**0**	*80-119*	*%REC*	*5*	*02-Jul-2018 18:25*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*1*	*03-Jul-2018 20:12*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*5*	*02-Jul-2018 18:25*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*03-Jul-2018 20:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT2_062818
Collection Date: 28-Jun-2018 06:55

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0425**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 14:53
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 14:53
Arsenic	**0.0116**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:53
Barium	**0.360**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:53
Beryllium	**0.000200**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:53
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:53
Calcium	**26.3**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 14:53
Chromium	**0.0401**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 14:53
Cobalt	**0.0167**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:53
Copper	**0.112**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 14:53
Iron	**31.2**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:53
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 14:53
Magnesium	**26.9**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:53
Manganese	**0.576**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:53
Nickel	**0.0252**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:53
Potassium	**1.23**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:53
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 14:53
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:53
Sodium	**243**		**0.140**	**1.00**	**2.00**	**mg/L**	10	10-Jul-2018 11:32
Thallium	**0.000399**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:53
Vanadium	**0.0103**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:53
Zinc	**0.694**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:53
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:27
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT4_062818
Collection Date: 28-Jun-2018 07:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
1,1,1-Trichloroethane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
1,1,2,2-Tetrachloroethane	12	U	12	12	25	ug/L	25	02-Jul-2018 19:15
1,1,2-Trichloroethane	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
1,1-Dichloroethane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
1,1-Dichloroethene	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
1,1-Dichloropropene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
1,2,3-Trichlorobenzene	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
1,2,3-Trichloropropane	12	U	12	12	25	ug/L	25	02-Jul-2018 19:15
1,2,4-Trichlorobenzene	12	U	12	12	25	ug/L	25	02-Jul-2018 19:15
1,2,4-Trimethylbenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
1,2-Dibromo-3-chloropropane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
1,2-Dibromoethane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
1,2-Dichlorobenzene	12	U	12	12	25	ug/L	25	02-Jul-2018 19:15
1,2-Dichloroethane	**200**		**5.0**	**12**	**25**	**ug/L**	25	02-Jul-2018 19:15
1,2-Dichloropropane	12	U	12	12	25	ug/L	25	02-Jul-2018 19:15
1,3,5-Trimethylbenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
1,3-Dichlorobenzene	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
1,3-Dichloropropane	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
1,4-Dichlorobenzene	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
2,2-Dichloropropane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
2-Butanone	25	U	12	25	50	ug/L	25	02-Jul-2018 19:15
2-Chlorotoluene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
2-Hexanone	25	U	25	25	50	ug/L	25	02-Jul-2018 19:15
4-Chlorotoluene	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
4-Isopropyltoluene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
4-Methyl-2-pentanone	25	U	18	25	50	ug/L	25	02-Jul-2018 19:15
Acetone	25	U	10	25	50	ug/L	25	02-Jul-2018 19:15
Benzene	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
Bromobenzene	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
Bromochloromethane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
Bromodichloromethane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
Bromoform	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
Bromomethane	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
Carbon disulfide	25	U	15	25	50	ug/L	25	02-Jul-2018 19:15
Carbon tetrachloride	12	U	12	12	25	ug/L	25	02-Jul-2018 19:15
Chlorobenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Chloroethane	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT4_062818
Collection Date: 28-Jun-2018 07:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
Chloromethane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
cis-1,2-Dichloroethene	**1,300**		**5.0**	**12**	**25**	**ug/L**	25	02-Jul-2018 19:15
cis-1,3-Dichloropropene	12	U	2.5	12	25	ug/L	25	02-Jul-2018 19:15
Dibromochloromethane	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Dibromomethane	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
Dichlorodifluoromethane	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Ethylbenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Hexachlorobutadiene	12	U	25	12	25	ug/L	25	02-Jul-2018 19:15
Isopropylbenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
m,p-Xylene	25	U	12	25	50	ug/L	25	02-Jul-2018 19:15
Methylene chloride	**53**		**10**	**25**	**50**	**ug/L**	25	02-Jul-2018 19:15
n-Butylbenzene	12	U	10	12	25	ug/L	25	02-Jul-2018 19:15
n-Propylbenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Naphthalene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
o-Xylene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
sec-Butylbenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Styrene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
tert-Butylbenzene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Tetrachloroethene	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Toluene	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
trans-1,2-Dichloroethene	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
trans-1,3-Dichloropropene	12	U	5.0	12	25	ug/L	25	02-Jul-2018 19:15
Trichloroethene	**7,400**		**20**	**50**	**100**	**ug/L**	100	02-Jul-2018 20:53
Trichlorofluoromethane	12	U	7.5	12	25	ug/L	25	02-Jul-2018 19:15
Vinyl chloride	**23**	J	**5.0**	**12**	**25**	**ug/L**	25	02-Jul-2018 19:15
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*100*	*02-Jul-2018 20:53*
Surr: 1,2-Dichloroethane-d4	*91.7*			**0**	*81-118*	*%REC*	*25*	*02-Jul-2018 19:15*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*25*	*02-Jul-2018 19:15*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*100*	*02-Jul-2018 20:53*
Surr: Dibromofluoromethane	*92.0*			**0**	*80-119*	*%REC*	*25*	*02-Jul-2018 19:15*
Surr: Dibromofluoromethane	*91.0*			**0**	*80-119*	*%REC*	*100*	*02-Jul-2018 20:53*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*25*	*02-Jul-2018 19:15*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*100*	*02-Jul-2018 20:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT4_062818
Collection Date: 28-Jun-2018 07:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.00509**	J	**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 14:55
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 14:55
Arsenic	**0.000422**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:55
Barium	**0.128**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:55
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:55
Cadmium	**0.000527**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:55
Calcium	**30.8**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 14:55
Chromium	**0.0170**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 14:55
Cobalt	**0.00798**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:55
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	06-Jul-2018 14:55
Iron	**0.103**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:55
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 14:55
Magnesium	**28.2**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:55
Manganese	**0.455**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:55
Nickel	**0.0117**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:55
Potassium	**1.04**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:55
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 14:55
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:55
Sodium	**233**		**0.140**	**1.00**	**2.00**	**mg/L**	10	10-Jul-2018 11:34
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:55
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	06-Jul-2018 14:55
Zinc	**0.00661**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:55
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:29
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT7_062818
Collection Date: 28-Jun-2018 07:05

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Jul-2018 17:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Jul-2018 17:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Jul-2018 17:36
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	02-Jul-2018 17:36
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Jul-2018 17:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT7_062818
Collection Date: 28-Jun-2018 07:05

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Jul-2018 17:36
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	02-Jul-2018 17:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Jul-2018 17:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Trichloroethene	**0.52**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Jul-2018 17:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Jul-2018 17:36
Surr: 1,2-Dichloroethane-d4	*92.8*			**0**	*81-118*	*%REC*	*1*	*02-Jul-2018 17:36*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*02-Jul-2018 17:36*
Surr: Dibromofluoromethane	*92.5*			**0**	*80-119*	*%REC*	*1*	*02-Jul-2018 17:36*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*02-Jul-2018 17:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT7_062818
Collection Date: 28-Jun-2018 07:05

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**4.70**		**0.0180**	**0.0250**	**0.100**	**mg/L**	10	10-Jul-2018 11:36
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 14:57
Arsenic	**0.00128**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:57
Barium	**0.107**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:57
Beryllium	**0.000482**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:57
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:57
Calcium	**2.30**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 14:57
Chromium	**0.00765**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 14:57
Cobalt	**0.00232**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:57
Copper	**0.00462**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 14:57
Iron	**5.50**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:57
Lead	**0.00259**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:57
Magnesium	**2.45**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:57
Manganese	**0.0650**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:57
Nickel	**0.00827**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:57
Potassium	**1.07**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:57
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 14:57
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:57
Sodium	**23.5**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:57
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:57
Vanadium	**0.00767**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:57
Zinc	**0.0238**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:57
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:34
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT8_062818
Collection Date: 28-Jun-2018 07:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
1,1,1-Trichloroethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
1,1,2,2-Tetrachloroethane	50	U	50	50	100	ug/L	100	03-Jul-2018 18:08
1,1,2-Trichloroethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
1,1-Dichloroethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
1,1-Dichloroethene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
1,1-Dichloropropene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
1,2,3-Trichlorobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
1,2,3-Trichloropropane	50	U	50	50	100	ug/L	100	03-Jul-2018 18:08
1,2,4-Trichlorobenzene	50	U	50	50	100	ug/L	100	03-Jul-2018 18:08
1,2,4-Trimethylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
1,2-Dibromo-3-chloropropane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
1,2-Dibromoethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
1,2-Dichlorobenzene	50	U	50	50	100	ug/L	100	03-Jul-2018 18:08
1,2-Dichloroethane	**87**	J	**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:08
1,2-Dichloropropane	50	U	50	50	100	ug/L	100	03-Jul-2018 18:08
1,3,5-Trimethylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
1,3-Dichlorobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
1,3-Dichloropropane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
1,4-Dichlorobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
2,2-Dichloropropane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
2-Butanone	100	U	50	100	200	ug/L	100	03-Jul-2018 18:08
2-Chlorotoluene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
2-Hexanone	100	U	100	100	200	ug/L	100	03-Jul-2018 18:08
4-Chlorotoluene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
4-Isopropyltoluene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
4-Methyl-2-pentanone	100	U	70	100	200	ug/L	100	03-Jul-2018 18:08
Acetone	100	U	40	100	200	ug/L	100	03-Jul-2018 18:08
Benzene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
Bromobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
Bromochloromethane	**270**		**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:08
Bromodichloromethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
Bromoform	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
Bromomethane	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
Carbon disulfide	100	U	60	100	200	ug/L	100	03-Jul-2018 18:08
Carbon tetrachloride	50	U	50	50	100	ug/L	100	03-Jul-2018 18:08
Chlorobenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Chloroethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT8_062818
Collection Date: 28-Jun-2018 07:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
Chloromethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
cis-1,2-Dichloroethene	**17,000**		**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:08
cis-1,3-Dichloropropene	50	U	10	50	100	ug/L	100	03-Jul-2018 18:08
Dibromochloromethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Dibromomethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
Dichlorodifluoromethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Ethylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Hexachlorobutadiene	50	U	100	50	100	ug/L	100	03-Jul-2018 18:08
Isopropylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
m,p-Xylene	100	U	50	100	200	ug/L	100	03-Jul-2018 18:08
Methylene chloride	**100,000**		**400**	**1000**	**2000**	**ug/L**	1000	04-Jul-2018 13:05
n-Butylbenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:08
n-Propylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Naphthalene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
o-Xylene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
sec-Butylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Styrene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
tert-Butylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Tetrachloroethene	**260**		**30**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:08
Toluene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
trans-1,2-Dichloroethene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
trans-1,3-Dichloropropene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:08
Trichloroethene	**8,400**		**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:08
Trichlorofluoromethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:08
Vinyl chloride	**86**	J	**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:08
Surr: 1,2-Dichloroethane-d4	*89.0*			**0**	*81-118*	*%REC*	*100*	*03-Jul-2018 18:08*
Surr: 1,2-Dichloroethane-d4	*88.4*			**0**	*81-118*	*%REC*	*1000*	*04-Jul-2018 13:05*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*100*	*03-Jul-2018 18:08*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*85-114*	*%REC*	*1000*	*04-Jul-2018 13:05*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*100*	*03-Jul-2018 18:08*
Surr: Dibromofluoromethane	*90.0*			**0**	*80-119*	*%REC*	*1000*	*04-Jul-2018 13:05*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*100*	*03-Jul-2018 18:08*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1000*	*04-Jul-2018 13:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT8_062818
Collection Date: 28-Jun-2018 07:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0172**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 14:59
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 14:59
Arsenic	**0.00236**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:59
Barium	**0.975**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:59
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:59
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:59
Calcium	**28.6**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 14:59
Chromium	**0.000861**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 14:59
Cobalt	**0.0101**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:59
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	06-Jul-2018 14:59
Iron	**3.43**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:59
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 14:59
Magnesium	**23.6**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:59
Manganese	**0.668**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:59
Nickel	**0.00845**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 14:59
Potassium	**1.50**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:59
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 14:59
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:59
Sodium	**123**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 14:59
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 14:59
Vanadium	**0.000887**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 14:59
Zinc	**0.00261**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 14:59
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:36
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT8_062818_a
Collection Date: 28-Jun-2018 07:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
1,1,1-Trichloroethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
1,1,2,2-Tetrachloroethane	50	U	50	50	100	ug/L	100	03-Jul-2018 18:57
1,1,2-Trichloroethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
1,1-Dichloroethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
1,1-Dichloroethene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
1,1-Dichloropropene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
1,2,3-Trichlorobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
1,2,3-Trichloropropane	50	U	50	50	100	ug/L	100	03-Jul-2018 18:57
1,2,4-Trichlorobenzene	50	U	50	50	100	ug/L	100	03-Jul-2018 18:57
1,2,4-Trimethylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
1,2-Dibromo-3-chloropropane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
1,2-Dibromoethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
1,2-Dichlorobenzene	50	U	50	50	100	ug/L	100	03-Jul-2018 18:57
1,2-Dichloroethane	**81**	J	**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:57
1,2-Dichloropropane	50	U	50	50	100	ug/L	100	03-Jul-2018 18:57
1,3,5-Trimethylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
1,3-Dichlorobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
1,3-Dichloropropane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
1,4-Dichlorobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
2,2-Dichloropropane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
2-Butanone	100	U	50	100	200	ug/L	100	03-Jul-2018 18:57
2-Chlorotoluene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
2-Hexanone	100	U	100	100	200	ug/L	100	03-Jul-2018 18:57
4-Chlorotoluene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
4-Isopropyltoluene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
4-Methyl-2-pentanone	100	U	70	100	200	ug/L	100	03-Jul-2018 18:57
Acetone	100	U	40	100	200	ug/L	100	03-Jul-2018 18:57
Benzene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
Bromobenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
Bromochloromethane	**87**	J	**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:57
Bromodichloromethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
Bromoform	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
Bromomethane	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
Carbon disulfide	100	U	60	100	200	ug/L	100	03-Jul-2018 18:57
Carbon tetrachloride	50	U	50	50	100	ug/L	100	03-Jul-2018 18:57
Chlorobenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Chloroethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT8_062818_a
Collection Date: 28-Jun-2018 07:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
Chloromethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
cis-1,2-Dichloroethene	**10,000**		**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:57
cis-1,3-Dichloropropene	50	U	10	50	100	ug/L	100	03-Jul-2018 18:57
Dibromochloromethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Dibromomethane	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
Dichlorodifluoromethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Ethylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Hexachlorobutadiene	50	U	100	50	100	ug/L	100	03-Jul-2018 18:57
Isopropylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
m,p-Xylene	100	U	50	100	200	ug/L	100	03-Jul-2018 18:57
Methylene chloride	**56,000**		**200**	**500**	**1000**	**ug/L**	500	04-Jul-2018 13:29
n-Butylbenzene	50	U	40	50	100	ug/L	100	03-Jul-2018 18:57
n-Propylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Naphthalene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
o-Xylene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
sec-Butylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Styrene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
tert-Butylbenzene	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Tetrachloroethene	**380**		**30**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:57
Toluene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
trans-1,2-Dichloroethene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
trans-1,3-Dichloropropene	50	U	20	50	100	ug/L	100	03-Jul-2018 18:57
Trichloroethene	**11,000**		**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:57
Trichlorofluoromethane	50	U	30	50	100	ug/L	100	03-Jul-2018 18:57
Vinyl chloride	**66**	J	**20**	**50**	**100**	**ug/L**	100	03-Jul-2018 18:57
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*100*	*03-Jul-2018 18:57*
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*500*	*04-Jul-2018 13:29*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*100*	*03-Jul-2018 18:57*
Surr: 4-Bromofluorobenzene	*99.7*			**0**	*85-114*	*%REC*	*500*	*04-Jul-2018 13:29*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*100*	*03-Jul-2018 18:57*
Surr: Dibromofluoromethane	*90.1*			**0**	*80-119*	*%REC*	*500*	*04-Jul-2018 13:29*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*100*	*03-Jul-2018 18:57*
Surr: Toluene-d8	*100.0*			**0**	*89-112*	*%REC*	*500*	*04-Jul-2018 13:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT8_062818_a
Collection Date: 28-Jun-2018 07:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0129**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:01
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:01
Arsenic	**0.00254**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:01
Barium	**0.958**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:01
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:01
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:01
Calcium	**27.9**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:01
Chromium	**0.00155**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:01
Cobalt	**0.0102**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:01
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	06-Jul-2018 15:01
Iron	**3.54**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:01
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:01
Magnesium	**23.8**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:01
Manganese	**0.681**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:01
Nickel	**0.00885**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:01
Potassium	**1.45**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:01
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:01
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:01
Sodium	**123**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:01
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:01
Vanadium	**0.00106**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:01
Zinc	**0.00205**	J	**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:01
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:38
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT11_062818
Collection Date: 28-Jun-2018 07:20

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,1-Dichloroethane	**0.47**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:27
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,2-Dichloroethane	**9.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 11:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	04-Jul-2018 11:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	04-Jul-2018 11:27
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	04-Jul-2018 11:27
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	04-Jul-2018 11:27
Carbon tetrachloride	**1.7**		**0.50**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT11_062818
Collection Date: 28-Jun-2018 07:20

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**4.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:27
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
cis-1,2-Dichloroethene	**140**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 11:27
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	04-Jul-2018 11:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
trans-1,2-Dichloroethene	**1.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Trichloroethene	**1,300**		**5.0**	**12**	**25**	**ug/L**	25	04-Jul-2018 14:43
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:27
Vinyl chloride	**0.57**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:27
Surr: 1,2-Dichloroethane-d4	*91.1*			**0**	*81-118*	*%REC*	*1*	*04-Jul-2018 11:27*
Surr: 1,2-Dichloroethane-d4	*88.9*			**0**	*81-118*	*%REC*	*25*	*04-Jul-2018 14:43*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*85-114*	*%REC*	*25*	*04-Jul-2018 14:43*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*04-Jul-2018 11:27*
Surr: Dibromofluoromethane	*90.3*			**0**	*80-119*	*%REC*	*25*	*04-Jul-2018 14:43*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*1*	*04-Jul-2018 11:27*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*04-Jul-2018 11:27*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*25*	*04-Jul-2018 14:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT11_062818
Collection Date: 28-Jun-2018 07:20

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.00386**	J	**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:03
Antimony	**0.00120**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:03
Arsenic	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:03
Barium	**0.847**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:03
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:03
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:03
Calcium	**24.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:03
Chromium	**0.00522**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:03
Cobalt	**0.000245**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:03
Copper	**0.178**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:03
Iron	**0.0390**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:03
Lead	**0.000735**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:03
Magnesium	**19.4**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:03
Manganese	**0.0387**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:03
Nickel	**0.0153**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:03
Potassium	**1.40**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:03
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:03
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:03
Sodium	**125**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:03
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:03
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	06-Jul-2018 15:03
Zinc	**0.626**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:03
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	**0.0000630**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	13-Jul-2018 12:39
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12B_062818
Collection Date: 28-Jun-2018 07:25

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,2-Dichloroethane	**7.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:51
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 11:51
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	04-Jul-2018 11:51
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	04-Jul-2018 11:51
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	04-Jul-2018 11:51
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	04-Jul-2018 11:51
Carbon tetrachloride	**7.4**		**0.50**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:51
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12B_062818
Collection Date: 28-Jun-2018 07:25

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**7.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:51
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
cis-1,2-Dichloroethene	**41**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:51
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 11:51
Methylene chloride	**39**		**0.40**	**1.0**	**2.0**	**ug/L**	1	04-Jul-2018 11:51
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 11:51
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Trichloroethene	**1,200**		**5.0**	**12**	**25**	**ug/L**	25	04-Jul-2018 15:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 11:51
Vinyl chloride	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 11:51
Surr: 1,2-Dichloroethane-d4	*86.6*			**0**	*81-118*	*%REC*	*25*	*04-Jul-2018 15:08*
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*1*	*04-Jul-2018 11:51*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*04-Jul-2018 11:51*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*25*	*04-Jul-2018 15:08*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*25*	*04-Jul-2018 15:08*
Surr: Dibromofluoromethane	*90.6*			**0**	*80-119*	*%REC*	*1*	*04-Jul-2018 11:51*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*25*	*04-Jul-2018 15:08*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*04-Jul-2018 11:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12B_062818
Collection Date: 28-Jun-2018 07:25

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0184**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:05
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:05
Arsenic	**0.000625**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:05
Barium	**0.327**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:05
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:05
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:05
Calcium	**9.74**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:05
Chromium	**0.0449**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:05
Cobalt	**0.00207**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:05
Copper	**0.0739**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:05
Iron	**1.52**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:05
Lead	**0.00236**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:05
Magnesium	**7.04**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:05
Manganese	**0.123**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:05
Nickel	**0.0663**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:05
Potassium	**0.859**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:05
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:05
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:05
Sodium	**86.4**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:05
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:05
Vanadium	**0.00125**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:05
Zinc	**0.0232**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:05
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:41
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12C_062818
Collection Date: 28-Jun-2018 07:35

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,1,1-Trichloroethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,1-Dichloroethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,1-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,1-Dichloropropene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2,3-Trichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2,3-Trichloropropane	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2,4-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2-Dibromo-3-chloropropane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2-Dibromoethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2-Dichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,2-Dichloroethane	**42**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 18:24
1,2-Dichloropropane	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,3,5-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,3-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,3-Dichloropropane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
1,4-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
2,2-Dichloropropane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
2-Butanone	10	U	5.0	10	20	ug/L	10	04-Jul-2018 18:24
2-Chlorotoluene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
2-Hexanone	10	U	10	10	20	ug/L	10	04-Jul-2018 18:24
4-Chlorotoluene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
4-Isopropyltoluene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
4-Methyl-2-pentanone	10	U	7.0	10	20	ug/L	10	04-Jul-2018 18:24
Acetone	10	U	4.0	10	20	ug/L	10	04-Jul-2018 18:24
Benzene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Bromobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Bromochloromethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Bromodichloromethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Bromoform	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Bromomethane	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Carbon disulfide	10	U	6.0	10	20	ug/L	10	04-Jul-2018 18:24
Carbon tetrachloride	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Chlorobenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Chloroethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12C_062818
Collection Date: 28-Jun-2018 07:35

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Chloromethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
cis-1,2-Dichloroethene	**23**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 18:24
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Dibromochloromethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Dibromomethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Dichlorodifluoromethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Ethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Hexachlorobutadiene	5.0	U	10	5.0	10	ug/L	10	04-Jul-2018 18:24
Isopropylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
m,p-Xylene	10	U	5.0	10	20	ug/L	10	04-Jul-2018 18:24
Methylene chloride	10	U	4.0	10	20	ug/L	10	04-Jul-2018 18:24
n-Butylbenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 18:24
n-Propylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Naphthalene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
o-Xylene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
sec-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Styrene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
tert-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Tetrachloroethene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Toluene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
trans-1,2-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
trans-1,3-Dichloropropene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Trichloroethene	**5,800**		**10**	**25**	**50**	**ug/L**	50	05-Jul-2018 14:32
Trichlorofluoromethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Vinyl chloride	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 18:24
Surr: 1,2-Dichloroethane-d4	*85.8*			**0**	*81-118*	*%REC*	*10*	*04-Jul-2018 18:24*
Surr: 1,2-Dichloroethane-d4	*94.0*			**0**	*81-118*	*%REC*	*50*	*05-Jul-2018 14:32*
Surr: 4-Bromofluorobenzene	*95.1*			**0**	*85-114*	*%REC*	*10*	*04-Jul-2018 18:24*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*50*	*05-Jul-2018 14:32*
Surr: Dibromofluoromethane	*87.8*			**0**	*80-119*	*%REC*	*10*	*04-Jul-2018 18:24*
Surr: Dibromofluoromethane	*93.6*			**0**	*80-119*	*%REC*	*50*	*05-Jul-2018 14:32*
Surr: Toluene-d8	*96.1*			**0**	*89-112*	*%REC*	*10*	*04-Jul-2018 18:24*
Surr: Toluene-d8	*99.8*			**0**	*89-112*	*%REC*	*50*	*05-Jul-2018 14:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24 - ICT's	WorkOrder:HS18061493	
Sample ID:	ICT12C_062818	Lab ID:HS18061493-08	
Collection Date:	28-Jun-2018 07:35	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.144**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:07
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:07
Arsenic	**0.00236**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:07
Barium	**0.143**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:07
Beryllium	**0.000260**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:07
Cadmium	**0.000208**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:07
Calcium	**8.57**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:07
Chromium	**0.599**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:07
Cobalt	**0.00523**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:07
Copper	**0.00440**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:07
Iron	**7.41**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:07
Lead	**0.000882**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:07
Magnesium	**6.27**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:07
Manganese	**0.222**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:07
Nickel	**0.187**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:07
Potassium	**0.501**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:07
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:07
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:07
Sodium	**83.6**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:07
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:07
Vanadium	**0.00562**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:07
Zinc	**0.0119**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:07
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:43
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12D_062818
Collection Date: 28-Jun-2018 07:40

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
1,1,1-Trichloroethane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
1,1,2,2-Tetrachloroethane	50	U	50	50	100	ug/L	100	04-Jul-2018 15:57
1,1,2-Trichloroethane	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
1,1-Dichloroethane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
1,1-Dichloroethene	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
1,1-Dichloropropene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
1,2,3-Trichlorobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
1,2,3-Trichloropropane	50	U	50	50	100	ug/L	100	04-Jul-2018 15:57
1,2,4-Trichlorobenzene	50	U	50	50	100	ug/L	100	04-Jul-2018 15:57
1,2,4-Trimethylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
1,2-Dibromo-3-chloropropane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
1,2-Dibromoethane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
1,2-Dichlorobenzene	50	U	50	50	100	ug/L	100	04-Jul-2018 15:57
1,2-Dichloroethane	**340**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 15:57
1,2-Dichloropropane	50	U	50	50	100	ug/L	100	04-Jul-2018 15:57
1,3,5-Trimethylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
1,3-Dichlorobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
1,3-Dichloropropane	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
1,4-Dichlorobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
2,2-Dichloropropane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
2-Butanone	100	U	50	100	200	ug/L	100	04-Jul-2018 15:57
2-Chlorotoluene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
2-Hexanone	100	U	100	100	200	ug/L	100	04-Jul-2018 15:57
4-Chlorotoluene	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
4-Isopropyltoluene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
4-Methyl-2-pentanone	100	U	70	100	200	ug/L	100	04-Jul-2018 15:57
Acetone	100	U	40	100	200	ug/L	100	04-Jul-2018 15:57
Benzene	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
Bromobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
Bromochloromethane	**120**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 15:57
Bromodichloromethane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
Bromoform	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
Bromomethane	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
Carbon disulfide	100	U	60	100	200	ug/L	100	04-Jul-2018 15:57
Carbon tetrachloride	50	U	50	50	100	ug/L	100	04-Jul-2018 15:57
Chlorobenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Chloroethane	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12D_062818
Collection Date: 28-Jun-2018 07:40

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
Chloromethane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
cis-1,2-Dichloroethene	**13,000**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 15:57
cis-1,3-Dichloropropene	50	U	10	50	100	ug/L	100	04-Jul-2018 15:57
Dibromochloromethane	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Dibromomethane	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
Dichlorodifluoromethane	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Ethylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Hexachlorobutadiene	50	U	100	50	100	ug/L	100	04-Jul-2018 15:57
Isopropylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
m,p-Xylene	100	U	50	100	200	ug/L	100	04-Jul-2018 15:57
Methylene chloride	**77,000**		**400**	**1000**	**2000**	**ug/L**	1000	05-Jul-2018 14:57
n-Butylbenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 15:57
n-Propylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Naphthalene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
o-Xylene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
sec-Butylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Styrene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
tert-Butylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Tetrachloroethene	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Toluene	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
trans-1,2-Dichloroethene	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
trans-1,3-Dichloropropene	50	U	20	50	100	ug/L	100	04-Jul-2018 15:57
Trichloroethene	**70,000**		**200**	**500**	**1000**	**ug/L**	1000	05-Jul-2018 14:57
Trichlorofluoromethane	50	U	30	50	100	ug/L	100	04-Jul-2018 15:57
Vinyl chloride	**300**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 15:57
Surr: 1,2-Dichloroethane-d4	*88.9*			**0**	*81-118*	*%REC*	*100*	*04-Jul-2018 15:57*
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1000*	*05-Jul-2018 14:57*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*100*	*04-Jul-2018 15:57*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*85-114*	*%REC*	*1000*	*05-Jul-2018 14:57*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*100*	*04-Jul-2018 15:57*
Surr: Dibromofluoromethane	*88.8*			**0**	*80-119*	*%REC*	*1000*	*05-Jul-2018 14:57*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*100*	*04-Jul-2018 15:57*
Surr: Toluene-d8	*96.6*			**0**	*89-112*	*%REC*	*1000*	*05-Jul-2018 14:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12D_062818
Collection Date: 28-Jun-2018 07:40

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0803**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:13
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:13
Arsenic	**0.00307**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:13
Barium	**0.327**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:13
Beryllium	**0.000238**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:13
Cadmium	**0.000396**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:13
Calcium	**25.2**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:13
Chromium	**0.00264**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:13
Cobalt	**0.0343**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:13
Copper	**0.00206**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:13
Iron	**3.78**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:13
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:13
Magnesium	**24.0**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:13
Manganese	**1.45**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:13
Nickel	**0.0165**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:13
Potassium	**0.432**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:13
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:13
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:13
Sodium	**99.7**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:13
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:13
Vanadium	**0.00126**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:13
Zinc	**0.0155**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:13
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12E_062818
Collection Date: 28-Jun-2018 07:45

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
1,1,1-Trichloroethane	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
1,1,2,2-Tetrachloroethane	50	U	50	50	100	ug/L	100	04-Jul-2018 16:46
1,1,2-Trichloroethane	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
1,1-Dichloroethane	**130**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 16:46
1,1-Dichloroethene	**570**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 16:46
1,1-Dichloropropene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
1,2,3-Trichlorobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
1,2,3-Trichloropropane	50	U	50	50	100	ug/L	100	04-Jul-2018 16:46
1,2,4-Trichlorobenzene	50	U	50	50	100	ug/L	100	04-Jul-2018 16:46
1,2,4-Trimethylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
1,2-Dibromo-3-chloropropane	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
1,2-Dibromoethane	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
1,2-Dichlorobenzene	50	U	50	50	100	ug/L	100	04-Jul-2018 16:46
1,2-Dichloroethane	**230**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 16:46
1,2-Dichloropropane	50	U	50	50	100	ug/L	100	04-Jul-2018 16:46
1,3,5-Trimethylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
1,3-Dichlorobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
1,3-Dichloropropane	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
1,4-Dichlorobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
2,2-Dichloropropane	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
2-Butanone	100	U	50	100	200	ug/L	100	04-Jul-2018 16:46
2-Chlorotoluene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
2-Hexanone	100	U	100	100	200	ug/L	100	04-Jul-2018 16:46
4-Chlorotoluene	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
4-Isopropyltoluene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
4-Methyl-2-pentanone	100	U	70	100	200	ug/L	100	04-Jul-2018 16:46
Acetone	100	U	40	100	200	ug/L	100	04-Jul-2018 16:46
Benzene	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
Bromobenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
Bromochloromethane	**340**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 16:46
Bromodichloromethane	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
Bromoform	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
Bromomethane	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
Carbon disulfide	100	U	60	100	200	ug/L	100	04-Jul-2018 16:46
Carbon tetrachloride	50	U	50	50	100	ug/L	100	04-Jul-2018 16:46
Chlorobenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Chloroethane	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12E_062818
Collection Date: 28-Jun-2018 07:45

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**76**	J	**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 16:46
Chloromethane	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
cis-1,2-Dichloroethene	**11,000**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 16:46
cis-1,3-Dichloropropene	50	U	10	50	100	ug/L	100	04-Jul-2018 16:46
Dibromochloromethane	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Dibromomethane	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
Dichlorodifluoromethane	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Ethylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Hexachlorobutadiene	50	U	100	50	100	ug/L	100	04-Jul-2018 16:46
Isopropylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
m,p-Xylene	100	U	50	100	200	ug/L	100	04-Jul-2018 16:46
Methylene chloride	**120,000**		**400**	**1000**	**2000**	**ug/L**	1000	05-Jul-2018 16:56
n-Butylbenzene	50	U	40	50	100	ug/L	100	04-Jul-2018 16:46
n-Propylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Naphthalene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
o-Xylene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
sec-Butylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Styrene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
tert-Butylbenzene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Tetrachloroethene	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Toluene	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
trans-1,2-Dichloroethene	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
trans-1,3-Dichloropropene	50	U	20	50	100	ug/L	100	04-Jul-2018 16:46
Trichloroethene	**65,000**		**200**	**500**	**1000**	**ug/L**	1000	05-Jul-2018 16:56
Trichlorofluoromethane	50	U	30	50	100	ug/L	100	04-Jul-2018 16:46
Vinyl chloride	**410**		**20**	**50**	**100**	**ug/L**	100	04-Jul-2018 16:46
Surr: 1,2-Dichloroethane-d4	*87.0*			**0**	*81-118*	*%REC*	*100*	*04-Jul-2018 16:46*
Surr: 1,2-Dichloroethane-d4	*88.9*			**0**	*81-118*	*%REC*	*1000*	*05-Jul-2018 16:56*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*100*	*04-Jul-2018 16:46*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1000*	*05-Jul-2018 16:56*
Surr: Dibromofluoromethane	*90.7*			**0**	*80-119*	*%REC*	*100*	*04-Jul-2018 16:46*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*1000*	*05-Jul-2018 16:56*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*100*	*04-Jul-2018 16:46*
Surr: Toluene-d8	*96.4*			**0**	*89-112*	*%REC*	*1000*	*05-Jul-2018 16:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT12E_062818
Collection Date: 28-Jun-2018 07:45

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0816**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:15
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:15
Arsenic	**0.000675**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:15
Barium	**0.274**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:15
Beryllium	**0.000577**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:15
Cadmium	**0.000588**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:15
Calcium	**37.1**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:15
Chromium	**0.0179**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:15
Cobalt	**0.0304**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:15
Copper	**0.00498**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:15
Iron	**0.449**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:15
Lead	**0.000706**	J	**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:15
Magnesium	**29.7**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:15
Manganese	**1.51**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:15
Nickel	**0.0223**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:15
Potassium	**1.67**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:15
Selenium	**0.00255**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:15
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:15
Sodium	**405**		**0.140**	**1.00**	**2.00**	**mg/L**	10	10-Jul-2018 11:38
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:15
Vanadium	**0.000628**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:15
Zinc	**0.0211**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:15
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:46
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13A_062818
Collection Date: 28-Jun-2018 07:50

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,1,1-Trichloroethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,1-Dichloroethane	**19**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 17:35
1,1-Dichloroethene	**46**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 17:35
1,1-Dichloropropene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2,3-Trichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2,3-Trichloropropane	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2,4-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2-Dibromo-3-chloropropane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2-Dibromoethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2-Dichlorobenzene	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,2-Dichloroethane	**83**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 17:35
1,2-Dichloropropane	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,3,5-Trimethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,3-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,3-Dichloropropane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
1,4-Dichlorobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
2,2-Dichloropropane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
2-Butanone	10	U	5.0	10	20	ug/L	10	04-Jul-2018 17:35
2-Chlorotoluene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
2-Hexanone	10	U	10	10	20	ug/L	10	04-Jul-2018 17:35
4-Chlorotoluene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
4-Isopropyltoluene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
4-Methyl-2-pentanone	10	U	7.0	10	20	ug/L	10	04-Jul-2018 17:35
Acetone	10	U	4.0	10	20	ug/L	10	04-Jul-2018 17:35
Benzene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Bromobenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Bromochloromethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Bromodichloromethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Bromoform	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Bromomethane	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Carbon disulfide	10	U	6.0	10	20	ug/L	10	04-Jul-2018 17:35
Carbon tetrachloride	5.0	U	5.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Chlorobenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Chloroethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13A_062818
Collection Date: 28-Jun-2018 07:50

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**12**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 17:35
Chloromethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
cis-1,2-Dichloroethene	**930**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 17:35
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Dibromochloromethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Dibromomethane	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Dichlorodifluoromethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Ethylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Hexachlorobutadiene	5.0	U	10	5.0	10	ug/L	10	04-Jul-2018 17:35
Isopropylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
m,p-Xylene	10	U	5.0	10	20	ug/L	10	04-Jul-2018 17:35
Methylene chloride	10	U	4.0	10	20	ug/L	10	04-Jul-2018 17:35
n-Butylbenzene	5.0	U	4.0	5.0	10	ug/L	10	04-Jul-2018 17:35
n-Propylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Naphthalene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
o-Xylene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
sec-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Styrene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
tert-Butylbenzene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Tetrachloroethene	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Toluene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
trans-1,2-Dichloroethene	**7.2**	J	**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 17:35
trans-1,3-Dichloropropene	5.0	U	2.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Trichloroethene	**9,600**		**20**	**50**	**100**	**ug/L**	100	05-Jul-2018 15:46
Trichlorofluoromethane	5.0	U	3.0	5.0	10	ug/L	10	04-Jul-2018 17:35
Vinyl chloride	**18**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 17:35
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*10*	*04-Jul-2018 17:35*
Surr: 1,2-Dichloroethane-d4	*91.1*			**0**	*81-118*	*%REC*	*100*	*05-Jul-2018 15:46*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*10*	*04-Jul-2018 17:35*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*100*	*05-Jul-2018 15:46*
Surr: Dibromofluoromethane	*91.5*			**0**	*80-119*	*%REC*	*10*	*04-Jul-2018 17:35*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*100*	*05-Jul-2018 15:46*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*10*	*04-Jul-2018 17:35*
Surr: Toluene-d8	*99.9*			**0**	*89-112*	*%REC*	*100*	*05-Jul-2018 15:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13A_062818
Collection Date: 28-Jun-2018 07:50

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.00923**	J	**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:17
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:17
Arsenic	**0.000962**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:17
Barium	**0.173**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:17
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:17
Cadmium	**0.000240**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:17
Calcium	**27.3**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:17
Chromium	**0.00465**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:17
Cobalt	**0.0273**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:17
Copper	**0.0105**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:17
Iron	**6.83**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:17
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:17
Magnesium	**23.1**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:17
Manganese	**0.520**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:17
Nickel	**0.0481**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:17
Potassium	**1.65**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:17
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:17
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:17
Sodium	**404**		**0.140**	**1.00**	**2.00**	**mg/L**	10	10-Jul-2018 11:40
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:17
Vanadium	**0.00248**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:17
Zinc	**0.0719**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:17
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:48
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13B_062818
Collection Date: 28-Jun-2018 08:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,1-Dichloroethane	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
1,1-Dichloroethene	**5.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,2-Dichloroethane	**50**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 15:16
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Jul-2018 15:16
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Jul-2018 15:16
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 15:16
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Jul-2018 15:16
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13B_062818
Collection Date: 28-Jun-2018 08:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**0.97**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
cis-1,2-Dichloroethene	**150**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 15:16
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 15:16
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 15:16
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Tetrachloroethene	**1.1**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
trans-1,2-Dichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Trichloroethene	**1,200**		**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 17:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 15:16
Vinyl chloride	**4.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 15:16
Surr: 1,2-Dichloroethane-d4	*88.6*			**0**	*81-118*	*%REC*	*1*	*03-Jul-2018 15:16*
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*25*	*03-Jul-2018 17:19*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*03-Jul-2018 15:16*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*25*	*03-Jul-2018 17:19*
Surr: Dibromofluoromethane	*91.0*			**0**	*80-119*	*%REC*	*1*	*03-Jul-2018 15:16*
Surr: Dibromofluoromethane	*92.2*			**0**	*80-119*	*%REC*	*25*	*03-Jul-2018 17:19*
Surr: Toluene-d8	*99.6*			**0**	*89-112*	*%REC*	*1*	*03-Jul-2018 15:16*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*25*	*03-Jul-2018 17:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13B_062818
Collection Date: 28-Jun-2018 08:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0370**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:19
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:19
Arsenic	**0.0521**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:19
Barium	**0.171**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:19
Beryllium	**0.00154**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:19
Cadmium	**0.000219**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:19
Calcium	**13.1**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:19
Chromium	**0.0151**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:19
Cobalt	**0.0224**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:19
Copper	**0.00619**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:19
Iron	**148**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:19
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:19
Magnesium	**16.3**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:19
Manganese	**0.533**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:19
Nickel	**0.0155**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:19
Potassium	**1.81**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:19
Selenium	**0.00212**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:19
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:19
Sodium	**107**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:19
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:19
Vanadium	**0.00342**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:19
Zinc	**0.0362**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:19
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:50
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13B_062818_a
Collection Date: 28-Jun-2018 08:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,1-Dichloroethane	**0.94**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
1,1-Dichloroethene	**4.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,2-Dichloroethane	**50**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 16:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Jul-2018 16:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Jul-2018 16:05
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 16:05
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Jul-2018 16:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13B_062818_a
Collection Date: 28-Jun-2018 08:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**0.95**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
cis-1,2-Dichloroethene	**150**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 16:05
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 16:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 16:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Tetrachloroethene	**0.98**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
trans-1,2-Dichloroethene	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Trichloroethene	**910**		**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 17:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 16:05
Vinyl chloride	**3.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 16:05
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*25*	*03-Jul-2018 17:44*
Surr: 1,2-Dichloroethane-d4	*89.1*			**0**	*81-118*	*%REC*	*1*	*03-Jul-2018 16:05*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*03-Jul-2018 17:44*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*03-Jul-2018 16:05*
Surr: Dibromofluoromethane	*90.0*			**0**	*80-119*	*%REC*	*1*	*03-Jul-2018 16:05*
Surr: Dibromofluoromethane	*90.5*			**0**	*80-119*	*%REC*	*25*	*03-Jul-2018 17:44*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*03-Jul-2018 16:05*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*25*	*03-Jul-2018 17:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13B_062818_a
Collection Date: 28-Jun-2018 08:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0397**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:21
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:21
Arsenic	**0.0559**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:21
Barium	**0.180**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:21
Beryllium	**0.00160**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:21
Cadmium	**0.000244**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:21
Calcium	**13.0**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:21
Chromium	**0.0189**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:21
Cobalt	**0.0225**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:21
Copper	**0.00660**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:21
Iron	**167**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:21
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:21
Magnesium	**15.7**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:21
Manganese	**0.509**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:21
Nickel	**0.0156**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:21
Potassium	**1.80**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:21
Selenium	**0.00210**		**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:21
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:21
Sodium	**102**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:21
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:21
Vanadium	**0.00365**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:21
Zinc	**0.0372**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:21
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:55
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13D_062818
Collection Date: 28-Jun-2018 08:05

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 12:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Jul-2018 12:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Jul-2018 12:48
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 12:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Jul-2018 12:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13D_062818
Collection Date: 28-Jun-2018 08:05

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
cis-1,2-Dichloroethene	**0.69**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 12:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 12:48
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 12:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Trichloroethene	**2.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 12:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:48
Surr: 1,2-Dichloroethane-d4	*90.7*			**0**	*81-118*	*%REC*	*1*	*03-Jul-2018 12:48*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*03-Jul-2018 12:48*
Surr: Dibromofluoromethane	*91.0*			**0**	*80-119*	*%REC*	*1*	*03-Jul-2018 12:48*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*03-Jul-2018 12:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13D_062818
Collection Date: 28-Jun-2018 08:05

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0191**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:23
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:23
Arsenic	**0.00397**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:23
Barium	**0.186**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:23
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:23
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:23
Calcium	**4.70**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:23
Chromium	**0.00682**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:23
Cobalt	**0.00917**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:23
Copper	**0.00122**	J	**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:23
Iron	**12.3**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:23
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:23
Magnesium	**4.97**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:23
Manganese	**0.148**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:23
Nickel	**0.0149**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:23
Potassium	**0.826**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:23
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:23
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:23
Sodium	**48.4**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:23
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:23
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	06-Jul-2018 15:23
Zinc	**0.0128**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:23
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:57
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client:	Bhate Environmental Associates, Inc.	**ANALYTICAL REPORT**	
Project:	LHAAP 18 24 - ICT's	WorkOrder:HS18061493	
Sample ID:	ICT13E_062818	Lab ID:HS18061493-15	
Collection Date:	28-Jun-2018 08:10	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 13:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Jul-2018 13:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Jul-2018 13:13
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 13:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Jul-2018 13:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13E_062818
Collection Date: 28-Jun-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 13:13
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 13:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:13
Surr: 1,2-Dichloroethane-d4	*90.8*			**0**	*81-118*	*%REC*	*1*	*03-Jul-2018 13:13*
Surr: 4-Bromofluorobenzene	*98.9*			**0**	*85-114*	*%REC*	*1*	*03-Jul-2018 13:13*
Surr: Dibromofluoromethane	*91.7*			**0**	*80-119*	*%REC*	*1*	*03-Jul-2018 13:13*
Surr: Toluene-d8	*99.1*			**0**	*89-112*	*%REC*	*1*	*03-Jul-2018 13:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13E_062818
Collection Date: 28-Jun-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**8.58**		**0.0180**	**0.0250**	**0.100**	**mg/L**	10	10-Jul-2018 11:42
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:25
Arsenic	**0.00303**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:25
Barium	**0.138**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:25
Beryllium	**0.000960**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:25
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:25
Calcium	**1.20**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:25
Chromium	**0.0323**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:25
Cobalt	**0.00529**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:25
Copper	**0.0135**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:25
Iron	**12.8**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:25
Lead	**0.0102**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:25
Magnesium	**1.51**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:25
Manganese	**0.0603**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:25
Nickel	**0.0223**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:25
Potassium	**1.76**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:25
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:25
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:25
Sodium	**8.66**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:25
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:25
Vanadium	**0.0232**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:25
Zinc	**0.0454**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:25
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 12:58
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13F_062818
Collection Date: 28-Jun-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 13:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Jul-2018 13:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Jul-2018 13:38
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 13:38
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Jul-2018 13:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13F_062818
Collection Date: 28-Jun-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 13:38
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 13:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 13:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Styrene	**0.77**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	03-Jul-2018 13:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 13:38
Surr: 1,2-Dichloroethane-d4	*90.9*			**0**	*81-118*	*%REC*	*1*	*03-Jul-2018 13:38*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*03-Jul-2018 13:38*
Surr: Dibromofluoromethane	*91.2*			**0**	*80-119*	*%REC*	*1*	*03-Jul-2018 13:38*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*03-Jul-2018 13:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT13F_062818
Collection Date: 28-Jun-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**2.17**		**0.0180**	**0.0250**	**0.100**	**mg/L**	10	10-Jul-2018 11:44
Antimony	**0.00431**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:27
Arsenic	**0.000491**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:27
Barium	**0.0736**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:27
Beryllium	**0.000353**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:27
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:27
Calcium	**0.946**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:27
Chromium	**0.00579**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:27
Cobalt	**0.00371**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:27
Copper	**0.266**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:27
Iron	**2.65**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:27
Lead	**0.00547**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:27
Magnesium	**0.828**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:27
Manganese	**0.0500**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:27
Nickel	**0.0848**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:27
Potassium	**0.950**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:27
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:27
Silver	**0.000213**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:27
Sodium	**8.34**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:27
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:27
Vanadium	**0.00369**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:27
Zinc	**1.69**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:27
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 13:00
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14B_062818
Collection Date: 28-Jun-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-17
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,1-Dichloroethane	**2.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 12:40
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 12:40
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	04-Jul-2018 12:40
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	04-Jul-2018 12:40
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	04-Jul-2018 12:40
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	04-Jul-2018 12:40
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14B_062818
Collection Date: 28-Jun-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-17
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 12:40
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
cis-1,2-Dichloroethene	**180**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 15:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 12:40
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	04-Jul-2018 12:40
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 12:40
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Tetrachloroethene	**1.1**		**0.30**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 12:40
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
trans-1,2-Dichloroethene	**2.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 12:40
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Trichloroethene	**410**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Jul-2018 15:32
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 12:40
Vinyl chloride	**9.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 12:40
Surr: 1,2-Dichloroethane-d4	*88.9*			**0**	*81-118*	*%REC*	*1*	*04-Jul-2018 12:40*
Surr: 1,2-Dichloroethane-d4	*85.9*			**0**	*81-118*	*%REC*	*10*	*04-Jul-2018 15:32*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*04-Jul-2018 12:40*
Surr: 4-Bromofluorobenzene	*98.2*			**0**	*85-114*	*%REC*	*10*	*04-Jul-2018 15:32*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*1*	*04-Jul-2018 12:40*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*10*	*04-Jul-2018 15:32*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*04-Jul-2018 12:40*
Surr: Toluene-d8	*99.0*			**0**	*89-112*	*%REC*	*10*	*04-Jul-2018 15:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14B_062818
Collection Date: 28-Jun-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-17
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0271**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:29
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	06-Jul-2018 15:29
Arsenic	**0.000700**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:29
Barium	**0.365**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:29
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:29
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:29
Calcium	**9.99**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:29
Chromium	**0.0288**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:29
Cobalt	**0.00202**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:29
Copper	0.00200	U	0.00100	0.00200	0.00200	mg/L	1	06-Jul-2018 15:29
Iron	**0.457**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:29
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:29
Magnesium	**8.82**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:29
Manganese	**0.123**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:29
Nickel	**0.00611**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:29
Potassium	**0.322**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:29
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:29
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:29
Sodium	**85.5**		**0.0140**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:29
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:29
Vanadium	**0.00100**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:29
Zinc	**0.00500**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:29
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 13:02
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14C_062818
Collection Date: 28-Jun-2018 08:35

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-18
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
1,1,1-Trichloroethane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
1,1,2,2-Tetrachloroethane	12	U	12	12	25	ug/L	25	03-Jul-2018 14:02
1,1,2-Trichloroethane	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
1,1-Dichloroethane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
1,1-Dichloroethene	**56**		**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 14:02
1,1-Dichloropropene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
1,2,3-Trichlorobenzene	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
1,2,3-Trichloropropane	12	U	12	12	25	ug/L	25	03-Jul-2018 14:02
1,2,4-Trichlorobenzene	12	U	12	12	25	ug/L	25	03-Jul-2018 14:02
1,2,4-Trimethylbenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
1,2-Dibromo-3-chloropropane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
1,2-Dibromoethane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
1,2-Dichlorobenzene	12	U	12	12	25	ug/L	25	03-Jul-2018 14:02
1,2-Dichloroethane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
1,2-Dichloropropane	12	U	12	12	25	ug/L	25	03-Jul-2018 14:02
1,3,5-Trimethylbenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
1,3-Dichlorobenzene	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
1,3-Dichloropropane	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
1,4-Dichlorobenzene	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
2,2-Dichloropropane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
2-Butanone	25	U	12	25	50	ug/L	25	03-Jul-2018 14:02
2-Chlorotoluene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
2-Hexanone	25	U	25	25	50	ug/L	25	03-Jul-2018 14:02
4-Chlorotoluene	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
4-Isopropyltoluene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
4-Methyl-2-pentanone	25	U	18	25	50	ug/L	25	03-Jul-2018 14:02
Acetone	25	U	10	25	50	ug/L	25	03-Jul-2018 14:02
Benzene	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
Bromobenzene	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
Bromochloromethane	**51**		**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 14:02
Bromodichloromethane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
Bromoform	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
Bromomethane	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
Carbon disulfide	25	U	15	25	50	ug/L	25	03-Jul-2018 14:02
Carbon tetrachloride	12	U	12	12	25	ug/L	25	03-Jul-2018 14:02
Chlorobenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Chloroethane	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14C_062818
Collection Date: 28-Jun-2018 08:35

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-18
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
Chloromethane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
cis-1,2-Dichloroethene	**2,900**		**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 14:02
cis-1,3-Dichloropropene	12	U	2.5	12	25	ug/L	25	03-Jul-2018 14:02
Dibromochloromethane	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Dibromomethane	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
Dichlorodifluoromethane	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Ethylbenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Hexachlorobutadiene	12	U	25	12	25	ug/L	25	03-Jul-2018 14:02
Isopropylbenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
m,p-Xylene	25	U	12	25	50	ug/L	25	03-Jul-2018 14:02
Methylene chloride	**7,000**		**40**	**100**	**200**	**ug/L**	100	03-Jul-2018 14:51
n-Butylbenzene	12	U	10	12	25	ug/L	25	03-Jul-2018 14:02
n-Propylbenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Naphthalene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
o-Xylene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
sec-Butylbenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Styrene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
tert-Butylbenzene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Tetrachloroethene	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Toluene	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
trans-1,2-Dichloroethene	**18**	J	**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 14:02
trans-1,3-Dichloropropene	12	U	5.0	12	25	ug/L	25	03-Jul-2018 14:02
Trichloroethene	**1,800**		**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 14:02
Trichlorofluoromethane	12	U	7.5	12	25	ug/L	25	03-Jul-2018 14:02
Vinyl chloride	**530**		**5.0**	**12**	**25**	**ug/L**	25	03-Jul-2018 14:02
Surr: 1,2-Dichloroethane-d4	*90.1*			**0**	*81-118*	*%REC*	*25*	*03-Jul-2018 14:02*
Surr: 1,2-Dichloroethane-d4	*91.6*			**0**	*81-118*	*%REC*	*100*	*03-Jul-2018 14:51*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*03-Jul-2018 14:02*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*100*	*03-Jul-2018 14:51*
Surr: Dibromofluoromethane	*91.8*			**0**	*80-119*	*%REC*	*100*	*03-Jul-2018 14:51*
Surr: Dibromofluoromethane	*90.6*			**0**	*80-119*	*%REC*	*25*	*03-Jul-2018 14:02*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*25*	*03-Jul-2018 14:02*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*100*	*03-Jul-2018 14:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14C_062818
Collection Date: 28-Jun-2018 08:35

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-18
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.526**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:31
Antimony	**0.000461**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Arsenic	**0.149**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Barium	**2.21**		**0.0190**	**0.0250**	**0.0400**	**mg/L**	10	10-Jul-2018 11:46
Beryllium	**0.00766**		**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Cadmium	**0.00862**		**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Calcium	**68.5**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:31
Chromium	**0.470**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:31
Cobalt	**0.0179**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:31
Copper	**0.0228**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Iron	**70.6**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:31
Lead	**0.00473**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Magnesium	**52.0**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:31
Manganese	**1.21**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:31
Nickel	**0.0849**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Potassium	**1.76**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:31
Selenium	**0.00119**	J	**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:31
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:31
Sodium	**230**		**0.140**	**1.00**	**2.00**	**mg/L**	10	10-Jul-2018 11:46
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:31
Vanadium	**0.0400**		**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:31
Zinc	**0.121**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:31
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 10-Jul-2018		Analyst: JBA
Mercury	**0.000235**		**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	13-Jul-2018 13:03
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14D_062818
Collection Date: 28-Jun-2018 08:50

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-19
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,1,2-Trichloroethane	**1.6**		**0.30**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
1,1-Dichloroethane	**5.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,2-Dichloroethane	**2.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 19:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	04-Jul-2018 19:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	04-Jul-2018 19:38
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	04-Jul-2018 19:38
Benzene	**0.80**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	04-Jul-2018 19:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14D_062818
Collection Date: 28-Jun-2018 08:50

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-19
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	**5.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
cis-1,2-Dichloroethene	**1,700**		**5.0**	**12**	**25**	**ug/L**	25	05-Jul-2018 15:22
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	04-Jul-2018 19:38
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	04-Jul-2018 19:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	04-Jul-2018 19:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Tetrachloroethene	**8.9**		**0.30**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
Toluene	**0.62**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
trans-1,2-Dichloroethene	**16**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Jul-2018 19:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Trichloroethene	**530**		**5.0**	**12**	**25**	**ug/L**	25	05-Jul-2018 15:22
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	04-Jul-2018 19:38
Vinyl chloride	**790**		**5.0**	**12**	**25**	**ug/L**	25	05-Jul-2018 15:22
Surr: 1,2-Dichloroethane-d4	*89.3*			**0**	*81-118*	*%REC*	*1*	*04-Jul-2018 19:38*
Surr: 1,2-Dichloroethane-d4	*90.1*			**0**	*81-118*	*%REC*	*25*	*05-Jul-2018 15:22*
Surr: 4-Bromofluorobenzene	*99.6*			**0**	*85-114*	*%REC*	*1*	*04-Jul-2018 19:38*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*05-Jul-2018 15:22*
Surr: Dibromofluoromethane	*91.2*			**0**	*80-119*	*%REC*	*1*	*04-Jul-2018 19:38*
Surr: Dibromofluoromethane	*91.6*			**0**	*80-119*	*%REC*	*25*	*05-Jul-2018 15:22*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*04-Jul-2018 19:38*
Surr: Toluene-d8	*99.7*			**0**	*89-112*	*%REC*	*25*	*05-Jul-2018 15:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: ICT14D_062818
Collection Date: 28-Jun-2018 08:50

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-19
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 02-Jul-2018		Analyst: JDE
Aluminum	**0.0263**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	06-Jul-2018 15:50
Antimony	**0.00110**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:50
Arsenic	**0.0167**		**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:50
Barium	**1.01**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:50
Beryllium	**0.000288**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:50
Cadmium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:50
Calcium	**81.8**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	06-Jul-2018 15:50
Chromium	**0.00513**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	06-Jul-2018 15:50
Cobalt	**0.0236**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:50
Copper	**0.00474**		**0.00100**	**0.00200**	**0.00200**	**mg/L**	1	06-Jul-2018 15:50
Iron	**39.9**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:50
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	06-Jul-2018 15:50
Magnesium	**64.8**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:50
Manganese	**1.63**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	06-Jul-2018 15:50
Nickel	**0.0518**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:50
Potassium	**2.09**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	06-Jul-2018 15:50
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	06-Jul-2018 15:50
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	06-Jul-2018 15:50
Sodium	**321**		**0.140**	**1.00**	**2.00**	**mg/L**	10	10-Jul-2018 11:56
Thallium	**0.000445**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	06-Jul-2018 15:50
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	06-Jul-2018 15:50
Zinc	**0.0332**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	06-Jul-2018 15:50
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 11-Jul-2018		Analyst: JBA
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	13-Jul-2018 13:15
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: Trip Blank
Collection Date: 28-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-20
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 12:24
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Jul-2018 12:24
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Jul-2018 12:24
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 12:24
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Jul-2018 12:24
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
Sample ID: Trip Blank
Collection Date: 28-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18061493
Lab ID:HS18061493-20
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Jul-2018 12:24
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	03-Jul-2018 12:24
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Jul-2018 12:24
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Jul-2018 12:24
Surr: 1,2-Dichloroethane-d4	*90.9*			**0**	*81-118*	*%REC*	*1*	*03-Jul-2018 12:24*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*03-Jul-2018 12:24*
Surr: Dibromofluoromethane	*92.3*			**0**	*80-119*	*%REC*	*1*	*03-Jul-2018 12:24*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*03-Jul-2018 12:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

Batch ID: 129997 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061493-01	1	10	10 (mL)	1
HS18061493-02	1	10	10 (mL)	1
HS18061493-03	1	10	10 (mL)	1
HS18061493-04	1	10	10 (mL)	1
HS18061493-05	1	10	10 (mL)	1
HS18061493-06	1	10	10 (mL)	1
HS18061493-07	1	10	10 (mL)	1
HS18061493-08	1	10	10 (mL)	1
HS18061493-09	1	10	10 (mL)	1
HS18061493-10	1	10	10 (mL)	1
HS18061493-11	1	10	10 (mL)	1
HS18061493-12	1	10	10 (mL)	1
HS18061493-13	1	10	10 (mL)	1
HS18061493-14	1	10	10 (mL)	1
HS18061493-15	1	10	10 (mL)	1
HS18061493-16	1	10	10 (mL)	1
HS18061493-17	1	10	10 (mL)	1
HS18061493-18	1	10	10 (mL)	1
HS18061493-19	1	10	10 (mL)	1

Batch ID: 130255 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061493-01	1	10 (mL)	10 (mL)	1
HS18061493-02	1	10 (mL)	10 (mL)	1
HS18061493-03	1	10 (mL)	10 (mL)	1
HS18061493-04	1	10 (mL)	10 (mL)	1
HS18061493-05	1	10 (mL)	10 (mL)	1
HS18061493-06	1	10 (mL)	10 (mL)	1
HS18061493-07	1	10 (mL)	10 (mL)	1
HS18061493-08	1	10 (mL)	10 (mL)	1
HS18061493-09	1	10 (mL)	10 (mL)	1
HS18061493-10	1	10 (mL)	10 (mL)	1
HS18061493-11	1	10 (mL)	10 (mL)	1
HS18061493-12	1	10 (mL)	10 (mL)	1
HS18061493-13	1	10 (mL)	10 (mL)	1
HS18061493-14	1	10 (mL)	10 (mL)	1
HS18061493-15	1	10 (mL)	10 (mL)	1
HS18061493-16	1	10 (mL)	10 (mL)	1
HS18061493-17	1	10 (mL)	10 (mL)	1
HS18061493-18	1	10 (mL)	10 (mL)	1

Batch ID: 130292 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061493-19	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129997	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18061493-01	ICT2_062818	28 Jun 2018 06:55		02 Jul 2018 10:29	10 Jul 2018 11:32	10
HS18061493-01	ICT2_062818	28 Jun 2018 06:55		02 Jul 2018 10:29	06 Jul 2018 14:53	1
HS18061493-02	ICT4_062818	28 Jun 2018 07:00		02 Jul 2018 10:29	10 Jul 2018 11:34	10
HS18061493-02	ICT4_062818	28 Jun 2018 07:00		02 Jul 2018 10:29	06 Jul 2018 14:55	1
HS18061493-03	ICT7_062818	28 Jun 2018 07:05		02 Jul 2018 10:29	10 Jul 2018 11:36	10
HS18061493-03	ICT7_062818	28 Jun 2018 07:05		02 Jul 2018 10:29	06 Jul 2018 14:57	1
HS18061493-04	ICT8_062818	28 Jun 2018 07:10		02 Jul 2018 10:29	06 Jul 2018 14:59	1
HS18061493-05	ICT8_062818_a	28 Jun 2018 07:10		02 Jul 2018 10:29	06 Jul 2018 15:01	1
HS18061493-06	ICT11_062818	28 Jun 2018 07:20		02 Jul 2018 10:29	06 Jul 2018 15:03	1
HS18061493-07	ICT12B_062818	28 Jun 2018 07:25		02 Jul 2018 10:29	06 Jul 2018 15:05	1
HS18061493-08	ICT12C_062818	28 Jun 2018 07:35		02 Jul 2018 10:29	06 Jul 2018 15:07	1
HS18061493-09	ICT12D_062818	28 Jun 2018 07:40		02 Jul 2018 10:29	06 Jul 2018 15:13	1
HS18061493-10	ICT12E_062818	28 Jun 2018 07:45		02 Jul 2018 10:29	10 Jul 2018 11:38	10
HS18061493-10	ICT12E_062818	28 Jun 2018 07:45		02 Jul 2018 10:29	06 Jul 2018 15:15	1
HS18061493-11	ICT13A_062818	28 Jun 2018 07:50		02 Jul 2018 10:29	10 Jul 2018 11:40	10
HS18061493-11	ICT13A_062818	28 Jun 2018 07:50		02 Jul 2018 10:29	06 Jul 2018 15:17	1
HS18061493-12	ICT13B_062818	28 Jun 2018 08:00		02 Jul 2018 10:29	06 Jul 2018 15:19	1
HS18061493-13	ICT13B_062818_a	28 Jun 2018 08:00		02 Jul 2018 10:29	06 Jul 2018 15:21	1
HS18061493-14	ICT13D_062818	28 Jun 2018 08:05		02 Jul 2018 10:29	06 Jul 2018 15:23	1
HS18061493-15	ICT13E_062818	28 Jun 2018 08:10		02 Jul 2018 10:29	10 Jul 2018 11:42	10
HS18061493-15	ICT13E_062818	28 Jun 2018 08:10		02 Jul 2018 10:29	06 Jul 2018 15:25	1
HS18061493-16	ICT13F_062818	28 Jun 2018 08:20		02 Jul 2018 10:29	10 Jul 2018 11:44	10
HS18061493-16	ICT13F_062818	28 Jun 2018 08:20		02 Jul 2018 10:29	06 Jul 2018 15:27	1
HS18061493-17	ICT14B_062818	28 Jun 2018 08:25		02 Jul 2018 10:29	06 Jul 2018 15:29	1
HS18061493-18	ICT14C_062818	28 Jun 2018 08:35		02 Jul 2018 10:29	10 Jul 2018 11:46	10
HS18061493-18	ICT14C_062818	28 Jun 2018 08:35		02 Jul 2018 10:29	06 Jul 2018 15:31	1
HS18061493-19	ICT14D_062818	28 Jun 2018 08:50		02 Jul 2018 10:29	10 Jul 2018 11:56	10
HS18061493-19	ICT14D_062818	28 Jun 2018 08:50		02 Jul 2018 10:29	06 Jul 2018 15:50	1

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 130255	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18061493-01	ICT2_062818	28 Jun 2018 06:55		10 Jul 2018 13:56	13 Jul 2018 12:27	1
HS18061493-02	ICT4_062818	28 Jun 2018 07:00		10 Jul 2018 13:56	13 Jul 2018 12:29	1
HS18061493-03	ICT7_062818	28 Jun 2018 07:05		10 Jul 2018 13:56	13 Jul 2018 12:34	1
HS18061493-04	ICT8_062818	28 Jun 2018 07:10		10 Jul 2018 13:56	13 Jul 2018 12:36	1
HS18061493-05	ICT8_062818_a	28 Jun 2018 07:10		10 Jul 2018 13:56	13 Jul 2018 12:38	1
HS18061493-06	ICT11_062818	28 Jun 2018 07:20		10 Jul 2018 13:56	13 Jul 2018 12:39	1
HS18061493-07	ICT12B_062818	28 Jun 2018 07:25		10 Jul 2018 13:56	13 Jul 2018 12:41	1
HS18061493-08	ICT12C_062818	28 Jun 2018 07:35		10 Jul 2018 13:56	13 Jul 2018 12:43	1
HS18061493-09	ICT12D_062818	28 Jun 2018 07:40		10 Jul 2018 13:56	13 Jul 2018 12:44	1
HS18061493-10	ICT12E_062818	28 Jun 2018 07:45		10 Jul 2018 13:56	13 Jul 2018 12:46	1
HS18061493-11	ICT13A_062818	28 Jun 2018 07:50		10 Jul 2018 13:56	13 Jul 2018 12:48	1
HS18061493-12	ICT13B_062818	28 Jun 2018 08:00		10 Jul 2018 13:56	13 Jul 2018 12:50	1
HS18061493-13	ICT13B_062818_a	28 Jun 2018 08:00		10 Jul 2018 13:56	13 Jul 2018 12:55	1
HS18061493-14	ICT13D_062818	28 Jun 2018 08:05		10 Jul 2018 13:56	13 Jul 2018 12:57	1
HS18061493-15	ICT13E_062818	28 Jun 2018 08:10		10 Jul 2018 13:56	13 Jul 2018 12:58	1
HS18061493-16	ICT13F_062818	28 Jun 2018 08:20		10 Jul 2018 13:56	13 Jul 2018 13:00	1
HS18061493-17	ICT14B_062818	28 Jun 2018 08:25		10 Jul 2018 13:56	13 Jul 2018 13:02	1
HS18061493-18	ICT14C_062818	28 Jun 2018 08:35		10 Jul 2018 13:56	13 Jul 2018 13:03	1
Batch ID 130292	**Test Name :** MERCURY BY SW7470A			**Matrix:** Groundwater		
HS18061493-19	ICT14D_062818	28 Jun 2018 08:50		11 Jul 2018 11:44	13 Jul 2018 13:15	1
Batch ID R319098	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18061493-01	ICT2_062818	28 Jun 2018 06:55			02 Jul 2018 18:25	5
HS18061493-02	ICT4_062818	28 Jun 2018 07:00			02 Jul 2018 20:53	100
HS18061493-02	ICT4_062818	28 Jun 2018 07:00			02 Jul 2018 19:15	25
HS18061493-03	ICT7_062818	28 Jun 2018 07:05			02 Jul 2018 17:36	1
Batch ID R319138	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18061493-20	Trip Blank	28 Jun 2018 00:00			03 Jul 2018 12:24	1

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R319138	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18061493-01	ICT2_062818	28 Jun 2018 06:55			03 Jul 2018 20:12	1
HS18061493-04	ICT8_062818	28 Jun 2018 07:10			03 Jul 2018 18:08	100
HS18061493-05	ICT8_062818_a	28 Jun 2018 07:10			03 Jul 2018 18:57	100
HS18061493-12	ICT13B_062818	28 Jun 2018 08:00			03 Jul 2018 17:19	25
HS18061493-12	ICT13B_062818	28 Jun 2018 08:00			03 Jul 2018 15:16	1
HS18061493-13	ICT13B_062818_a	28 Jun 2018 08:00			03 Jul 2018 17:44	25
HS18061493-13	ICT13B_062818_a	28 Jun 2018 08:00			03 Jul 2018 16:05	1
HS18061493-14	ICT13D_062818	28 Jun 2018 08:05			03 Jul 2018 12:48	1
HS18061493-15	ICT13E_062818	28 Jun 2018 08:10			03 Jul 2018 13:13	1
HS18061493-16	ICT13F_062818	28 Jun 2018 08:20			03 Jul 2018 13:38	1
HS18061493-18	ICT14C_062818	28 Jun 2018 08:35			03 Jul 2018 14:51	100
HS18061493-18	ICT14C_062818	28 Jun 2018 08:35			03 Jul 2018 14:02	25
Batch ID R319171	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18061493-04	ICT8_062818	28 Jun 2018 07:10			04 Jul 2018 13:05	1000
HS18061493-05	ICT8_062818_a	28 Jun 2018 07:10			04 Jul 2018 13:29	500
HS18061493-06	ICT11_062818	28 Jun 2018 07:20			04 Jul 2018 14:43	25
HS18061493-06	ICT11_062818	28 Jun 2018 07:20			04 Jul 2018 11:27	1
HS18061493-07	ICT12B_062818	28 Jun 2018 07:25			04 Jul 2018 15:08	25
HS18061493-07	ICT12B_062818	28 Jun 2018 07:25			04 Jul 2018 11:51	1
HS18061493-08	ICT12C_062818	28 Jun 2018 07:35			04 Jul 2018 18:24	10
HS18061493-09	ICT12D_062818	28 Jun 2018 07:40			04 Jul 2018 15:57	100
HS18061493-10	ICT12E_062818	28 Jun 2018 07:45			04 Jul 2018 16:46	100
HS18061493-11	ICT13A_062818	28 Jun 2018 07:50			04 Jul 2018 17:35	10
HS18061493-17	ICT14B_062818	28 Jun 2018 08:25			04 Jul 2018 15:32	10
HS18061493-17	ICT14B_062818	28 Jun 2018 08:25			04 Jul 2018 12:40	1
HS18061493-19	ICT14D_062818	28 Jun 2018 08:50			04 Jul 2018 19:38	1
Batch ID R319233	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS18061493-08	ICT12C_062818	28 Jun 2018 07:35			05 Jul 2018 14:32	50
HS18061493-09	ICT12D_062818	28 Jun 2018 07:40			05 Jul 2018 14:57	1000
HS18061493-10	ICT12E_062818	28 Jun 2018 07:45			05 Jul 2018 16:56	1000
HS18061493-11	ICT13A_062818	28 Jun 2018 07:50			05 Jul 2018 15:46	100
HS18061493-19	ICT14D_062818	28 Jun 2018 08:50			05 Jul 2018 15:22	25

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R319784	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18061493-01	ICT2_062818	28 Jun 2018 06:55			16 Jul 2018 11:37	1
HS18061493-02	ICT4_062818	28 Jun 2018 07:00			16 Jul 2018 11:37	1
HS18061493-03	ICT7_062818	28 Jun 2018 07:05			16 Jul 2018 11:37	1
HS18061493-04	ICT8_062818	28 Jun 2018 07:10			16 Jul 2018 11:37	1
HS18061493-05	ICT8_062818_a	28 Jun 2018 07:10			16 Jul 2018 11:37	1
HS18061493-06	ICT11_062818	28 Jun 2018 07:20			16 Jul 2018 11:37	1
HS18061493-07	ICT12B_062818	28 Jun 2018 07:25			16 Jul 2018 11:37	1
HS18061493-08	ICT12C_062818	28 Jun 2018 07:35			16 Jul 2018 11:37	1
HS18061493-09	ICT12D_062818	28 Jun 2018 07:40			16 Jul 2018 11:37	1
HS18061493-10	ICT12E_062818	28 Jun 2018 07:45			16 Jul 2018 11:37	1
HS18061493-11	ICT13A_062818	28 Jun 2018 07:50			16 Jul 2018 11:37	1
HS18061493-12	ICT13B_062818	28 Jun 2018 08:00			16 Jul 2018 11:37	1
HS18061493-13	ICT13B_062818_a	28 Jun 2018 08:00			16 Jul 2018 11:37	1
HS18061493-14	ICT13D_062818	28 Jun 2018 08:05			16 Jul 2018 11:37	1
HS18061493-15	ICT13E_062818	28 Jun 2018 08:10			16 Jul 2018 11:37	1
HS18061493-16	ICT13F_062818	28 Jun 2018 08:20			16 Jul 2018 11:37	1
HS18061493-17	ICT14B_062818	28 Jun 2018 08:25			16 Jul 2018 11:37	1
HS18061493-18	ICT14C_062818	28 Jun 2018 08:35			16 Jul 2018 11:37	1
HS18061493-19	ICT14D_062818	28 Jun 2018 08:50			16 Jul 2018 11:37	1

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 129997 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129997** Units: **mg/L** Analysis Date: **10-Jul-2018 11:30**
Client ID: Run ID: **ICPMS05_319413** SeqNo: **4642024** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.002167	0.0100								J

MBLK Sample ID: **MBLK-129997** Units: **mg/L** Analysis Date: **06-Jul-2018 14:49**
Client ID: Run ID: **ICPMS05_319244** SeqNo: **4640095** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.07682	0.500								J
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Copper	0.00200	0.00200								U
Iron	0.100	0.200								U
Lead	0.00100	0.00200								U
Magnesium	0.02142	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.100	0.200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U
Sodium	0.06973	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 129997 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129997** Units: **mg/L** Analysis Date: **06-Jul-2018 14:51**
Client ID: Run ID: **ICPMS05_319244** SeqNo: **4640096** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.0963	0.0100	0.1	0	96.3	80 - 120				
Antimony	0.04709	0.00200	0.05	0	94.2	80 - 120				
Arsenic	0.04747	0.00200	0.05	0	94.9	80 - 120				
Barium	0.04404	0.00400	0.05	0	88.1	80 - 120				
Beryllium	0.04539	0.00200	0.05	0	90.8	80 - 120				
Cadmium	0.04788	0.00200	0.05	0	95.8	80 - 120				
Calcium	4.666	0.500	5	0	93.3	80 - 120				
Chromium	0.04847	0.00400	0.05	0	96.9	80 - 120				
Cobalt	0.0462	0.00500	0.05	0	92.4	80 - 120				
Copper	0.04854	0.00200	0.05	0	97.1	80 - 120				
Iron	4.865	0.200	5	0	97.3	80 - 120				
Lead	0.0468	0.00200	0.05	0	93.6	80 - 120				
Magnesium	4.98	0.200	5	0	99.6	80 - 120				
Manganese	0.0481	0.00500	0.05	0	96.2	80 - 120				
Nickel	0.04832	0.00200	0.05	0	96.6	80 - 120				
Potassium	4.626	0.200	5	0	92.5	80 - 120				
Selenium	0.04774	0.00200	0.05	0	95.5	80 - 120				
Silver	0.04646	0.00200	0.05	0	92.9	80 - 120				
Sodium	4.871	0.200	5	0	97.4	80 - 120				
Thallium	0.04154	0.00200	0.05	0	83.1	80 - 120				
Vanadium	0.04629	0.00500	0.05	0	92.6	80 - 120				
Zinc	0.04946	0.00400	0.05	0	98.9	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 129997 **Instrument:** ICPMS05 **Method:** SW6020

MS Sample ID: **HS18061493-18MS** Units: **mg/L** Analysis Date: **06-Jul-2018 15:44**
Client ID: **ICT14C_062818** Run ID: **ICPMS05_319244** SeqNo: **4640122** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.649	0.0100	0.1	0.5257	123	80 - 120				SO
Antimony	0.04836	0.00200	0.05	0.000461	95.8	80 - 120				
Arsenic	0.2	0.00200	0.05	0.1495	101	80 - 120				
Barium	2.281	0.00400	0.05	2.228	106	80 - 120				EO
Cadmium	0.05856	0.00200	0.05	0.008624	99.9	80 - 120				
Calcium	75.76	0.500	5	68.51	145	80 - 120				SO
Chromium	0.5208	0.00400	0.05	0.4696	102	80 - 120				O
Cobalt	0.06484	0.00500	0.05	0.01789	93.9	80 - 120				
Copper	0.07092	0.00200	0.05	0.02277	96.3	80 - 120				
Iron	77.65	0.200	5	70.57	142	80 - 120				SO
Lead	0.04971	0.00200	0.05	0.004732	90.0	80 - 120				
Magnesium	59.81	0.200	5	51.98	157	80 - 120				SO
Manganese	1.3	0.00500	0.05	1.208	184	80 - 120				SO
Nickel	0.1357	0.00200	0.05	0.08486	102	80 - 120				
Potassium	6.399	0.200	5	1.761	92.8	80 - 120				
Selenium	0.04904	0.00200	0.05	0.001186	95.7	80 - 120				
Silver	0.0465	0.00200	0.05	0.000199	92.6	80 - 120				
Sodium	225.2	0.200	5	207.8	347	80 - 120				SEO
Thallium	0.04131	0.00200	0.05	0.000018	82.6	80 - 120				
Vanadium	0.08948	0.00500	0.05	0.03997	99.0	80 - 120				
Zinc	0.1754	0.00400	0.05	0.1211	109	80 - 120				

MS Sample ID: **HS18061493-18MS** Units: **mg/L** Analysis Date: **06-Jul-2018 15:52**
Client ID: **ICT14C_062818** Run ID: **ICPMS05_319244** SeqNo: **4640126** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.05735	0.00200	0.05	0.007662	99.4	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 129997 **Instrument:** ICPMS05 **Method:** SW6020

MSD Sample ID: **HS18061493-18MSD** Units: **mg/L** Analysis Date: **06-Jul-2018 15:46**
Client ID: **ICT14C_062818** Run ID: **ICPMS05_319244** SeqNo: **4640123** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.6176	0.0100	0.1	0.5257	91.9	80 - 120	0.649	4.96	20	O
Antimony	0.04755	0.00200	0.05	0.000461	94.2	80 - 120	0.04836	1.67	20	
Arsenic	0.1951	0.00200	0.05	0.1495	91.3	80 - 120	0.2	2.46	20	
Barium	2.231	0.00400	0.05	2.228	5.20	80 - 120	2.281	2.23	20	SEO
Beryllium	0.05754	0.00200	0.05	0.007662	99.7	80 - 120	0.05996	4.12	20	
Cadmium	0.05706	0.00200	0.05	0.008624	96.9	80 - 120	0.05856	2.61	20	
Calcium	73.43	0.500	5	68.51	98.3	80 - 120	75.76	3.12	20	O
Chromium	0.5205	0.00400	0.05	0.4696	102	80 - 120	0.5208	0.0507	20	O
Cobalt	0.06352	0.00500	0.05	0.01789	91.2	80 - 120	0.06484	2.07	20	
Copper	0.07009	0.00200	0.05	0.02277	94.6	80 - 120	0.07092	1.18	20	
Iron	76.92	0.200	5	70.57	127	80 - 120	77.65	0.949	20	SO
Lead	0.04904	0.00200	0.05	0.004732	88.6	80 - 120	0.04971	1.35	20	
Magnesium	58.27	0.200	5	51.98	126	80 - 120	59.81	2.61	20	SO
Manganese	1.297	0.00500	0.05	1.208	177	80 - 120	1.3	0.281	20	SO
Nickel	0.1324	0.00200	0.05	0.08486	95.0	80 - 120	0.1357	2.46	20	
Potassium	6.145	0.200	5	1.761	87.7	80 - 120	6.399	4.05	20	
Selenium	0.04977	0.00200	0.05	0.001186	97.2	80 - 120	0.04904	1.47	20	
Silver	0.04515	0.00200	0.05	0.000199	89.9	80 - 120	0.0465	2.94	20	
Sodium	216.8	0.200	5	207.8	178	80 - 120	225.2	3.82	20	SEO
Thallium	0.04025	0.00200	0.05	0.000018	80.5	80 - 120	0.04131	2.6	20	
Vanadium	0.08728	0.00500	0.05	0.03997	94.6	80 - 120	0.08948	2.49	20	
Zinc	0.1717	0.00400	0.05	0.1211	101	80 - 120	0.1754	2.11	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 129997 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18061493-18PDS** Units: **mg/L** Analysis Date: **06-Jul-2018 15:48**
Client ID: **ICT14C_062818** Run ID: **ICPMS05_319244** SeqNo: **4640124** PrepDate: **02-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.5604	0.0100	0.1	0.5257	34.7	75 - 125				SO
Antimony	0.08458	0.00200	0.1	0.000461	84.1	75 - 125				
Arsenic	0.2325	0.00200	0.1	0.1495	83.0	75 - 125				
Beryllium	0.09702	0.00200	0.1	0.007662	89.4	75 - 125				
Cadmium	0.09982	0.00200	0.1	0.008624	91.2	75 - 125				
Calcium	72.27	0.500	10	68.51	37.5	75 - 125				SO
Chromium	0.5374	0.00400	0.1	0.4696	67.8	75 - 125				SO
Cobalt	0.1044	0.00500	0.1	0.01789	86.5	75 - 125				
Copper	0.1108	0.00200	0.1	0.02277	88.0	75 - 125				
Iron	76.59	0.200	10	70.57	60.2	75 - 125				SO
Lead	0.0918	0.00200	0.1	0.004732	87.1	75 - 125				
Magnesium	58.97	0.200	10	51.98	69.9	75 - 125				SO
Manganese	1.264	0.00500	0.1	1.208	55.5	75 - 125				SO
Nickel	0.1722	0.00200	0.1	0.08486	87.4	75 - 125				
Potassium	10.05	0.200	10	1.761	82.9	75 - 125				
Selenium	0.09419	0.00200	0.1	0.001186	93.0	75 - 125				
Silver	0.0837	0.00200	0.1	0.000199	83.5	75 - 125				
Thallium	0.09	0.00200	0.1	0.000018	90.0	75 - 125				
Vanadium	0.1278	0.00500	0.1	0.03997	87.8	75 - 125				
Zinc	0.2099	0.00400	0.1	0.1211	88.8	75 - 125				

PDS Sample ID: **HS18061493-18PDS** Units: **mg/L** Analysis Date: **10-Jul-2018 11:54**
Client ID: **ICT14C_062818** Run ID: **ICPMS05_319413** SeqNo: **4642036** PrepDate: **02-Jul-2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	3.175	0.0400	1	2.209	96.6	75 - 125				
Sodium	306.1	2.00	100	230.4	75.7	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 129997 **Instrument:** ICPMS05 **Method:** SW6020

SD Sample ID: **HS18061493-18SD** Units: **mg/L** Analysis Date: **06-Jul-2018 15:42**
Client ID: **ICT14C_062818** Run ID: **ICPMS05_319244** SeqNo: **4640121** PrepDate: **02-Jul-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.5423	0.0500					0.5257	3.18	10	
Antimony	0.00500	0.0100					0.000461	0	10	U
Arsenic	0.1492	0.0100					0.1495	0.183	10	
Beryllium	0.007087	0.0100					0.007662	0	10	J
Cadmium	0.008444	0.0100					0.008624	0	10	J
Calcium	66.7	2.50					68.51	2.65	10	
Chromium	0.4542	0.0200					0.4696	3.27	10	
Cobalt	0.01936	0.0250					0.01789	0	10	J
Copper	0.02198	0.0100					0.02277	3.49	10	
Iron	72.72	1.00					70.57	3.05	10	
Lead	0.005163	0.0100					0.004732	0	10	J
Magnesium	53.22	1.00					51.98	2.39	10	
Manganese	1.195	0.0250					1.208	1.08	10	
Nickel	0.08555	0.0100					0.08486	0.808	10	
Selenium	0.0100	0.0100					0.001186	0	10	U
Silver	0.00500	0.0100					0.000199	0	10	U
Thallium	0.002066	0.0100					0.000018	0	10	J
Zinc	0.125	0.0200					0.1211	3.26	10	

SD Sample ID: **HS18061493-18SD** Units: **mg/L** Analysis Date: **10-Jul-2018 11:48**
Client ID: **ICT14C_062818** Run ID: **ICPMS05_319413** SeqNo: **4642033** PrepDate: **02-Jul-2018** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	2.021	0.200					2.209	8.52	10	
Sodium	215.3	10.0					230.4	6.58	10	

The following samples were analyzed in this batch:

HS18061493-01	HS18061493-02	HS18061493-03	HS18061493-04
HS18061493-05	HS18061493-06	HS18061493-07	HS18061493-08
HS18061493-09	HS18061493-10	HS18061493-11	HS18061493-12
HS18061493-13	HS18061493-14	HS18061493-15	HS18061493-16
HS18061493-17	HS18061493-18	HS18061493-19	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 130255 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-130255** Units: **mg/L** Analysis Date: **13-Jul-2018 12:20**
Client ID: Run ID: **HG03_319647** SeqNo: **4647789** PrepDate: **10-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-130255** Units: **mg/L** Analysis Date: **13-Jul-2018 12:22**
Client ID: Run ID: **HG03_319647** SeqNo: **4647790** PrepDate: **10-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00465	0.000200	0.005	0	93.0	80 - 120				

MS Sample ID: **HS18061493-18MS** Units: **mg/L** Analysis Date: **13-Jul-2018 13:05**
Client ID: **ICT14C_062818** Run ID: **HG03_319647** SeqNo: **4647811** PrepDate: **10-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00501	0.000200	0.005	0.000235	95.5	75 - 125				

MSD Sample ID: **HS18061493-18MSD** Units: **mg/L** Analysis Date: **13-Jul-2018 13:07**
Client ID: **ICT14C_062818** Run ID: **HG03_319647** SeqNo: **4647812** PrepDate: **10-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0051	0.000200	0.005	0.000235	97.3	75 - 125	0.00501	1.78	20	

The following samples were analyzed in this batch:

HS18061493-01	HS18061493-02	HS18061493-03	HS18061493-04
HS18061493-05	HS18061493-06	HS18061493-07	HS18061493-08
HS18061493-09	HS18061493-10	HS18061493-11	HS18061493-12
HS18061493-13	HS18061493-14	HS18061493-15	HS18061493-16
HS18061493-17	HS18061493-18		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: 130292 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-130292** Units: **mg/L** Analysis Date: **13-Jul-2018 13:08**
Client ID: Run ID: **HG03_319647** SeqNo: **4647958** PrepDate: **11-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-130292** Units: **mg/L** Analysis Date: **13-Jul-2018 13:10**
Client ID: Run ID: **HG03_319647** SeqNo: **4647959** PrepDate: **11-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00437	0.000200	0.005	0	87.4	80 - 120				

MS Sample ID: **HS18061529-18MS** Units: **mg/L** Analysis Date: **13-Jul-2018 13:45**
Client ID: Run ID: **HG03_319647** SeqNo: **4647977** PrepDate: **11-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0035	0.000200	0.005	-0.000018	70.4	75 - 125				S

MSD Sample ID: **HS18061529-18MSD** Units: **mg/L** Analysis Date: **13-Jul-2018 13:46**
Client ID: Run ID: **HG03_319647** SeqNo: **4647978** PrepDate: **11-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00365	0.000200	0.005	-0.000018	73.4	75 - 125	0.0035	4.2	20	S

The following samples were analyzed in this batch: HS18061493-19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319098 **Instrument:** VOA6 **Method:** SW8260

MBLK Sample ID: **VBLKW-180702** Units: **ug/L** Analysis Date: **02-Jul-2018 16:47**
Client ID: Run ID: **VOA6_319098** SeqNo: **4634417** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319098 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180702** Units: **ug/L** Analysis Date: **02-Jul-2018 16:47**
Client ID: Run ID: **VOA6_319098** SeqNo: **4634417** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.14*	*1.0*	*50*	*0*	*92.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.65*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*45.15*	*1.0*	*50*	*0*	*90.3*	*80 - 119*				
Surr: Toluene-d8	*50.6*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319098 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180702** Units: **ug/L** Analysis Date: **02-Jul-2018 15:33**
Client ID: Run ID: **VOA6_319098** SeqNo: **4634416** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.98	1.0	50	0	96.0	78 - 124				
1,1,1-Trichloroethane	46.88	1.0	50	0	93.8	74 - 131				
1,1,2,2-Tetrachloroethane	57.92	1.0	50	0	116	71 - 121				
1,1,2-Trichloroethane	50.07	1.0	50	0	100	80 - 119				
1,1-Dichloroethane	51.13	1.0	50	0	102	77 - 125				
1,1-Dichloroethene	46.59	1.0	50	0	93.2	71 - 131				
1,1-Dichloropropene	46.11	1.0	50	0	92.2	78 - 125				
1,2,3-Trichlorobenzene	53.77	1.0	50	0	108	69 - 129				
1,2,3-Trichloropropane	53.32	1.0	50	0	107	73 - 122				
1,2,4-Trichlorobenzene	51.69	1.0	50	0	103	69 - 130				
1,2,4-Trimethylbenzene	49.81	1.0	50	0	99.6	76 - 124				
1,2-Dibromo-3-chloropropane	62.65	1.0	50	0	125	62 - 128				
1,2-Dibromoethane	51.05	1.0	50	0	102	77 - 121				
1,2-Dichlorobenzene	51.77	1.0	50	0	104	80 - 119				
1,2-Dichloroethane	48.97	1.0	50	0	97.9	73 - 128				
1,2-Dichloropropane	49.14	1.0	50	0	98.3	78 - 122				
1,3,5-Trimethylbenzene	48.71	1.0	50	0	97.4	75 - 124				
1,3-Dichlorobenzene	50.31	1.0	50	0	101	80 - 119				
1,3-Dichloropropane	54.69	1.0	50	0	109	80 - 119				
1,4-Dichlorobenzene	50.55	1.0	50	0	101	79 - 118				
2,2-Dichloropropane	50.92	1.0	50	0	102	60 - 139				
2-Butanone	118.3	2.0	100	0	118	56 - 143				
2-Chlorotoluene	49.96	1.0	50	0	99.9	79 - 122				
2-Hexanone	117.8	2.0	100	0	118	57 - 139				
4-Chlorotoluene	50.12	1.0	50	0	100	78 - 122				
4-Isopropyltoluene	45.67	1.0	50	0	91.3	77 - 127				
4-Methyl-2-pentanone	112.7	2.0	100	0	113	67 - 130				
Acetone	118.6	2.0	100	0	119	39 - 160				
Benzene	47	1.0	50	0	94.0	79 - 120				
Bromobenzene	50.74	1.0	50	0	101	80 - 120				
Bromochloromethane	45.69	1.0	50	0	91.4	78 - 123				
Bromodichloromethane	48.19	1.0	50	0	96.4	79 - 125				
Bromoform	54.9	1.0	50	0	110	66 - 130				
Bromomethane	52.3	1.0	50	0	105	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319098 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180702** Units: **ug/L** Analysis Date: **02-Jul-2018 15:33**
Client ID: Run ID: **VOA6_319098** SeqNo: **4634416** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	87.11	2.0	100	0	87.1	64 - 133				
Carbon tetrachloride	43.35	1.0	50	0	86.7	72 - 136				
Chlorobenzene	48.05	1.0	50	0	96.1	82 - 118				
Chloroethane	55.02	1.0	50	0	110	60 - 138				
Chloroform	46.93	1.0	50	0	93.9	79 - 124				
Chloromethane	53.38	1.0	50	0	107	50 - 139				
cis-1,2-Dichloroethene	46.83	1.0	50	0	93.7	78 - 123				
cis-1,3-Dichloropropene	50.42	1.0	50	0	101	75 - 124				
Dibromochloromethane	52.76	1.0	50	0	106	74 - 126				
Dibromomethane	52.37	1.0	50	0	105	79 - 123				
Dichlorodifluoromethane	36.99	1.0	50	0	74.0	32 - 152				
Ethylbenzene	48.09	1.0	50	0	96.2	79 - 121				
Hexachlorobutadiene	54.1	1.0	50	0	108	66 - 134				
Isopropylbenzene	45.5	1.0	50	0	91.0	72 - 131				
m,p-Xylene	92.84	2.0	100	0	92.8	80 - 121				
Methylene chloride	50.83	2.0	50	0	102	74 - 124				
Naphthalene	62.82	1.0	50	0	126	61 - 128				
n-Butylbenzene	49.83	1.0	50	0	99.7	75 - 128				
n-Propylbenzene	45.17	1.0	50	0	90.3	76 - 126				
o-Xylene	48.07	1.0	50	0	96.1	78 - 122				
sec-Butylbenzene	47.96	1.0	50	0	95.9	77 - 126				
Styrene	48.92	1.0	50	0	97.8	78 - 123				
tert-Butylbenzene	48.1	1.0	50	0	96.2	78 - 124				
Tetrachloroethene	45.05	1.0	50	0	90.1	74 - 129				
Toluene	47.32	1.0	50	0	94.6	80 - 121				
trans-1,2-Dichloroethene	45.64	1.0	50	0	91.3	75 - 124				
trans-1,3-Dichloropropene	51.87	1.0	50	0	104	73 - 127				
Trichloroethene	46.14	1.0	50	0	92.3	79 - 123				
Trichlorofluoromethane	46.09	1.0	50	0	92.2	65 - 141				
Vinyl chloride	46.53	1.0	50	0	93.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.53*	*1.0*	*50*	*0*	*91.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.9*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.2*	*1.0*	*50*	*0*	*90.4*	*80 - 119*				
Surr: Toluene-d8	*50.19*	*1.0*	*50*	*0*	*100*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: **R319098** **Instrument:** **VOA6** **Method:** **SW8260**

MS Sample ID: **HS18061493-03MS** Units: **ug/L** Analysis Date: **02-Jul-2018 19:40**
Client ID: **ICT7_062818** Run ID: **VOA6_319098** SeqNo: **4634423** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.02	1.0	50	0	86.0	78 - 124				
1,1,1-Trichloroethane	43.02	1.0	50	0	86.0	74 - 131				
1,1,2,2-Tetrachloroethane	55.13	1.0	50	0	110	71 - 121				
1,1,2-Trichloroethane	45.93	1.0	50	0	91.9	80 - 119				
1,1-Dichloroethane	44.8	1.0	50	0	89.6	77 - 125				
1,1-Dichloroethene	41.88	1.0	50	0	83.8	71 - 131				
1,1-Dichloropropene	40.87	1.0	50	0	81.7	78 - 125				
1,2,3-Trichlorobenzene	42.73	1.0	50	0	85.5	69 - 129				
1,2,3-Trichloropropane	50.16	1.0	50	0	100	73 - 122				
1,2,4-Trichlorobenzene	42.48	1.0	50	0	85.0	69 - 130				
1,2,4-Trimethylbenzene	45.63	1.0	50	0	91.3	76 - 124				
1,2-Dibromo-3-chloropropane	54.34	1.0	50	0	109	62 - 128				
1,2-Dibromoethane	46.01	1.0	50	0	92.0	77 - 121				
1,2-Dichlorobenzene	47.99	1.0	50	0	96.0	80 - 119				
1,2-Dichloroethane	43.62	1.0	50	0	87.2	73 - 128				
1,2-Dichloropropane	43.4	1.0	50	0	86.8	78 - 122				
1,3,5-Trimethylbenzene	45.22	1.0	50	0	90.4	75 - 124				
1,3-Dichlorobenzene	46.3	1.0	50	0	92.6	80 - 119				
1,3-Dichloropropane	49.85	1.0	50	0	99.7	80 - 119				
1,4-Dichlorobenzene	46.27	1.0	50	0	92.5	79 - 118				
2,2-Dichloropropane	42.91	1.0	50	0	85.8	60 - 139				
2-Butanone	107.6	2.0	100	0	108	56 - 143				
2-Chlorotoluene	46.18	1.0	50	0	92.4	79 - 122				
2-Hexanone	108.1	2.0	100	0	108	57 - 139				
4-Chlorotoluene	46.54	1.0	50	0	93.1	78 - 122				
4-Isopropyltoluene	40.73	1.0	50	0	81.5	77 - 127				
4-Methyl-2-pentanone	103.8	2.0	100	0	104	67 - 130				
Acetone	99.8	2.0	100	0	99.8	39 - 160				
Benzene	40.84	1.0	50	0	81.7	79 - 120				
Bromobenzene	48.02	1.0	50	0	96.0	80 - 120				
Bromochloromethane	41.2	1.0	50	0	82.4	78 - 123				
Bromodichloromethane	42.42	1.0	50	0	84.8	79 - 125				
Bromoform	50.07	1.0	50	0	100	66 - 130				
Bromomethane	24.65	1.0	50	0	49.3	53 - 141				S

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: **R319098** **Instrument:** **VOA6** **Method:** **SW8260**

MS Sample ID: **HS18061493-03MS** Units: **ug/L** Analysis Date: **02-Jul-2018 19:40**
Client ID: **ICT7_062818** Run ID: **VOA6_319098** SeqNo: **4634423** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	76.22	2.0	100	0	76.2	64 - 133				
Carbon tetrachloride	40.18	1.0	50	0	80.4	72 - 136				
Chlorobenzene	42.75	1.0	50	0	85.5	82 - 118				
Chloroethane	46.74	1.0	50	0	93.5	60 - 138				
Chloroform	41.12	1.0	50	0	82.2	79 - 124				
Chloromethane	34.15	1.0	50	0	68.3	50 - 139				
cis-1,2-Dichloroethene	41.72	1.0	50	0	83.4	78 - 123				
cis-1,3-Dichloropropene	43.49	1.0	50	0	87.0	75 - 124				
Dibromochloromethane	48.32	1.0	50	0	96.6	74 - 126				
Dibromomethane	47.31	1.0	50	0	94.6	79 - 123				
Dichlorodifluoromethane	25.95	1.0	50	0	51.9	32 - 152				
Ethylbenzene	42.92	1.0	50	0	85.8	79 - 121				
Hexachlorobutadiene	33.92	1.0	50	0	67.8	66 - 134				
Isopropylbenzene	41.11	1.0	50	0	82.2	72 - 131				
m,p-Xylene	83.6	2.0	100	0	83.6	80 - 121				
Methylene chloride	46.4	2.0	50	0	92.8	74 - 124				
Naphthalene	49.24	1.0	50	0	98.5	61 - 128				
n-Butylbenzene	43.23	1.0	50	0	86.5	75 - 128				
n-Propylbenzene	41.87	1.0	50	0	83.7	76 - 126				
o-Xylene	42.53	1.0	50	0	85.1	78 - 122				
sec-Butylbenzene	43.13	1.0	50	0	86.3	77 - 126				
Styrene	43.04	1.0	50	0	86.1	78 - 123				
tert-Butylbenzene	44.32	1.0	50	0	88.6	78 - 124				
Tetrachloroethene	41.41	1.0	50	0	82.8	74 - 129				
Toluene	43.13	1.0	50	0	86.3	80 - 121				
trans-1,2-Dichloroethene	40.66	1.0	50	0	81.3	75 - 124				
trans-1,3-Dichloropropene	45.03	1.0	50	0	90.1	73 - 127				
Trichloroethene	42.23	1.0	50	0.5173	83.4	79 - 123				
Trichlorofluoromethane	42.11	1.0	50	0	84.2	65 - 141				
Vinyl chloride	37.39	1.0	50	0	74.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.03*	*1.0*	*50*	*0*	*90.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.48*	*1.0*	*50*	*0*	*99.0*	*85 - 114*				
Surr: Dibromofluoromethane	*45.13*	*1.0*	*50*	*0*	*90.3*	*80 - 119*				
Surr: Toluene-d8	*49.46*	*1.0*	*50*	*0*	*98.9*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319098 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061493-03MSD** Units: **ug/L** Analysis Date: **02-Jul-2018 20:04**
Client ID: **ICT7_062818** Run ID: **VOA6_319098** SeqNo: **4634424** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	43.83	1.0	50	0	87.7	78 - 124	43.02	1.88	20	
1,1,1-Trichloroethane	43	1.0	50	0	86.0	74 - 131	43.02	0.0355	20	
1,1,2,2-Tetrachloroethane	54.62	1.0	50	0	109	71 - 121	55.13	0.928	20	
1,1,2-Trichloroethane	47.6	1.0	50	0	95.2	80 - 119	45.93	3.57	20	
1,1-Dichloroethane	47.56	1.0	50	0	95.1	77 - 125	44.8	5.98	20	
1,1-Dichloroethene	39.99	1.0	50	0	80.0	71 - 131	41.88	4.63	20	
1,1-Dichloropropene	40.44	1.0	50	0	80.9	78 - 125	40.87	1.05	20	
1,2,3-Trichlorobenzene	47.95	1.0	50	0	95.9	69 - 129	42.73	11.5	20	
1,2,3-Trichloropropane	49.28	1.0	50	0	98.6	73 - 122	50.16	1.77	20	
1,2,4-Trichlorobenzene	45.85	1.0	50	0	91.7	69 - 130	42.48	7.64	20	
1,2,4-Trimethylbenzene	46.14	1.0	50	0	92.3	76 - 124	45.63	1.11	20	
1,2-Dibromo-3-chloropropane	58.11	1.0	50	0	116	62 - 128	54.34	6.7	20	
1,2-Dibromoethane	48.45	1.0	50	0	96.9	77 - 121	46.01	5.16	20	
1,2-Dichlorobenzene	47.75	1.0	50	0	95.5	80 - 119	47.99	0.493	20	
1,2-Dichloroethane	45	1.0	50	0	90.0	73 - 128	43.62	3.11	20	
1,2-Dichloropropane	45.28	1.0	50	0	90.6	78 - 122	43.4	4.24	20	
1,3,5-Trimethylbenzene	45.58	1.0	50	0	91.2	75 - 124	45.22	0.801	20	
1,3-Dichlorobenzene	46.99	1.0	50	0	94.0	80 - 119	46.3	1.48	20	
1,3-Dichloropropane	51.52	1.0	50	0	103	80 - 119	49.85	3.28	20	
1,4-Dichlorobenzene	46.58	1.0	50	0	93.2	79 - 118	46.27	0.668	20	
2,2-Dichloropropane	42.78	1.0	50	0	85.6	60 - 139	42.91	0.283	20	
2-Butanone	110.3	2.0	100	0	110	56 - 143	107.6	2.41	20	
2-Chlorotoluene	45.93	1.0	50	0	91.9	79 - 122	46.18	0.545	20	
2-Hexanone	111.2	2.0	100	0	111	57 - 139	108.1	2.88	20	
4-Chlorotoluene	46.4	1.0	50	0	92.8	78 - 122	46.54	0.294	20	
4-Isopropyltoluene	41.67	1.0	50	0	83.3	77 - 127	40.73	2.28	20	
4-Methyl-2-pentanone	106.5	2.0	100	0	106	67 - 130	103.8	2.59	20	
Acetone	101.5	2.0	100	0	101	39 - 160	99.8	1.69	20	
Benzene	42.1	1.0	50	0	84.2	79 - 120	40.84	3.03	20	
Bromobenzene	47.05	1.0	50	0	94.1	80 - 120	48.02	2.04	20	
Bromochloromethane	42.56	1.0	50	0	85.1	78 - 123	41.2	3.25	20	
Bromodichloromethane	43.58	1.0	50	0	87.2	79 - 125	42.42	2.7	20	
Bromoform	51.78	1.0	50	0	104	66 - 130	50.07	3.37	20	
Bromomethane	31.56	1.0	50	0	63.1	53 - 141	24.65	24.6	20	R

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319098 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061493-03MSD** Units: **ug/L** Analysis Date: **02-Jul-2018 20:04**
Client ID: **ICT7_062818** Run ID: **VOA6_319098** SeqNo: **4634424** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	75.71	2.0	100	0	75.7	64 - 133	76.22	0.672	20	
Carbon tetrachloride	39.13	1.0	50	0	78.3	72 - 136	40.18	2.66	20	
Chlorobenzene	44.22	1.0	50	0	88.4	82 - 118	42.75	3.38	20	
Chloroethane	45.87	1.0	50	0	91.7	60 - 138	46.74	1.89	20	
Chloroform	43	1.0	50	0	86.0	79 - 124	41.12	4.48	20	
Chloromethane	34.54	1.0	50	0	69.1	50 - 139	34.15	1.13	20	
cis-1,2-Dichloroethene	43.41	1.0	50	0	86.8	78 - 123	41.72	3.97	20	
cis-1,3-Dichloropropene	45.07	1.0	50	0	90.1	75 - 124	43.49	3.57	20	
Dibromochloromethane	49.95	1.0	50	0	99.9	74 - 126	48.32	3.31	20	
Dibromomethane	48.9	1.0	50	0	97.8	79 - 123	47.31	3.3	20	
Dichlorodifluoromethane	22.69	1.0	50	0	45.4	32 - 152	25.95	13.4	20	
Ethylbenzene	44.44	1.0	50	0	88.9	79 - 121	42.92	3.49	20	
Hexachlorobutadiene	38.39	1.0	50	0	76.8	66 - 134	33.92	12.4	20	
Isopropylbenzene	42.73	1.0	50	0	85.5	72 - 131	41.11	3.86	20	
m,p-Xylene	86.92	2.0	100	0	86.9	80 - 121	83.6	3.89	20	
Methylene chloride	47.42	2.0	50	0	94.8	74 - 124	46.4	2.18	20	
Naphthalene	55.47	1.0	50	0	111	61 - 128	49.24	11.9	20	
n-Butylbenzene	44.21	1.0	50	0	88.4	75 - 128	43.23	2.24	20	
n-Propylbenzene	41.87	1.0	50	0	83.7	76 - 126	41.87	0.00514	20	
o-Xylene	44.29	1.0	50	0	88.6	78 - 122	42.53	4.05	20	
sec-Butylbenzene	43.43	1.0	50	0	86.9	77 - 126	43.13	0.695	20	
Styrene	44.97	1.0	50	0	89.9	78 - 123	43.04	4.38	20	
tert-Butylbenzene	44.87	1.0	50	0	89.7	78 - 124	44.32	1.23	20	
Tetrachloroethene	41.16	1.0	50	0	82.3	74 - 129	41.41	0.601	20	
Toluene	43.48	1.0	50	0	87.0	80 - 121	43.13	0.817	20	
trans-1,2-Dichloroethene	41.3	1.0	50	0	82.6	75 - 124	40.66	1.56	20	
trans-1,3-Dichloropropene	46.68	1.0	50	0	93.4	73 - 127	45.03	3.58	20	
Trichloroethene	42.11	1.0	50	0.5173	83.2	79 - 123	42.23	0.282	20	
Trichlorofluoromethane	39.5	1.0	50	0	79.0	65 - 141	42.11	6.4	20	
Vinyl chloride	36.48	1.0	50	0	73.0	58 - 137	37.39	2.47	20	
Surr: 1,2-Dichloroethane-d4	*45.8*	*1.0*	*50*	*0*	*91.6*	*81 - 118*	*45.03*	*1.7*	*20*	
Surr: 4-Bromofluorobenzene	*50.13*	*1.0*	*50*	*0*	*100*	*85 - 114*	*49.48*	*1.3*	*20*	
Surr: Dibromofluoromethane	*46.15*	*1.0*	*50*	*0*	*92.3*	*80 - 119*	*45.13*	*2.24*	*20*	
Surr: Toluene-d8	*50.55*	*1.0*	*50*	*0*	*101*	*89 - 112*	*49.46*	*2.18*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client:	Bhate Environmental Associates, Inc.	**QC BATCH REPORT**
Project:	LHAAP 18 24 - ICT's	
WorkOrder:	HS18061493	

Batch ID: R319098 **Instrument: VOA6** **Method: SW8260**

The following samples were analyzed in this batch: HS18061493-01 HS18061493-02 HS18061493-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument:** VOA6 **Method:** SW8260

MBLK Sample ID: **VBLKW-180703** Units: **ug/L** Analysis Date: **03-Jul-2018 11:59**
Client ID: Run ID: **VOA6_319138** SeqNo: **4635623** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument:** VOA6 **Method:** SW8260

MBLK Sample ID: **VBLKW-180703** Units: **ug/L** Analysis Date: **03-Jul-2018 11:59**
Client ID: Run ID: **VOA6_319138** SeqNo: **4635623** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.26*	*1.0*	*50*	*0*	*90.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.09*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*45.8*	*1.0*	*50*	*0*	*91.6*	*80 - 119*				
Surr: Toluene-d8	*49.94*	*1.0*	*50*	*0*	*99.9*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180703** Units: **ug/L** Analysis Date: **03-Jul-2018 10:46**
Client ID: Run ID: **VOA6_319138** SeqNo: **4635622** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.25	1.0	50	0	98.5	78 - 124				
1,1,1-Trichloroethane	51.15	1.0	50	0	102	74 - 131				
1,1,2,2-Tetrachloroethane	60.99	1.0	50	0	122	71 - 121				S
1,1,2-Trichloroethane	51.19	1.0	50	0	102	80 - 119				
1,1-Dichloroethane	52.06	1.0	50	0	104	77 - 125				
1,1-Dichloroethene	51.15	1.0	50	0	102	71 - 131				
1,1-Dichloropropene	50.53	1.0	50	0	101	78 - 125				
1,2,3-Trichlorobenzene	58.03	1.0	50	0	116	69 - 129				
1,2,3-Trichloropropane	55.06	1.0	50	0	110	73 - 122				
1,2,4-Trichlorobenzene	57.32	1.0	50	0	115	69 - 130				
1,2,4-Trimethylbenzene	55.68	1.0	50	0	111	76 - 124				
1,2-Dibromo-3-chloropropane	63.95	1.0	50	0	128	62 - 128				
1,2-Dibromoethane	52.38	1.0	50	0	105	77 - 121				
1,2-Dichlorobenzene	56.94	1.0	50	0	114	80 - 119				
1,2-Dichloroethane	49.4	1.0	50	0	98.8	73 - 128				
1,2-Dichloropropane	49.73	1.0	50	0	99.5	78 - 122				
1,3,5-Trimethylbenzene	55.44	1.0	50	0	111	75 - 124				
1,3-Dichlorobenzene	55.33	1.0	50	0	111	80 - 119				
1,3-Dichloropropane	55.69	1.0	50	0	111	80 - 119				
1,4-Dichlorobenzene	55.88	1.0	50	0	112	79 - 118				
2,2-Dichloropropane	54.32	1.0	50	0	109	60 - 139				
2-Butanone	115.7	2.0	100	0	116	56 - 143				
2-Chlorotoluene	55	1.0	50	0	110	79 - 122				
2-Hexanone	116.9	2.0	100	0	117	57 - 139				
4-Chlorotoluene	54.8	1.0	50	0	110	78 - 122				
4-Isopropyltoluene	52.15	1.0	50	0	104	77 - 127				
4-Methyl-2-pentanone	110.9	2.0	100	0	111	67 - 130				
Acetone	111.4	2.0	100	0	111	39 - 160				
Benzene	48.42	1.0	50	0	96.8	79 - 120				
Bromobenzene	54.98	1.0	50	0	110	80 - 120				
Bromochloromethane	46.16	1.0	50	0	92.3	78 - 123				
Bromodichloromethane	48.72	1.0	50	0	97.4	79 - 125				
Bromoform	56.42	1.0	50	0	113	66 - 130				
Bromomethane	47.26	1.0	50	0	94.5	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180703** Units: **ug/L** Analysis Date: **03-Jul-2018 10:46**
Client ID: Run ID: **VOA6_319138** SeqNo: **4635622** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	93.08	2.0	100	0	93.1	64 - 133				
Carbon tetrachloride	48.85	1.0	50	0	97.7	72 - 136				
Chlorobenzene	50.21	1.0	50	0	100	82 - 118				
Chloroethane	56.04	1.0	50	0	112	60 - 138				
Chloroform	47.63	1.0	50	0	95.3	79 - 124				
Chloromethane	47.8	1.0	50	0	95.6	50 - 139				
cis-1,2-Dichloroethene	48.64	1.0	50	0	97.3	78 - 123				
cis-1,3-Dichloropropene	51.06	1.0	50	0	102	75 - 124				
Dibromochloromethane	54.54	1.0	50	0	109	74 - 126				
Dibromomethane	53.84	1.0	50	0	108	79 - 123				
Dichlorodifluoromethane	42.53	1.0	50	0	85.1	32 - 152				
Ethylbenzene	51.42	1.0	50	0	103	79 - 121				
Hexachlorobutadiene	56.33	1.0	50	0	113	66 - 134				
Isopropylbenzene	50.42	1.0	50	0	101	72 - 131				
m,p-Xylene	99.48	2.0	100	0	99.5	80 - 121				
Methylene chloride	51.43	2.0	50	0	103	74 - 124				
Naphthalene	64.44	1.0	50	0	129	61 - 128				S
n-Butylbenzene	57.74	1.0	50	0	115	75 - 128				
n-Propylbenzene	51.9	1.0	50	0	104	76 - 126				
o-Xylene	50.67	1.0	50	0	101	78 - 122				
sec-Butylbenzene	56.07	1.0	50	0	112	77 - 126				
Styrene	50.83	1.0	50	0	102	78 - 123				
tert-Butylbenzene	55.63	1.0	50	0	111	78 - 124				
Tetrachloroethene	50.79	1.0	50	0	102	74 - 129				
Toluene	50.49	1.0	50	0	101	80 - 121				
trans-1,2-Dichloroethene	48.46	1.0	50	0	96.9	75 - 124				
trans-1,3-Dichloropropene	52.53	1.0	50	0	105	73 - 127				
Trichloroethene	48.65	1.0	50	0	97.3	79 - 123				
Trichlorofluoromethane	52.88	1.0	50	0	106	65 - 141				
Vinyl chloride	49.55	1.0	50	0	99.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.79*	*1.0*	*50*	*0*	*89.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.97*	*1.0*	*50*	*0*	*99.9*	*85 - 114*				
Surr: Dibromofluoromethane	*45.7*	*1.0*	*50*	*0*	*91.4*	*80 - 119*				
Surr: Toluene-d8	*50.29*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS18061493-18MS** Units: **ug/L** Analysis Date: **03-Jul-2018 20:36**
Client ID: **ICT14C_062818** Run ID: **VOA6_319138** SeqNo: **4635637** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	4505	100	5000	0	90.1	78 - 124				
1,1,1-Trichloroethane	4302	100	5000	0	86.0	74 - 131				
1,1,2,2-Tetrachloroethane	5635	100	5000	0	113	71 - 121				
1,1,2-Trichloroethane	4847	100	5000	0	96.9	80 - 119				
1,1-Dichloroethane	4715	100	5000	0	94.3	77 - 125				
1,1-Dichloroethene	4345	100	5000	57.18	85.8	71 - 131				
1,1-Dichloropropene	4142	100	5000	0	82.8	78 - 125				
1,2,3-Trichlorobenzene	4581	100	5000	0	91.6	69 - 129				
1,2,3-Trichloropropane	5340	100	5000	0	107	73 - 122				
1,2,4-Trichlorobenzene	4539	100	5000	0	90.8	69 - 130				
1,2,4-Trimethylbenzene	4659	100	5000	0	93.2	76 - 124				
1,2-Dibromo-3-chloropropane	5855	100	5000	0	117	62 - 128				
1,2-Dibromoethane	4965	100	5000	0	99.3	77 - 121				
1,2-Dichlorobenzene	5001	100	5000	0	100	80 - 119				
1,2-Dichloroethane	4589	100	5000	0	91.8	73 - 128				
1,2-Dichloropropane	4592	100	5000	0	91.8	78 - 122				
1,3,5-Trimethylbenzene	4575	100	5000	0	91.5	75 - 124				
1,3-Dichlorobenzene	4712	100	5000	0	94.2	80 - 119				
1,3-Dichloropropane	5252	100	5000	0	105	80 - 119				
1,4-Dichlorobenzene	4781	100	5000	0	95.6	79 - 118				
2,2-Dichloropropane	4180	100	5000	0	83.6	60 - 139				
2-Butanone	11180	200	10000	0	112	56 - 143				
2-Chlorotoluene	4657	100	5000	0	93.1	79 - 122				
2-Hexanone	11350	200	10000	0	113	57 - 139				
4-Chlorotoluene	4725	100	5000	0	94.5	78 - 122				
4-Isopropyltoluene	4128	100	5000	0	82.6	77 - 127				
4-Methyl-2-pentanone	10660	200	10000	0	107	67 - 130				
Acetone	10610	200	10000	0	106	39 - 160				
Benzene	4270	100	5000	0	85.4	79 - 120				
Bromobenzene	4928	100	5000	0	98.6	80 - 120				
Bromochloromethane	4543	100	5000	0	90.9	78 - 123				
Bromodichloromethane	4504	100	5000	0	90.1	79 - 125				
Bromoform	5397	100	5000	0	108	66 - 130				
Bromomethane	3758	100	5000	0	75.2	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS18061493-18MS** Units: **ug/L** Analysis Date: **03-Jul-2018 20:36**
Client ID: **ICT14C_062818** Run ID: **VOA6_319138** SeqNo: **4635637** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	7842	200	10000	0	78.4	64 - 133				
Carbon tetrachloride	3942	100	5000	0	78.8	72 - 136				
Chlorobenzene	4513	100	5000	0	90.3	82 - 118				
Chloroethane	4887	100	5000	0	97.7	60 - 138				
Chloroform	4348	100	5000	0	87.0	79 - 124				
Chloromethane	4496	100	5000	0	89.9	50 - 139				
cis-1,2-Dichloroethene	6419	100	5000	2534	77.7	78 - 123				S
cis-1,3-Dichloropropene	4587	100	5000	0	91.7	75 - 124				
Dibromochloromethane	5090	100	5000	0	102	74 - 126				
Dibromomethane	5115	100	5000	0	102	79 - 123				
Dichlorodifluoromethane	3452	100	5000	0	69.0	32 - 152				
Ethylbenzene	4433	100	5000	0	88.7	79 - 121				
Hexachlorobutadiene	3629	100	5000	0	72.6	66 - 134				
Isopropylbenzene	4217	100	5000	0	84.3	72 - 131				
m,p-Xylene	8630	200	10000	0	86.3	80 - 121				
Methylene chloride	10250	200	5000	6976	65.5	74 - 124				S
Naphthalene	5225	100	5000	0	105	61 - 128				
n-Butylbenzene	4343	100	5000	0	86.9	75 - 128				
n-Propylbenzene	4202	100	5000	0	84.0	76 - 126				
o-Xylene	4458	100	5000	0	89.2	78 - 122				
sec-Butylbenzene	4390	100	5000	0	87.8	77 - 126				
Styrene	4509	100	5000	0	90.2	78 - 123				
tert-Butylbenzene	4518	100	5000	0	90.4	78 - 124				
Tetrachloroethene	4180	100	5000	0	83.6	74 - 129				
Toluene	4403	100	5000	0	88.1	80 - 121				
trans-1,2-Dichloroethene	4203	100	5000	0	84.1	75 - 124				
trans-1,3-Dichloropropene	4741	100	5000	0	94.8	73 - 127				
Trichloroethene	6188	100	5000	2313	77.5	79 - 123				S
Trichlorofluoromethane	4256	100	5000	0	85.1	65 - 141				
Vinyl chloride	4376	100	5000	233.3	82.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*4462*	*100*	*5000*	*0*	*89.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*4979*	*100*	*5000*	*0*	*99.6*	*85 - 114*				
Surr: Dibromofluoromethane	*4548*	*100*	*5000*	*0*	*91.0*	*80 - 119*				
Surr: Toluene-d8	*4979*	*100*	*5000*	*0*	*99.6*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061493-18MSD** Units: **ug/L** Analysis Date: **03-Jul-2018 21:01**
Client ID: **ICT14C_062818** Run ID: **VOA6_319138** SeqNo: **4635638** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	4508	100	5000	0	90.2	78 - 124	4505	0.0696	20	
1,1,1-Trichloroethane	4445	100	5000	0	88.9	74 - 131	4302	3.26	20	
1,1,2,2-Tetrachloroethane	5646	100	5000	0	113	71 - 121	5635	0.209	20	
1,1,2-Trichloroethane	4851	100	5000	0	97.0	80 - 119	4847	0.0826	20	
1,1-Dichloroethane	4696	100	5000	0	93.9	77 - 125	4715	0.412	20	
1,1-Dichloroethene	4234	100	5000	57.18	83.5	71 - 131	4345	2.59	20	
1,1-Dichloropropene	4216	100	5000	0	84.3	78 - 125	4142	1.76	20	
1,2,3-Trichlorobenzene	4949	100	5000	0	99.0	69 - 129	4581	7.73	20	
1,2,3-Trichloropropane	5042	100	5000	0	101	73 - 122	5340	5.73	20	
1,2,4-Trichlorobenzene	4865	100	5000	0	97.3	69 - 130	4539	6.92	20	
1,2,4-Trimethylbenzene	4751	100	5000	0	95.0	76 - 124	4659	1.97	20	
1,2-Dibromo-3-chloropropane	5972	100	5000	0	119	62 - 128	5855	1.97	20	
1,2-Dibromoethane	4958	100	5000	0	99.2	77 - 121	4965	0.132	20	
1,2-Dichlorobenzene	4990	100	5000	0	99.8	80 - 119	5001	0.221	20	
1,2-Dichloroethane	4623	100	5000	0	92.5	73 - 128	4589	0.736	20	
1,2-Dichloropropane	4556	100	5000	0	91.1	78 - 122	4592	0.789	20	
1,3,5-Trimethylbenzene	4662	100	5000	0	93.2	75 - 124	4575	1.87	20	
1,3-Dichlorobenzene	4747	100	5000	0	94.9	80 - 119	4712	0.744	20	
1,3-Dichloropropane	5248	100	5000	0	105	80 - 119	5252	0.0741	20	
1,4-Dichlorobenzene	4811	100	5000	0	96.2	79 - 118	4781	0.611	20	
2,2-Dichloropropane	4286	100	5000	0	85.7	60 - 139	4180	2.52	20	
2-Butanone	11150	200	10000	0	112	56 - 143	11180	0.25	20	
2-Chlorotoluene	4676	100	5000	0	93.5	79 - 122	4657	0.407	20	
2-Hexanone	11090	200	10000	0	111	57 - 139	11350	2.26	20	
4-Chlorotoluene	4727	100	5000	0	94.5	78 - 122	4725	0.0358	20	
4-Isopropyltoluene	4223	100	5000	0	84.5	77 - 127	4128	2.26	20	
4-Methyl-2-pentanone	10580	200	10000	0	106	67 - 130	10660	0.81	20	
Acetone	10650	200	10000	0	106	39 - 160	10610	0.334	20	
Benzene	4363	100	5000	0	87.3	79 - 120	4270	2.14	20	
Bromobenzene	4895	100	5000	0	97.9	80 - 120	4928	0.667	20	
Bromochloromethane	4541	100	5000	0	90.8	78 - 123	4543	0.0586	20	
Bromodichloromethane	4476	100	5000	0	89.5	79 - 125	4504	0.607	20	
Bromoform	5393	100	5000	0	108	66 - 130	5397	0.0785	20	
Bromomethane	4482	100	5000	0	89.6	53 - 141	3758	17.6	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061493-18MSD** Units: **ug/L** Analysis Date: **03-Jul-2018 21:01**
Client ID: **ICT14C_062818** Run ID: **VOA6_319138** SeqNo: **4635638** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	8023	200	10000	0	80.2	64 - 133	7842	2.28	20	
Carbon tetrachloride	4068	100	5000	0	81.4	72 - 136	3942	3.15	20	
Chlorobenzene	4583	100	5000	0	91.7	82 - 118	4513	1.55	20	
Chloroethane	5046	100	5000	0	101	60 - 138	4887	3.19	20	
Chloroform	4382	100	5000	0	87.6	79 - 124	4348	0.764	20	
Chloromethane	4489	100	5000	0	89.8	50 - 139	4496	0.15	20	
cis-1,2-Dichloroethene	6404	100	5000	2534	77.4	78 - 123	6419	0.23	20	S
cis-1,3-Dichloropropene	4632	100	5000	0	92.6	75 - 124	4587	0.977	20	
Dibromochloromethane	5163	100	5000	0	103	74 - 126	5090	1.42	20	
Dibromomethane	5088	100	5000	0	102	79 - 123	5115	0.512	20	
Dichlorodifluoromethane	3450	100	5000	0	69.0	32 - 152	3452	0.0628	20	
Ethylbenzene	4526	100	5000	0	90.5	79 - 121	4433	2.08	20	
Hexachlorobutadiene	3879	100	5000	0	77.6	66 - 134	3629	6.66	20	
Isopropylbenzene	4323	100	5000	0	86.5	72 - 131	4217	2.48	20	
m,p-Xylene	8830	200	10000	0	88.3	80 - 121	8630	2.29	20	
Methylene chloride	10230	200	5000	6976	65.1	74 - 124	10250	0.199	20	S
Naphthalene	5724	100	5000	0	114	61 - 128	5225	9.11	20	
n-Butylbenzene	4427	100	5000	0	88.5	75 - 128	4343	1.92	20	
n-Propylbenzene	4290	100	5000	0	85.8	76 - 126	4202	2.07	20	
o-Xylene	4502	100	5000	0	90.0	78 - 122	4458	0.982	20	
sec-Butylbenzene	4519	100	5000	0	90.4	77 - 126	4390	2.88	20	
Styrene	4624	100	5000	0	92.5	78 - 123	4509	2.53	20	
tert-Butylbenzene	4586	100	5000	0	91.7	78 - 124	4518	1.48	20	
Tetrachloroethene	4279	100	5000	0	85.6	74 - 129	4180	2.35	20	
Toluene	4492	100	5000	0	89.8	80 - 121	4403	2	20	
trans-1,2-Dichloroethene	4281	100	5000	0	85.6	75 - 124	4203	1.86	20	
trans-1,3-Dichloropropene	4724	100	5000	0	94.5	73 - 127	4741	0.342	20	
Trichloroethene	6027	100	5000	2313	74.3	79 - 123	6188	2.63	20	S
Trichlorofluoromethane	4377	100	5000	0	87.5	65 - 141	4256	2.8	20	
Vinyl chloride	4426	100	5000	233.3	83.9	58 - 137	4376	1.15	20	
Surr: 1,2-Dichloroethane-d4	*4535*	*100*	*5000*	*0*	*90.7*	*81 - 118*	*4462*	*1.63*	*20*	
Surr: 4-Bromofluorobenzene	*5010*	*100*	*5000*	*0*	*100*	*85 - 114*	*4979*	*0.62*	*20*	
Surr: Dibromofluoromethane	*4597*	*100*	*5000*	*0*	*91.9*	*80 - 119*	*4548*	*1.07*	*20*	
Surr: Toluene-d8	*5004*	*100*	*5000*	*0*	*100*	*89 - 112*	*4979*	*0.51*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319138 **Instrument: VOA6** **Method: SW8260**

The following samples were analyzed in this batch:

HS18061493-01	HS18061493-04	HS18061493-05	HS18061493-12
HS18061493-13	HS18061493-14	HS18061493-15	HS18061493-16
HS18061493-18	HS18061493-20		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: **R319171** **Instrument:** **VOA6** **Method:** **SW8260**

MBLK Sample ID: **VBLKW-180704** Units: **ug/L** Analysis Date: **04-Jul-2018 11:02**
Client ID: Run ID: **VOA6_319171** SeqNo: **4636545** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180704** Units: **ug/L** Analysis Date: **04-Jul-2018 11:02**
Client ID: Run ID: **VOA6_319171** SeqNo: **4636545** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.84*	*1.0*	*50*	*0*	*89.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.73*	*1.0*	*50*	*0*	*99.5*	*85 - 114*				
Surr: Dibromofluoromethane	*45.33*	*1.0*	*50*	*0*	*90.7*	*80 - 119*				
Surr: Toluene-d8	*49.79*	*1.0*	*50*	*0*	*99.6*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180704** Units: **ug/L** Analysis Date: **04-Jul-2018 09:48**
Client ID: Run ID: **VOA6_319171** SeqNo: **4636544** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.54	1.0	50	0	95.1	78 - 124				
1,1,1-Trichloroethane	48.43	1.0	50	0	96.9	74 - 131				
1,1,2,2-Tetrachloroethane	55.55	1.0	50	0	111	71 - 121				
1,1,2-Trichloroethane	49.27	1.0	50	0	98.5	80 - 119				
1,1-Dichloroethane	50.82	1.0	50	0	102	77 - 125				
1,1-Dichloroethene	47.82	1.0	50	0	95.6	71 - 131				
1,1-Dichloropropene	46.93	1.0	50	0	93.9	78 - 125				
1,2,3-Trichlorobenzene	52.98	1.0	50	0	106	69 - 129				
1,2,3-Trichloropropane	51.35	1.0	50	0	103	73 - 122				
1,2,4-Trichlorobenzene	51.37	1.0	50	0	103	69 - 130				
1,2,4-Trimethylbenzene	50.9	1.0	50	0	102	76 - 124				
1,2-Dibromo-3-chloropropane	56.62	1.0	50	0	113	62 - 128				
1,2-Dibromoethane	50.11	1.0	50	0	100	77 - 121				
1,2-Dichlorobenzene	52.71	1.0	50	0	105	80 - 119				
1,2-Dichloroethane	47.88	1.0	50	0	95.8	73 - 128				
1,2-Dichloropropane	48.91	1.0	50	0	97.8	78 - 122				
1,3,5-Trimethylbenzene	50.46	1.0	50	0	101	75 - 124				
1,3-Dichlorobenzene	51.29	1.0	50	0	103	80 - 119				
1,3-Dichloropropane	53.69	1.0	50	0	107	80 - 119				
1,4-Dichlorobenzene	51.56	1.0	50	0	103	79 - 118				
2,2-Dichloropropane	52.21	1.0	50	0	104	60 - 139				
2-Butanone	106.1	2.0	100	0	106	56 - 143				
2-Chlorotoluene	51.15	1.0	50	0	102	79 - 122				
2-Hexanone	104.5	2.0	100	0	104	57 - 139				
4-Chlorotoluene	51.75	1.0	50	0	104	78 - 122				
4-Isopropyltoluene	46.55	1.0	50	0	93.1	77 - 127				
4-Methyl-2-pentanone	101.6	2.0	100	0	102	67 - 130				
Acetone	102.8	2.0	100	0	103	39 - 160				
Benzene	46.86	1.0	50	0	93.7	79 - 120				
Bromobenzene	52.63	1.0	50	0	105	80 - 120				
Bromochloromethane	47.19	1.0	50	0	94.4	78 - 123				
Bromodichloromethane	47.52	1.0	50	0	95.0	79 - 125				
Bromoform	53.43	1.0	50	0	107	66 - 130				
Bromomethane	50.87	1.0	50	0	102	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180704** Units: **ug/L** Analysis Date: **04-Jul-2018 09:48**
Client ID: Run ID: **VOA6_319171** SeqNo: **4636544** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	90.45	2.0	100	0	90.4	64 - 133				
Carbon tetrachloride	45.27	1.0	50	0	90.5	72 - 136				
Chlorobenzene	47.87	1.0	50	0	95.7	82 - 118				
Chloroethane	56.51	1.0	50	0	113	60 - 138				
Chloroform	46.69	1.0	50	0	93.4	79 - 124				
Chloromethane	51.55	1.0	50	0	103	50 - 139				
cis-1,2-Dichloroethene	47.58	1.0	50	0	95.2	78 - 123				
cis-1,3-Dichloropropene	49.89	1.0	50	0	99.8	75 - 124				
Dibromochloromethane	53.3	1.0	50	0	107	74 - 126				
Dibromomethane	51.38	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	40.47	1.0	50	0	80.9	32 - 152				
Ethylbenzene	48.41	1.0	50	0	96.8	79 - 121				
Hexachlorobutadiene	52.82	1.0	50	0	106	66 - 134				
Isopropylbenzene	46.36	1.0	50	0	92.7	72 - 131				
m,p-Xylene	93.9	2.0	100	0	93.9	80 - 121				
Methylene chloride	50.73	2.0	50	0	101	74 - 124				
Naphthalene	58.51	1.0	50	0	117	61 - 128				
n-Butylbenzene	51.05	1.0	50	0	102	75 - 128				
n-Propylbenzene	46.61	1.0	50	0	93.2	76 - 126				
o-Xylene	47.89	1.0	50	0	95.8	78 - 122				
sec-Butylbenzene	49.32	1.0	50	0	98.6	77 - 126				
Styrene	48.83	1.0	50	0	97.7	78 - 123				
tert-Butylbenzene	49.57	1.0	50	0	99.1	78 - 124				
Tetrachloroethene	46.99	1.0	50	0	94.0	74 - 129				
Toluene	48.28	1.0	50	0	96.6	80 - 121				
trans-1,2-Dichloroethene	46.9	1.0	50	0	93.8	75 - 124				
trans-1,3-Dichloropropene	50.68	1.0	50	0	101	73 - 127				
Trichloroethene	47.09	1.0	50	0	94.2	79 - 123				
Trichlorofluoromethane	50.16	1.0	50	0	100	65 - 141				
Vinyl chloride	48.73	1.0	50	0	97.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.44*	*1.0*	*50*	*0*	*88.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.47*	*1.0*	*50*	*0*	*98.9*	*85 - 114*				
Surr: Dibromofluoromethane	*44.98*	*1.0*	*50*	*0*	*90.0*	*80 - 119*				
Surr: Toluene-d8	*49.69*	*1.0*	*50*	*0*	*99.4*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS18061493-05MS** Units: **ug/L** Analysis Date: **04-Jul-2018 13:54**
Client ID: **ICT8_062818_a** Run ID: **VOA6_319171** SeqNo: **4636551** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	23190	500	25000	0	92.8	78 - 124				
1,1,1-Trichloroethane	23300	500	25000	0	93.2	74 - 131				
1,1,2,2-Tetrachloroethane	26100	500	25000	0	104	71 - 121				
1,1,2-Trichloroethane	24010	500	25000	0	96.1	80 - 119				
1,1-Dichloroethane	23930	500	25000	0	95.7	77 - 125				
1,1-Dichloroethene	22580	500	25000	0	90.3	71 - 131				
1,1-Dichloropropene	22710	500	25000	0	90.8	78 - 125				
1,2,3-Trichlorobenzene	21960	500	25000	0	87.8	69 - 129				
1,2,3-Trichloropropane	24200	500	25000	0	96.8	73 - 122				
1,2,4-Trichlorobenzene	22550	500	25000	0	90.2	69 - 130				
1,2,4-Trimethylbenzene	24220	500	25000	0	96.9	76 - 124				
1,2-Dibromo-3-chloropropane	25500	500	25000	0	102	62 - 128				
1,2-Dibromoethane	24340	500	25000	0	97.4	77 - 121				
1,2-Dichlorobenzene	24910	500	25000	0	99.6	80 - 119				
1,2-Dichloroethane	23220	500	25000	0	92.9	73 - 128				
1,2-Dichloropropane	23290	500	25000	0	93.2	78 - 122				
1,3,5-Trimethylbenzene	24110	500	25000	0	96.4	75 - 124				
1,3-Dichlorobenzene	24250	500	25000	0	97.0	80 - 119				
1,3-Dichloropropane	26200	500	25000	0	105	80 - 119				
1,4-Dichlorobenzene	24330	500	25000	0	97.3	79 - 118				
2,2-Dichloropropane	24070	500	25000	0	96.3	60 - 139				
2-Butanone	47890	1000	50000	0	95.8	56 - 143				
2-Chlorotoluene	23950	500	25000	0	95.8	79 - 122				
2-Hexanone	48950	1000	50000	0	97.9	57 - 139				
4-Chlorotoluene	24120	500	25000	0	96.5	78 - 122				
4-Isopropyltoluene	21840	500	25000	0	87.3	77 - 127				
4-Methyl-2-pentanone	47970	1000	50000	0	95.9	67 - 130				
Acetone	46460	1000	50000	0	92.9	39 - 160				
Benzene	22610	500	25000	0	90.4	79 - 120				
Bromobenzene	25020	500	25000	0	100	80 - 120				
Bromochloromethane	23890	500	25000	0	95.5	78 - 123				
Bromodichloromethane	22830	500	25000	0	91.3	79 - 125				
Bromoform	26040	500	25000	0	104	66 - 130				
Bromomethane	21120	500	25000	0	84.5	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS18061493-05MS** Units: **ug/L** Analysis Date: **04-Jul-2018 13:54**
Client ID: **ICT8_062818_a** Run ID: **VOA6_319171** SeqNo: **4636551** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	42300	1000	50000	0	84.6	64 - 133				
Carbon tetrachloride	22140	500	25000	0	88.5	72 - 136				
Chlorobenzene	23130	500	25000	0	92.5	82 - 118				
Chloroethane	26250	500	25000	0	105	60 - 138				
Chloroform	22260	500	25000	0	89.0	79 - 124				
Chloromethane	24470	500	25000	0	97.9	50 - 139				
cis-1,2-Dichloroethene	34500	500	25000	11280	92.9	78 - 123				
cis-1,3-Dichloropropene	23830	500	25000	0	95.3	75 - 124				
Dibromochloromethane	25800	500	25000	0	103	74 - 126				
Dibromomethane	25450	500	25000	0	102	79 - 123				
Dichlorodifluoromethane	19100	500	25000	0	76.4	32 - 152				
Ethylbenzene	23400	500	25000	0	93.6	79 - 121				
Hexachlorobutadiene	20270	500	25000	0	81.1	66 - 134				
Isopropylbenzene	22630	500	25000	0	90.5	72 - 131				
m,p-Xylene	45750	1000	50000	0	91.5	80 - 121				
Methylene chloride	83160	1000	25000	55610	110	74 - 124				
Naphthalene	23510	500	25000	0	94.0	61 - 128				
n-Butylbenzene	23420	500	25000	0	93.7	75 - 128				
n-Propylbenzene	22180	500	25000	0	88.7	76 - 126				
o-Xylene	23000	500	25000	0	92.0	78 - 122				
sec-Butylbenzene	23610	500	25000	0	94.5	77 - 126				
Styrene	23380	500	25000	0	93.5	78 - 123				
tert-Butylbenzene	23900	500	25000	0	95.6	78 - 124				
Tetrachloroethene	23090	500	25000	345.5	91.0	74 - 129				
Toluene	23290	500	25000	0	93.2	80 - 121				
trans-1,2-Dichloroethene	22380	500	25000	0	89.5	75 - 124				
trans-1,3-Dichloropropene	24330	500	25000	0	97.3	73 - 127				
Trichloroethene	34260	500	25000	11960	89.2	79 - 123				
Trichlorofluoromethane	23900	500	25000	0	95.6	65 - 141				
Vinyl chloride	23050	500	25000	0	92.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*21680*	*500*	*25000*	*0*	*86.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*24970*	*500*	*25000*	*0*	*99.9*	*85 - 114*				
Surr: Dibromofluoromethane	*22550*	*500*	*25000*	*0*	*90.2*	*80 - 119*				
Surr: Toluene-d8	*24780*	*500*	*25000*	*0*	*99.1*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061493-05MSD** Units: **ug/L** Analysis Date: **04-Jul-2018 14:19**
Client ID: **ICT8_062818_a** Run ID: **VOA6_319171** SeqNo: **4636552** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	23330	500	25000	0	93.3	78 - 124	23190	0.585	20	
1,1,1-Trichloroethane	21890	500	25000	0	87.5	74 - 131	23300	6.27	20	
1,1,2,2-Tetrachloroethane	27640	500	25000	0	111	71 - 121	26100	5.74	20	
1,1,2-Trichloroethane	24300	500	25000	0	97.2	80 - 119	24010	1.18	20	
1,1-Dichloroethane	23940	500	25000	0	95.7	77 - 125	23930	0.0327	20	
1,1-Dichloroethene	20980	500	25000	0	83.9	71 - 131	22580	7.32	20	
1,1-Dichloropropene	20830	500	25000	0	83.3	78 - 125	22710	8.66	20	
1,2,3-Trichlorobenzene	23960	500	25000	0	95.8	69 - 129	21960	8.7	20	
1,2,3-Trichloropropane	25320	500	25000	0	101	73 - 122	24200	4.49	20	
1,2,4-Trichlorobenzene	23910	500	25000	0	95.7	69 - 130	22550	5.88	20	
1,2,4-Trimethylbenzene	23800	500	25000	0	95.2	76 - 124	24220	1.75	20	
1,2-Dibromo-3-chloropropane	27940	500	25000	0	112	62 - 128	25500	9.12	20	
1,2-Dibromoethane	24880	500	25000	0	99.5	77 - 121	24340	2.19	20	
1,2-Dichlorobenzene	25980	500	25000	0	104	80 - 119	24910	4.22	20	
1,2-Dichloroethane	23760	500	25000	0	95.0	73 - 128	23220	2.29	20	
1,2-Dichloropropane	23690	500	25000	0	94.7	78 - 122	23290	1.69	20	
1,3,5-Trimethylbenzene	23520	500	25000	0	94.1	75 - 124	24110	2.49	20	
1,3-Dichlorobenzene	24660	500	25000	0	98.7	80 - 119	24250	1.68	20	
1,3-Dichloropropane	26600	500	25000	0	106	80 - 119	26200	1.52	20	
1,4-Dichlorobenzene	24920	500	25000	0	99.7	79 - 118	24330	2.42	20	
2,2-Dichloropropane	22810	500	25000	0	91.2	60 - 139	24070	5.4	20	
2-Butanone	50510	1000	50000	0	101	56 - 143	47890	5.31	20	
2-Chlorotoluene	24080	500	25000	0	96.3	79 - 122	23950	0.574	20	
2-Hexanone	50650	1000	50000	0	101	57 - 139	48950	3.42	20	
4-Chlorotoluene	24360	500	25000	0	97.4	78 - 122	24120	0.992	20	
4-Isopropyltoluene	20680	500	25000	0	82.7	77 - 127	21840	5.43	20	
4-Methyl-2-pentanone	48740	1000	50000	0	97.5	67 - 130	47970	1.6	20	
Acetone	49050	1000	50000	0	98.1	39 - 160	46460	5.44	20	
Benzene	22340	500	25000	0	89.4	79 - 120	22610	1.2	20	
Bromobenzene	25970	500	25000	0	104	80 - 120	25020	3.71	20	
Bromochloromethane	24490	500	25000	0	98.0	78 - 123	23890	2.51	20	
Bromodichloromethane	23430	500	25000	0	93.7	79 - 125	22830	2.58	20	
Bromoform	26860	500	25000	0	107	66 - 130	26040	3.09	20	
Bromomethane	23570	500	25000	0	94.3	53 - 141	21120	11	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS18061493-05MSD** Units: **ug/L** Analysis Date: **04-Jul-2018 14:19**
Client ID: **ICT8_062818_a** Run ID: **VOA6_319171** SeqNo: **4636552** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	40410	1000	50000	0	80.8	64 - 133	42300	4.57	20	
Carbon tetrachloride	19840	500	25000	0	79.3	72 - 136	22140	11	20	
Chlorobenzene	23360	500	25000	0	93.4	82 - 118	23130	0.98	20	
Chloroethane	25760	500	25000	0	103	60 - 138	26250	1.9	20	
Chloroform	22540	500	25000	0	90.2	79 - 124	22260	1.27	20	
Chloromethane	24660	500	25000	0	98.6	50 - 139	24470	0.758	20	
cis-1,2-Dichloroethene	34670	500	25000	11280	93.6	78 - 123	34500	0.5	20	
cis-1,3-Dichloropropene	24120	500	25000	0	96.5	75 - 124	23830	1.19	20	
Dibromochloromethane	26100	500	25000	0	104	74 - 126	25800	1.18	20	
Dibromomethane	25770	500	25000	0	103	79 - 123	25450	1.27	20	
Dichlorodifluoromethane	16300	500	25000	0	65.2	32 - 152	19100	15.8	20	
Ethylbenzene	22770	500	25000	0	91.1	79 - 121	23400	2.73	20	
Hexachlorobutadiene	18750	500	25000	0	75.0	66 - 134	20270	7.79	20	
Isopropylbenzene	21090	500	25000	0	84.4	72 - 131	22630	7.02	20	
m,p-Xylene	44160	1000	50000	0	88.3	80 - 121	45750	3.52	20	
Methylene chloride	83740	1000	25000	55610	112	74 - 124	83160	0.686	20	
Naphthalene	27470	500	25000	0	110	61 - 128	23510	15.6	20	
n-Butylbenzene	22010	500	25000	0	88.1	75 - 128	23420	6.2	20	
n-Propylbenzene	21380	500	25000	0	85.5	76 - 126	22180	3.65	20	
o-Xylene	22800	500	25000	0	91.2	78 - 122	23000	0.897	20	
sec-Butylbenzene	21820	500	25000	0	87.3	77 - 126	23610	7.91	20	
Styrene	23430	500	25000	0	93.7	78 - 123	23380	0.213	20	
tert-Butylbenzene	22450	500	25000	0	89.8	78 - 124	23900	6.26	20	
Tetrachloroethene	21480	500	25000	345.5	84.5	74 - 129	23090	7.24	20	
Toluene	22660	500	25000	0	90.6	80 - 121	23290	2.75	20	
trans-1,2-Dichloroethene	22050	500	25000	0	88.2	75 - 124	22380	1.49	20	
trans-1,3-Dichloropropene	24680	500	25000	0	98.7	73 - 127	24330	1.44	20	
Trichloroethene	33990	500	25000	11960	88.1	79 - 123	34260	0.787	20	
Trichlorofluoromethane	20380	500	25000	0	81.5	65 - 141	23900	15.9	20	
Vinyl chloride	21120	500	25000	0	84.5	58 - 137	23050	8.77	20	
Surr: 1,2-Dichloroethane-d4	*22230*	*500*	*25000*	*0*	*88.9*	*81 - 118*	*21680*	*2.52*	*20*	
Surr: 4-Bromofluorobenzene	*24970*	*500*	*25000*	*0*	*99.9*	*85 - 114*	*24970*	*0.00273*	*20*	
Surr: Dibromofluoromethane	*22810*	*500*	*25000*	*0*	*91.2*	*80 - 119*	*22550*	*1.11*	*20*	
Surr: Toluene-d8	*24950*	*500*	*25000*	*0*	*99.8*	*89 - 112*	*24780*	*0.684*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319171 **Instrument: VOA6** **Method: SW8260**

The following samples were analyzed in this batch:

HS18061493-04	HS18061493-05	HS18061493-06	HS18061493-07
HS18061493-08	HS18061493-09	HS18061493-10	HS18061493-11
HS18061493-17	HS18061493-19		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319233 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180705** Units: **ug/L** Analysis Date: **05-Jul-2018 11:16**
Client ID: Run ID: **VOA6_319233** SeqNo: **4637886** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.45*	*1.0*	*50*	*0*	*86.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.25*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*45.07*	*1.0*	*50*	*0*	*90.1*	*80 - 119*				
Surr: Toluene-d8	*50.24*	*1.0*	*50*	*0*	*100*	*89 - 112*				

LCS Sample ID: **VLCSW-180705** Units: **ug/L** Analysis Date: **05-Jul-2018 10:01**
Client ID: Run ID: **VOA6_319233** SeqNo: **4637885** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	48.33	1.0	50	0	96.7	78 - 123				
Methylene chloride	51.77	2.0	50	0	104	74 - 124				
Trichloroethene	48.26	1.0	50	0	96.5	79 - 123				
Vinyl chloride	49.57	1.0	50	0	99.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.04*	*1.0*	*50*	*0*	*88.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.57*	*1.0*	*50*	*0*	*99.1*	*85 - 114*				
Surr: Dibromofluoromethane	*45.46*	*1.0*	*50*	*0*	*90.9*	*80 - 119*				
Surr: Toluene-d8	*48.56*	*1.0*	*50*	*0*	*97.1*	*89 - 112*				

MS Sample ID: **HS18061396-02MS** Units: **ug/L** Analysis Date: **05-Jul-2018 13:43**
Client ID: Run ID: **VOA6_319233** SeqNo: **4637888** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	44.99	1.0	50	0	90.0	78 - 123				
Methylene chloride	50.66	2.0	50	0	101	74 - 124				
Trichloroethene	42.59	1.0	50	0	85.2	79 - 123				
Vinyl chloride	42.41	1.0	50	0	84.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.58*	*1.0*	*50*	*0*	*89.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.6*	*1.0*	*50*	*0*	*99.2*	*85 - 114*				
Surr: Dibromofluoromethane	*45.37*	*1.0*	*50*	*0*	*90.7*	*80 - 119*				
Surr: Toluene-d8	*49.12*	*1.0*	*50*	*0*	*98.2*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: HS18061493

QC BATCH REPORT

Batch ID: R319233 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061396-02MSD** Units: **ug/L** Analysis Date: **05-Jul-2018 14:07**
Client ID: Run ID: **VOA6_319233** SeqNo: **4637889** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	44	1.0	50	0	88.0	78 - 123	44.99	2.24	20	
Methylene chloride	49.57	2.0	50	0	99.1	74 - 124	50.66	2.18	20	
Trichloroethene	40.88	1.0	50	0	81.8	79 - 123	42.59	4.1	20	
Vinyl chloride	39.51	1.0	50	0	79.0	58 - 137	42.41	7.09	20	
Surr: 1,2-Dichloroethane-d4	*43.98*	*1.0*	*50*	*0*	*88.0*	*81 - 118*	*44.58*	*1.34*	*20*	
Surr: 4-Bromofluorobenzene	*49.23*	*1.0*	*50*	*0*	*98.5*	*85 - 114*	*49.6*	*0.762*	*20*	
Surr: Dibromofluoromethane	*45.27*	*1.0*	*50*	*0*	*90.5*	*80 - 119*	*45.37*	*0.222*	*20*	
Surr: Toluene-d8	*48.95*	*1.0*	*50*	*0*	*97.9*	*89 - 112*	*49.12*	*0.35*	*20*	

The following samples were analyzed in this batch: HS18061493-08 HS18061493-09 HS18061493-10 HS18061493-11 HS18061493-19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24 - ICT's
WorkOrder: **HS18061493**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Group Houston, Corp Date: 16-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 16-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18061493

Date/Time Received: **29-Jun-2018 08:45**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature | 29-Jun-2018 Date

Reviewed by: *RJ Modashia* eSignature | 29-Jun-2018 Date

Matrices: **Groundwater/Water**

Carrier name: **FedEx**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	☐ Not Present
Custody seals intact on shipping container/cooler?	☐	☐	☑ Not Present
Custody seals intact on sample bottles?	☐	☐	☑ Not Present
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☐	☑	
TX1005 solids received in hermetically sealed vials?	☐	☐	☑ N/A
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	1.3c/0.8c U/c		IR11
Cooler(s)/Kit(s):	24541		
Date/Time sample(s) sent to storage:	6/29/18 13:20		
Water - VOA vials have zero headspace?	☑	☐	☐ No VOA vials submitted
Water - pH acceptable upon receipt?	☑	☐	☐ N/A
pH adjusted?	☐	☑	☐ N/A
pH adjusted by:			

Login Notes: ICT14C_062818 - 1 vial received broken

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24 - ICT's

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) | Quality Assurance Samples (4)

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Perchlorate	Total Metals	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
ICT2_062818		6/28/18	0655	-	N		WG	5	X	X	X				
ICT4_062818		6/28/18	0700	-	N		WG	5	X	X	X				
ICT7_062818		6/28/18	0705	-	N		WG	5	X	X	X				
ICT8_062818		6/28/18	0710		N		WG	5	X	X	X				
ICT8_062818_a		6/28/18	0710		FD		WG	5	X	X	X				
ICT11_062818		6/28/18	0720	-	N		WG	5	X	X	X				
ICT12B_062818		6/28/18	0725	-	N		WG	5	X	X	X				
ICT12C_062818		6/28/18	0735	-	N		WG	5	X	X	X				
ICT12D_062818		6/28/18	0740	-	N		WG	5	X	X	X				
ICT12E_062818		6/28/18	0745	-	N		WG	5	X	X	X				
ICT13A_062818		6/28/18	0750	-	N		WG	5	X	X	X				

HS18061493
Bhate Environmental Associates, Inc.
LHAAP 18 24 - ICT's

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/28/18	1300	1. [illegible]	6/28/18	08:45
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

Method of Shipment: _____

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

24541. [illegible] 1.30 #11 CIF - 0.5

Bhate Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 18/24 - ICT's

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	PERCHLORATE	TOTAL METALS							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
ICT13B_062818		6/28/18	0800	-	N		WG	5	X	X	X										
ICT13B_062818_a		6/28/18	0800	-	FD		WG	5	X	X	X										
ICT13D_062818		6/28/18	0805	-	N		WG	5	X	X	X										
ICT13E_062818		6/28/18	0810		N		WG	5	X	X	X										
ICT13F_062818		6/28/18	0820		N		WG	5	X	X	X										
ICT14B_062818		6/28/18	0825	-	N		WG	5	X	X	X										
ICT14C_062818		6/28/18	0835	-	N		WG	5	X	X	X										
ICT14C_062818_MS		6/28/18	0835	-	MS		WG	5	X	X	X										
ICT14C_062818_SD		6/28/18	0835	-	SD		WG	5	X	X	X										
ICT14D_062818		6/28/18	0850	-	N		WG	5	X	X	X										
TRIPBLANK		6/28/18		-	TB		[illegible]	2	X												

Sample Analysis Requested (5) — Quality Assurance Samples (6)

HS18061493
Bhate Environmental Associates, Inc.
LHAAP 18 24 - ICT's

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received By (signed)	Date	Time
1. Scott Beesinger	6/28/18	1300	1. Jim [illegible]	6/29/18	08:45
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONJA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, If sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 101099-01 in the Equipment Blank Lot Control

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date: 6
Name:
Company:

CUSTODY SEAL
Time: 1300
Seal Broken By:
Date:

TRK# 0221 7376 9751 2757

RETURNS MON – SAT
PRIORITY OVERNIGHT

77099

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1818104; 1818319

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2117 (218450)

General Set Information: There were twenty field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: The following samples were analyzed and reported at various dilutions. 181104001/1818319003 – 10; 1818319001/04/05/12/13/17-20 – 100; 1818319002/06-09/11 – 1,000; 1818319010 – 10,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 609109) was less than 1/2 the CRDL. The recovery for the LCS (609110) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on samples 1818319019/20 (Client ID: ICT14C_062818). The parent sample and the MS/MSD were analyzed at 1:100 dilutions. The effective spike target was 500.µg/L. The Matrix Spike and duplicate (MS/MSD – 1818319019/20) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected. The MS/MSD relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations were performed for datafiles 09JULD22/23.

Thomas Bosch July 13, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 13, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1818319**
Project ID: HS18061493 062818
Purchase Order: HS18061493
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
ICT2_062818	1818319001	06/28/18	06/30/18	
ICT4_062818	1818319002	06/28/18	06/30/18	
ICT7_062818	1818319003	06/28/18	06/30/18	
ICT8_062818	1818319004	06/28/18	06/30/18	
ICT8_062818_a	1818319005	06/28/18	06/30/18	
ICT11_062818	1818319006	06/28/18	06/30/18	
ICT12B_062818	1818319007	06/28/18	06/30/18	
ICT12C_062818	1818319008	06/28/18	06/30/18	
ICT12D_062818	1818319009	06/28/18	06/30/18	
ICT12E_062818	1818319010	06/28/18	06/30/18	
ICT13A_062818	1818319011	06/28/18	06/30/18	
ICT13B_062818	1818319012	06/28/18	06/30/18	
ICT13B_062818_a	1818319013	06/28/18	06/30/18	
ICT13D_062818	1818319014	06/28/18	06/30/18	
ICT13E_062818	1818319015	06/28/18	06/30/18	
ICT13F_062818	1818319016	06/28/18	06/30/18	
ICT14B_062818	1818319017	06/28/18	06/30/18	
ICT14C_062818	1818319018	06/28/18	06/30/18	
ICT14D_062818	1818319021	06/28/18	06/30/18	

Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
ICT14C_062818MS	1818319019	06/28/18	06/30/18	
ICT14C_062818MSD	1818319020	06/28/18	06/30/18	

***Client QC is reported as part of the Quality Control results report, if requested.**

ANALYTICAL REPORT

Workorder: 34-1818319
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **ICT2_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319001 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2117 (HBN: 218450)
Analyzed: 07/09/2018 10:09
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**6200**	100	200	400	100	

Sample ID: **ICT4_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319002 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2117 (HBN: 218450)
Analyzed: 07/09/2018 16:04
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**14000**	1000	2000	4000	1000	

Sample ID: **ICT7_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319003 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2117 (HBN: 218450)
Analyzed: 07/09/2018 10:37
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**350**	10	20	40	10	

Sample ID: **ICT8_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319004 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2117 (HBN: 218450)
Analyzed: 07/09/2018 10:52
Instrument ID: LCMS04
Percent Solid: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**1900**	100	200	400	100	

ANALYTICAL REPORT

Workorder: 34-1818319
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **ICT8_062818_a** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319005 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 11:06 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**1800**	100	200	400	100	

Sample ID: **ICT11_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319006 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 11:20 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**17000**	1000	2000	4000	1000	

Sample ID: **ICT12B_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319007 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 11:34 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**19000**	1000	2000	4000	1000	

Sample ID: **ICT12C_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319008 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 11:49 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**10000**	1000	2000	4000	1000	

ANALYTICAL REPORT

Workorder: 34-1818319
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **ICT12D_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319009 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 12:04 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**73000**	1000	2000	4000	1000	

Sample ID: **ICT12E_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319010 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 16:18 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**81000**	10000	20000	40000	10000	

Sample ID: **ICT13A_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319011 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 13:00 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**24000**	1000	2000	4000	1000	

Sample ID: **ICT13B_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319012 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 13:14 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**700**	100	200	400	100	

ANALYTICAL REPORT

Workorder: 34-1818319
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **ICT13B_062818_a** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319013 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 13:28 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**540**	100	200	400	100	

Sample ID: **ICT13D_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319014 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 13:43 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **ICT13E_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319015 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 13:57 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **ICT13F_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319016 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 14:11 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**56**	1.0	2.0	4.0	1	

ANALYTICAL REPORT

Workorder: 34-1818319
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **ICT14B_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319017 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 14:25 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**6800**	100	200	400	100	

Sample ID: **ICT14C_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319018 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 14:39 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**710**	100	200	400	100	

Sample ID: **ICT14D_062818** | Sampling Site: NA | Collected: 06/28/2018
Lab ID: 1818319021 | Media: 125 mL Nalgene | Received: 06/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2117 (HBN: 218450) | **Percent Solid:** NA
Analyzed: 07/09/2018 15:22 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	1.9	1.0	2.0	4.0	1	J

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 218450)**

The following samples were analyzed and reported at various dilutions. 181104001/1818319003 – 10; 1818319001/04/05/12/13/17-20 – 100; 1818319002/06-09/11 – 1,000; 1818319010 – 10,000. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/10/2018 14:16	/S/ Stephen Brose 07/13/2018 12:15

ANALYTICAL REPORT

Workorder: 34-1818319
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1818319
Client: ALS Environmental (Houston)
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Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1818319

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850, DoD QSM
Batch: ELMS/2117 (HBN: 218450)
Analyzed By: Thomas Bosch

Blank

LMB: 609110
Analyzed: 07/09/2018 09:24
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 609111
Analyzed: 07/09/2018 09:38
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.03	5.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1818319018
Analyzed: 07/09/2018 14:39
Dilution: 100
Units: ug/L

MS: 1818319019
Analyzed: 07/09/2018 14:53
Dilution: 100
Units: ug/L

MSD: 1818319020
Analyzed: 07/09/2018 15:08
Dilution: 100
Units: ug/L

Analyte	Result	Result	Target	% Rec		QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	710	1340	500	#	125	78.8	123.8	1320	122	1.2	0.0	20.0

Continuing Calibration Verification

CCV: 609107
Analyzed: 07/09/2018 08:41
Units: ug/L
Criteria: ± 15%

CCV: 609112
Analyzed: 07/09/2018 12:18
Units: ug/L
Criteria: ± 15%

CCV: 609114
Analyzed: 07/09/2018 15:36
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	27.4	25.0	110	27.1	25.0	108	27.3	25.0	109

CCV: 609257
Analyzed: 07/09/2018 16:32
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.
Perchlorate	27.1	25.0	108

Interference Check Sample

ICSA: 609109
Analyzed: 07/09/2018 09:10
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.09	1.00	109

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1818319

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2117 (HBN: 218450)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

LODV:	609108			**LODV:**	609113		**LODV:**	609115	
Analyzed:	07/09/2018 08:55			**Analyzed:**	07/09/2018 12:32		**Analyzed:**	07/09/2018 15:50	
Units:	ug/L			**Units:**	ug/L		**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%		**Criteria:**	± 50%	
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.03	1.00	103	1.03	1.00	103	1.06	1.00	106

LODV:	609258		
Analyzed:	07/09/2018 16:50		
Units:	ug/L		
Criteria:	± 50%		
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	0.984	1.00	98.4

Comments

The following samples were analyzed and reported at various dilutions. 181104001/1818319003 – 10; 1818319001/04/05/12/13/17-20 – 100; 1818319002/06-09/11 – 1,000; 1818319010 – 10,000. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
07/10/2018 14:16	07/13/2018 12:15

Symbols and Definitions

- ✱ - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1818319

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9370

1818319

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS18061493
TSR: Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18061493-01**	**ICT2_062818**	**Groundwater**	**28 Jun 2018 06:55**
	SUB_Perch-6850			10 Jul 2018
2.	**HS18061493-02**	**ICT4_062818**	**Groundwater**	**28 Jun 2018 07:00**
	SUB_Perch-6850			10 Jul 2018
3.	**HS18061493-03**	**ICT7_062818**	**Groundwater**	**28 Jun 2018 07:05**
	SUB_Perch-6850			10 Jul 2018
4.	**HS18061493-04**	**ICT8_062818**	**Groundwater**	**28 Jun 2018 07:10**
	SUB_Perch-6850			10 Jul 2018
5.	**HS18061493-05**	**ICT8_062818_a**	**Groundwater**	**28 Jun 2018 07:10**
	SUB_Perch-6850			10 Jul 2018
6.	**HS18061493-06**	**ICT11_062818**	**Groundwater**	**28 Jun 2018 07:20**
	SUB_Perch-6850			10 Jul 2018
7.	**HS18061493-07**	**ICT12B_062818**	**Groundwater**	**28 Jun 2018 07:25**
	SUB_Perch-6850			10 Jul 2018
8.	**HS18061493-08**	**ICT12C_062818**	**Groundwater**	**28 Jun 2018 07:35**
	SUB_Perch-6850			10 Jul 2018
9.	**HS18061493-09**	**ICT12D_062818**	**Groundwater**	**28 Jun 2018 07:40**

Subcontract Chain of Custody

COC ID: 9370

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
	SUB_Perch-6850			10 Jul 2018
10.	**HS18061493-10**	**ICT12E_062818**	**Groundwater**	**28 Jun 2018 07:45**
	SUB_Perch-6850			10 Jul 2018
11.	**HS18061493-11**	**ICT13A_062818**	**Groundwater**	**28 Jun 2018 07:50**
	SUB_Perch-6850			10 Jul 2018
12.	**HS18061493-12**	**ICT13B_062818**	**Groundwater**	**28 Jun 2018 08:00**
	SUB_Perch-6850			10 Jul 2018
13.	**HS18061493-13**	**ICT13B_062818_a**	**Groundwater**	**28 Jun 2018 08:00**
	SUB_Perch-6850			10 Jul 2018
14.	**HS18061493-14**	**ICT13D_062818**	**Groundwater**	**28 Jun 2018 08:05**
	SUB_Perch-6850			10 Jul 2018
15.	**HS18061493-15**	**ICT13E_062818**	**Groundwater**	**28 Jun 2018 08:10**
	SUB_Perch-6850			10 Jul 2018
16.	**HS18061493-16**	**ICT13F_062818**	**Groundwater**	**28 Jun 2018 08:20**
	SUB_Perch-6850			10 Jul 2018
17.	**HS18061493-17**	**ICT14B_062818**	**Groundwater**	**28 Jun 2018 08:25**
	SUB_Perch-6850			10 Jul 2018
18.	**HS18061493-18**	**ICT14C_062818**	**Groundwater**	**28 Jun 2018 08:35** MS/MSD
	SUB_Perch-6850			10 Jul 2018
19.	**HS18061493-19**	**ICT14D_062818**	**Groundwater**	**28 Jun 2018 08:50**
	SUB_Perch-6850			10 Jul 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
Please analyze MS/MSD on sample HS18061493-18C

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 6/29/18 1800

Received By: _____ Date/Time: 6/29/18 889

Cooler ID(s): _____ Temperature(s): 2°

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061493	Split:	Workorder ID: 1818319	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/28/2018 06:55	ICT2_062818	1818319001		Water	A	1	A
2	06/28/2018 07:00	ICT4_062818	1818319002		Water	A	1	A
3	06/28/2018 07:05	ICT7_062818	1818319003		Water	A	1	A
4	06/28/2018 07:10	ICT8_062818	1818319004		Water	A	1	A
5	06/28/2018 07:10	ICT8_062818_a	1818319005		Water	A	1	A
6	06/28/2018 07:20	ICT11_062818	1818319006		Water	A	1	A
7	06/28/2018 07:25	ICT12B_062818	1818319007		Water	A	1	A
8	06/28/2018 07:35	ICT12C_062818	1818319008		Water	A	1	A
9	06/28/2018 07:40	ICT12D_062818	1818319009		Water	A	1	A
10	06/28/2018 07:45	ICT12E_062818	1818319010		Water	A	1	A

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ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/30/2018 08:59	ALS Sample Receiving	Sample Login
Julie Warath	7/2/18 1130	SC	storage
R.33.1	7.6.18 / 11:17	T.Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061493	Split:	Workorder ID: 1818319	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Requested Analysis: EPA 6850, DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
11	06/28/2018 07:50	ICT13A_062818	1818319011		Water	A	1	A
12	06/28/2018 08:00	ICT13B_062818	1818319012		Water	A	1	A
13	06/28/2018 08:00	ICT13B_062818_a	1818319013		Water	A	1	A
14	06/28/2018 08:05	ICT13D_062818	1818319014		Water	A	1	A
15	06/28/2018 08:10	ICT13E_062818	1818319015		Water	A	1	A
16	06/28/2018 08:20	ICT13F_062818	1818319016		Water	A	1	A
17	06/28/2018 08:25	ICT14B_062818	1818319017		Water	A	1	A
18	06/28/2018 08:35	ICT14C_062818	1818319018		Water	A	1	A
19	06/28/2018 08:35	ICT14C_062818MS	1818319019	MS	Water	A	1	A
20	06/28/2018 08:35	ICT14C_062818MSD	1818319020	MSD	Water	A	1	A

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/30/2018 08:59	ALS Sample Receiving	Sample Login
Julie Warath	7/2/18 1130	SC	storage
R.331	7.6.18 / 11:17	T.Bussel	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061493	Split:	Workorder ID: 1818319	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
21	06/28/2018 08:50	ICT14D_062818	1818319021		Water	A	1	A
22								
23								
24								
25								
26								
27								
28								
29								
30								

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ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/30/2018 08:59	ALS Sample Receiving	Sample Login
Julie Warath	7/2/18 1130	SC	storage
R.33.1	7.6.18/ 11:17	T.Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1818319

Date/Time of Receipt: 6/30/18 1855

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 5700	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Marcel Salcedo (Signature) Meredith Edens (Printed Name) 6/30/18 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc Revised 01/01/2018

ALS

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 29JUN18
ACTWGT: 25.75 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18061493-RJ

546C2/93DF/53C1

FedEx Express

E

J171016102001uv

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 4380 9530 4888

X0 BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2117
Rule: EPA 6850, DoD QSM Water

Created: 7/9/2018 08:17
Analyst: T. Bosch

Instrument:
Status: WP

HBN: 218450

Workorder: 1818104 [ENV_LVL4]
Workorder: 1818319 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	609107	CCV for HBN 218450 [ELMS/2117]				CCV	3		E685041C3Q	5311		7/13/2018	
2	609108	LODV for HBN 218450 [ELMS/2117				LODV	3		E6850..D3Q	5311		7/13/2018	
3	609109	ICS for HBN 218450 [ELMS/2117]				ICS	3		E6850..D3Q	5311		7/13/2018	
4	609110	LMB for HBN 218450 [ELMS/2117]				LMB	3		E6850Q413Q	5311		7/13/2018	
5	609111	LCS for HBN 218450 [ELMS/2117]				LCS	3		E6850Q413Q	5311		7/13/2018	
6	1818104001	LH18/24-SP650_062718				SAMPLE	3	1818104001-A	E6850Q41.3	5480	7/25/2018	7/13/2018	
7	1818319001	ICT2_062818				SAMPLE	3	1818319001-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
8	1818319002	ICT4_062818				SAMPLE	3	1818319002-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
9	1818319003	ICT7_062818				SAMPLE	3	1818319003-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
10	1818319004	ICT8_062818				SAMPLE	3	1818319004-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
11	1818319005	ICT8_062818_a				SAMPLE	3	1818319005-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
12	1818319006	ICT11_062818				SAMPLE	3	1818319006-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
13	1818319007	ICT12B_062818				SAMPLE	3	1818319007-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
14	1818319008	ICT12C_062818				SAMPLE	3	1818319008-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
15	1818319009	ICT12D_062818				SAMPLE	3	1818319009-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
16	609112	CCV for HBN 218450 [ELMS/2117]				CCV	3		E685041C3Q	5311		7/13/2018	
17	609113	LODV for HBN 218450 [ELMS/2117				LODV	3		E6850..D3Q	5311		7/13/2018	
18	1818319010	ICT12E_062818				SAMPLE	3	1818319010-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
19	1818319011	ICT13A_062818				SAMPLE	3	1818319011-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
20	1818319012	ICT13B_062818				SAMPLE	3	1818319012-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
21	1818319013	ICT13B_062818_a				SAMPLE	3	1818319013-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
22	1818319014	ICT13D_062818				SAMPLE	3	1818319014-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
23	1818319015	ICT13E_062818				SAMPLE	3	1818319015-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
24	1818319016	ICT13F_062818				SAMPLE	3	1818319016-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
25	1818319017	ICT14B_062818				SAMPLE	3	1818319017-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
26	1818319018	ICT14C_062818				SAMPLE	3	1818319018-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
27	1818319019	ICT14C_062818MS				MS	3	1818319019-A	E6850Q413Q	5480		7/13/2018	
28	1818319020	ICT14C_062818MSD				MSD	3	1818319020-A	E6850Q413Q	5480		7/13/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
29	1818319021	ICT14D_062818				SAMPLE	3	1818319021-A	E6850Q41.3	5480	7/26/2018	7/13/2018	
30	609114	CCV for HBN 218450 [ELMS/2117]				CCV	3		E685041C3Q	5311		7/13/2018	
31	609115	LODV for HBN 218450 [ELMS/2117				LODV	3		E6850..D3Q	5311		7/13/2018	
32	609257	CCV for HBN 218450 [ELMS/2117]				CCV	3		E685041C3Q	5311		7/13/2018	
33	609258	LODV for HBN 218450 [ELMS/2117				LODV	3		E6850..D3Q	5311		7/13/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1818104 (001); 1818319 (001-21)
ELMS Batch/HBN ID: 2117 (218450)
Prep Date: 07/06/2018 Analysis Date: 07/09/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\09JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 609111; Target = 5.0µg/L. ASTM type II water was used for LMB 609110.

MS/MSD: MS/MSD was performed on samples 1818319019/20 (Client ID: ICT14C_062818). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:100 dilutions. The effective spike target was 500.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 181104001/1818319003 – 10; 1818319001/04/05/12/13/17-20 – 100; 1818319002/06-09/11 – 1,000; 1818319010 – 10,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1818319019/20) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 09JULD22/23.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218450-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	Verified By: Thomas Bosch	Usable: Yes
Pipette ID: Not Provided	Verify Date:	Lab Lot: CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L	
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025	
MFG Lot: Not Provided		Usable: Yes	
Part ID: Not Provided		Lab Lot: LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Number: ICC-013
Lot Number: CP-0860

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

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USA

AccuStandard® Inc.

Tel (203)786-5290
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www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

APPENDIX D
ISOPLETH CONTOUR MAPS

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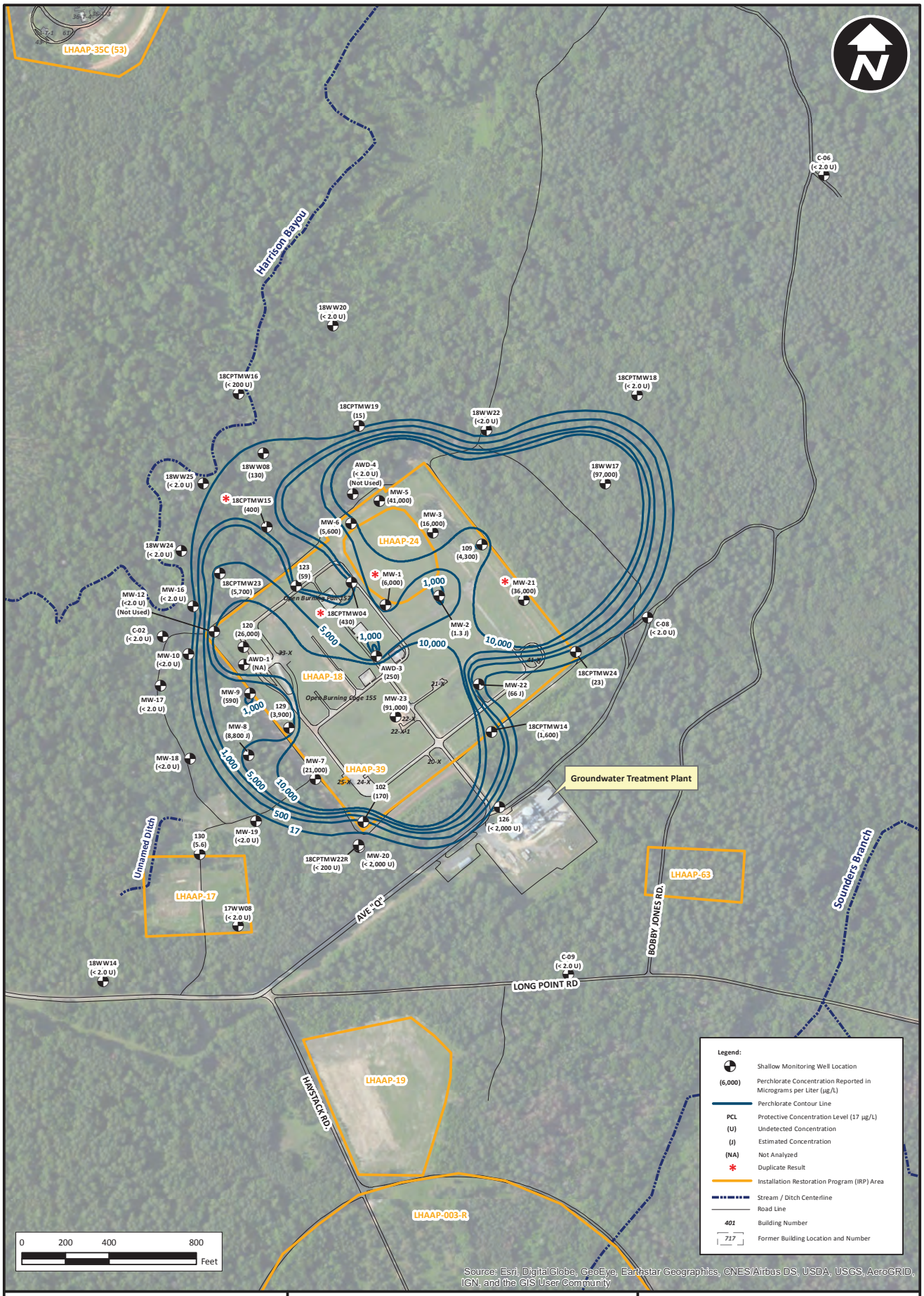


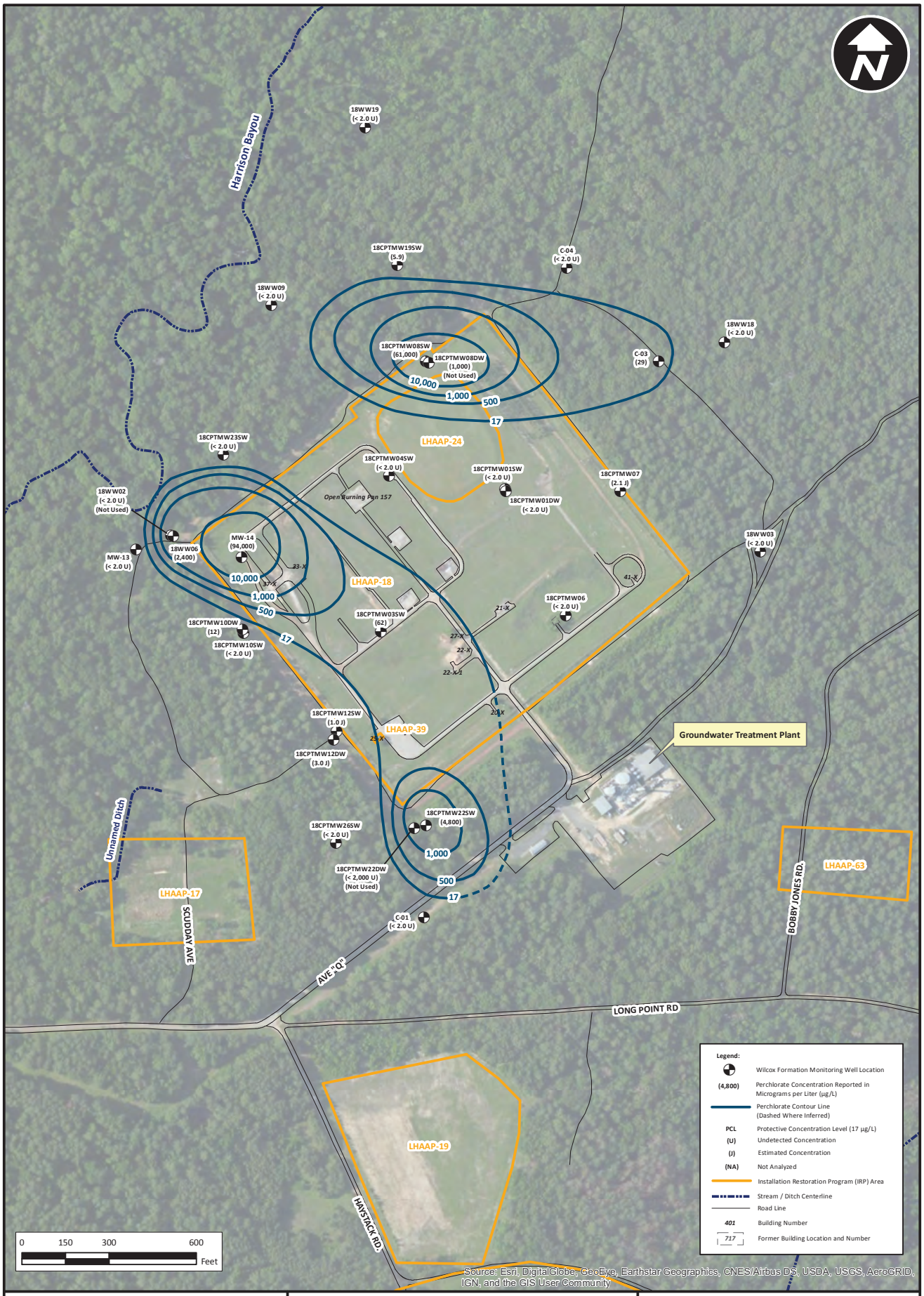
bhate

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

Perchlorate Isopleth Contours in Shallow Zone (June 2018)

Figure D-1



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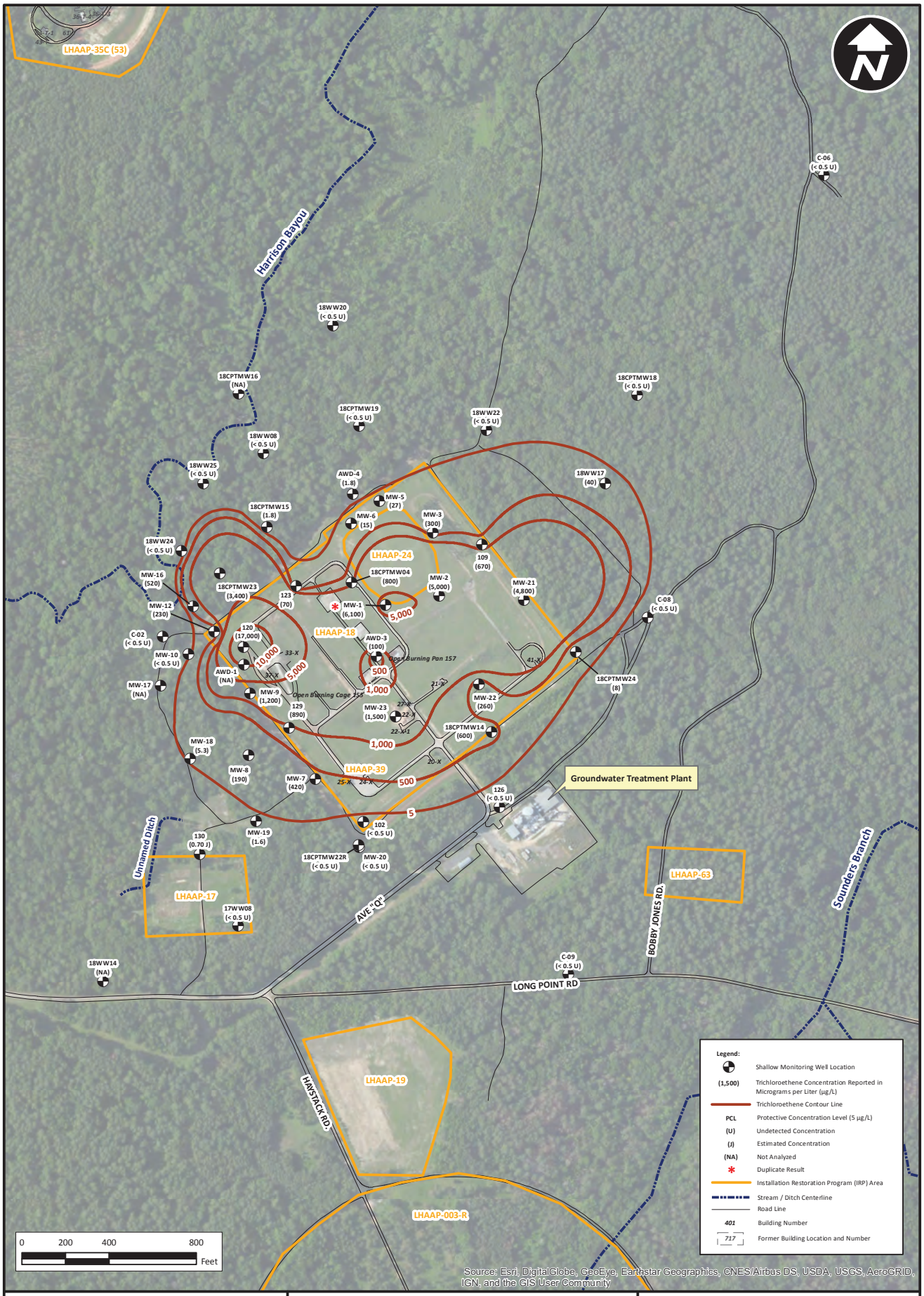
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

Perchlorate Isopleth Contours in Wilcox Formation (June 2018)

Figure D-2



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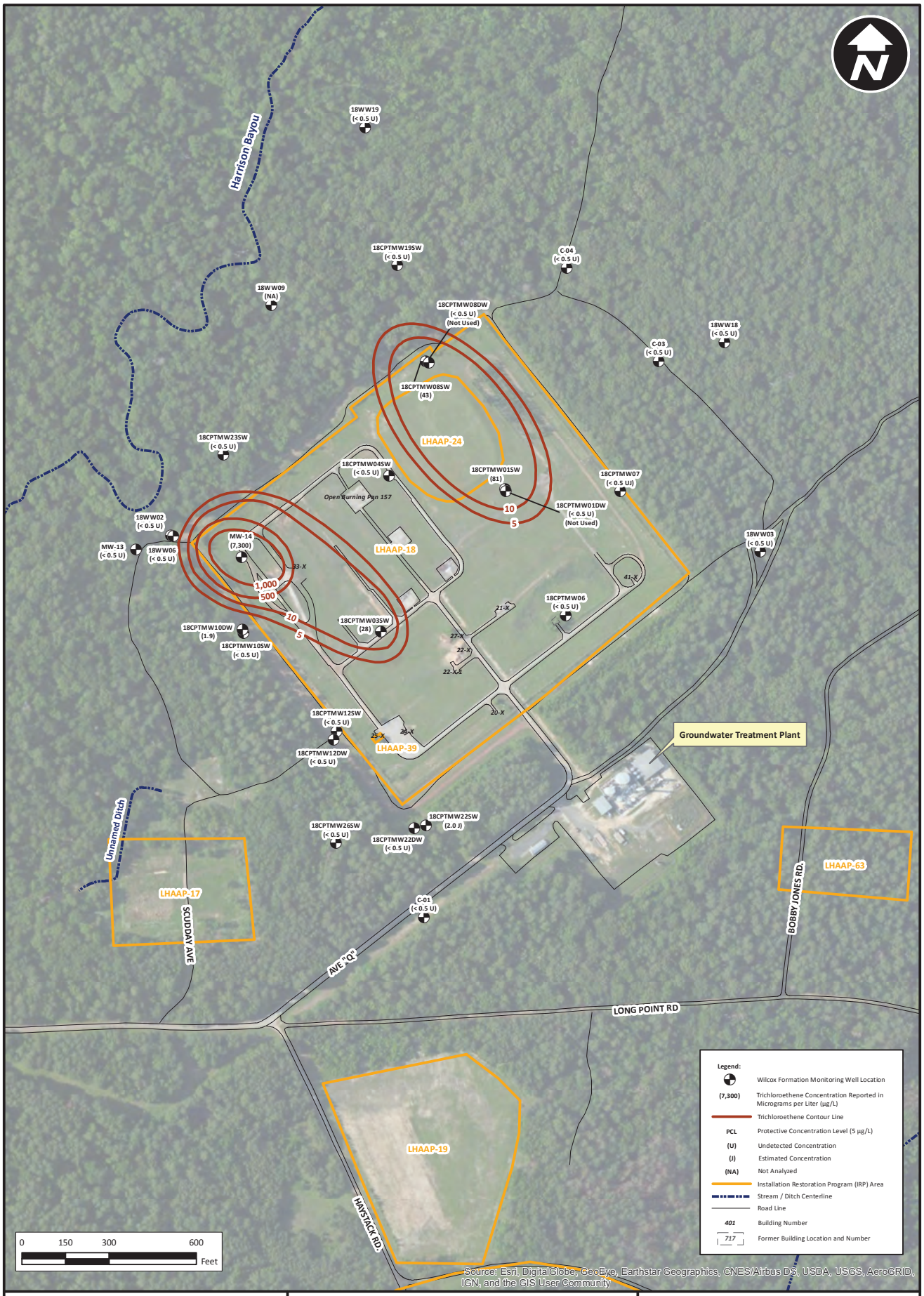
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

Trichloroethene Isopleth Contours in Shallow Zone (June 2018)

Figure D-3



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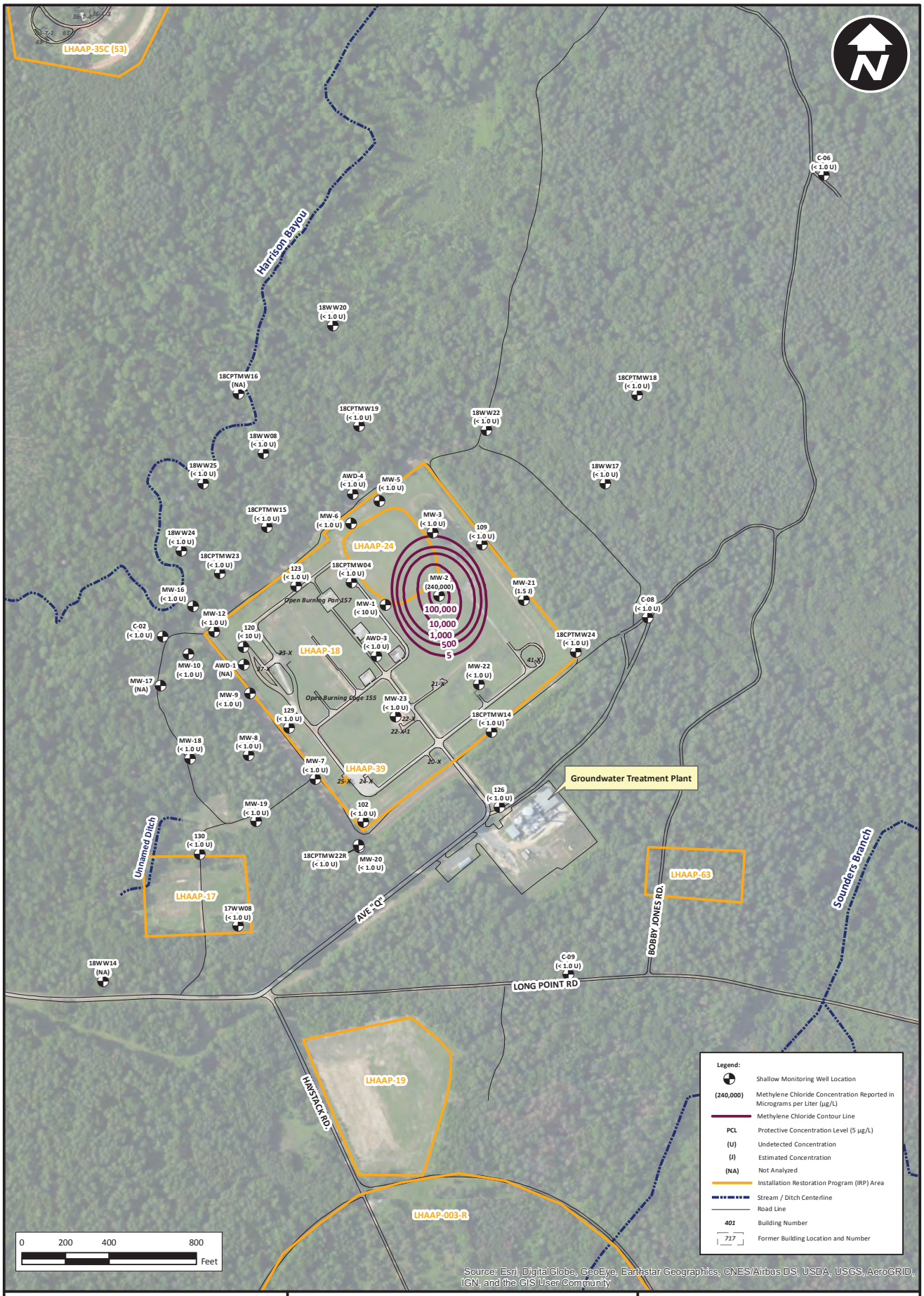
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

Trichloroethene Isopleth Contours in Wilcox Formation (June 2018)

Figure D-4



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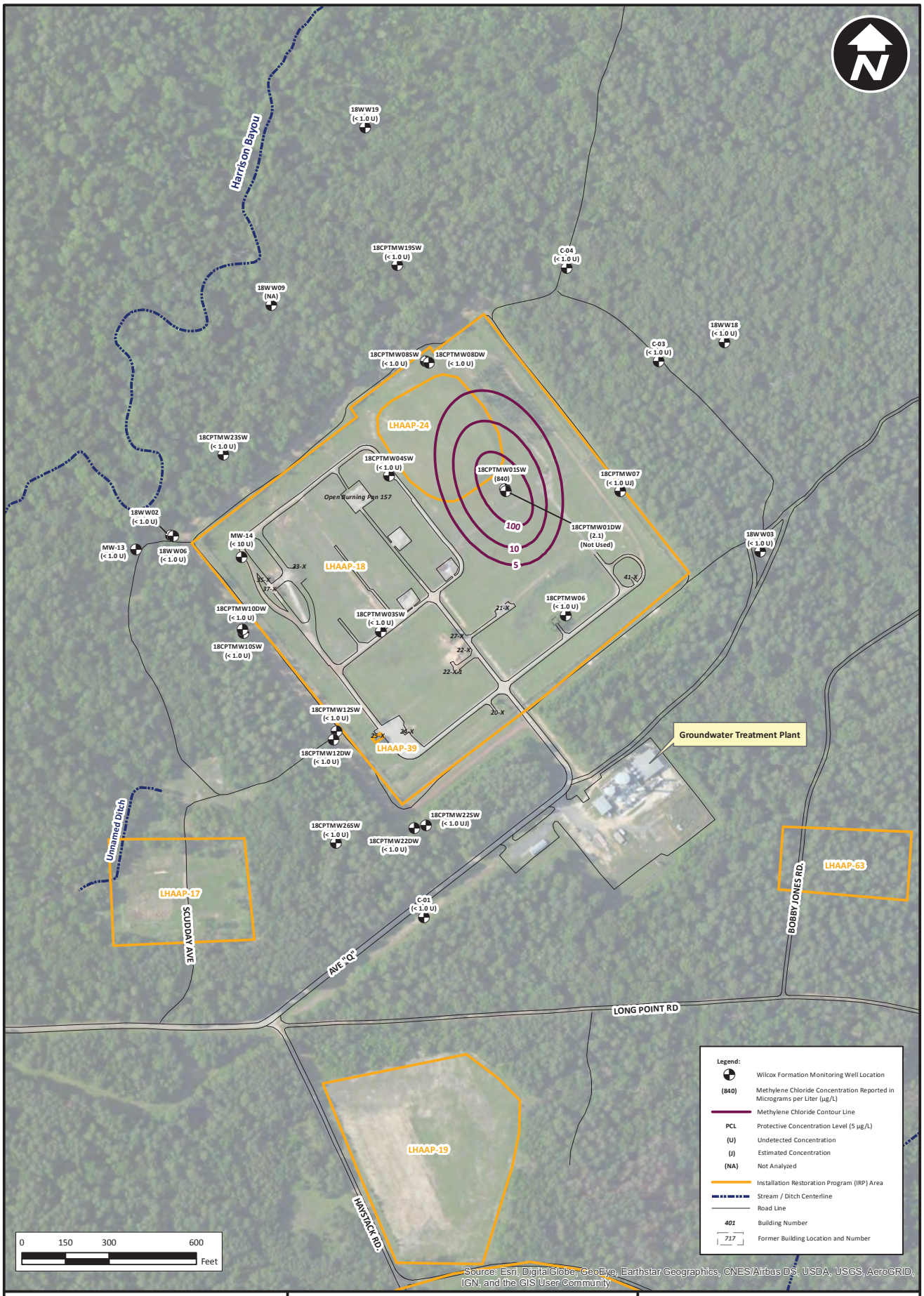
Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

Methylene Chloride Isopleth Contours in Shallow Zone (June 2018)

Figure D-5



bhate

Quarterly Evaluation Report 2nd Quarter (April – June) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	9/12/2018	MRM

Methylene Chloride Isopleth Contours in Wilcox Formation (June 2018)

Figure D-6

APPENDIX E
TREND CHARTS FOR LHAAP-18/24 MONITORING WELLS

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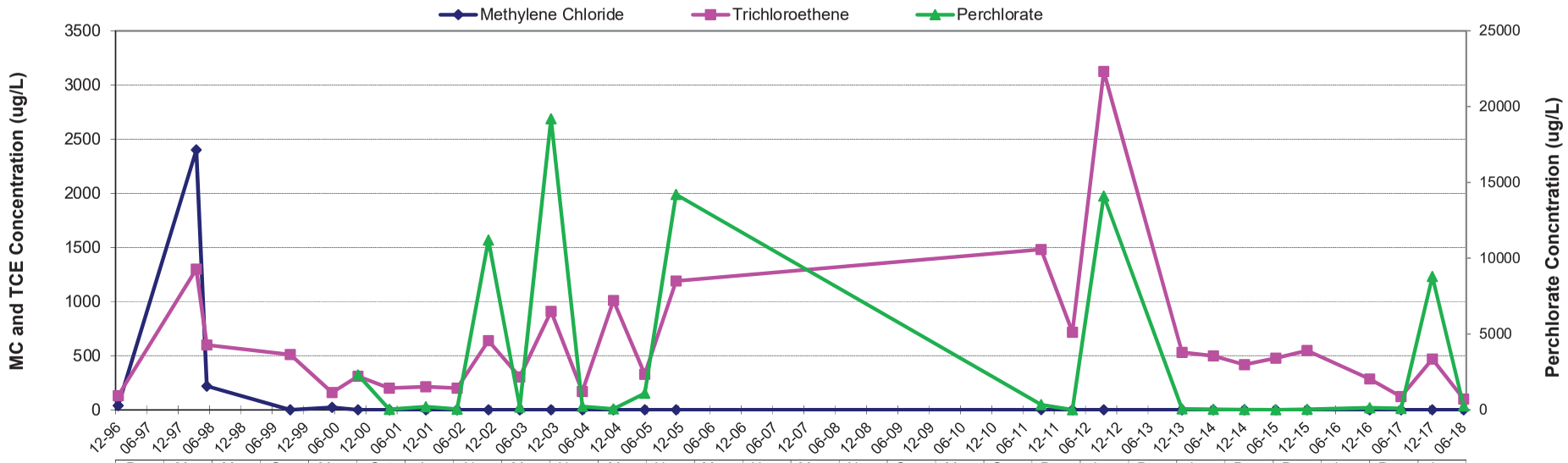
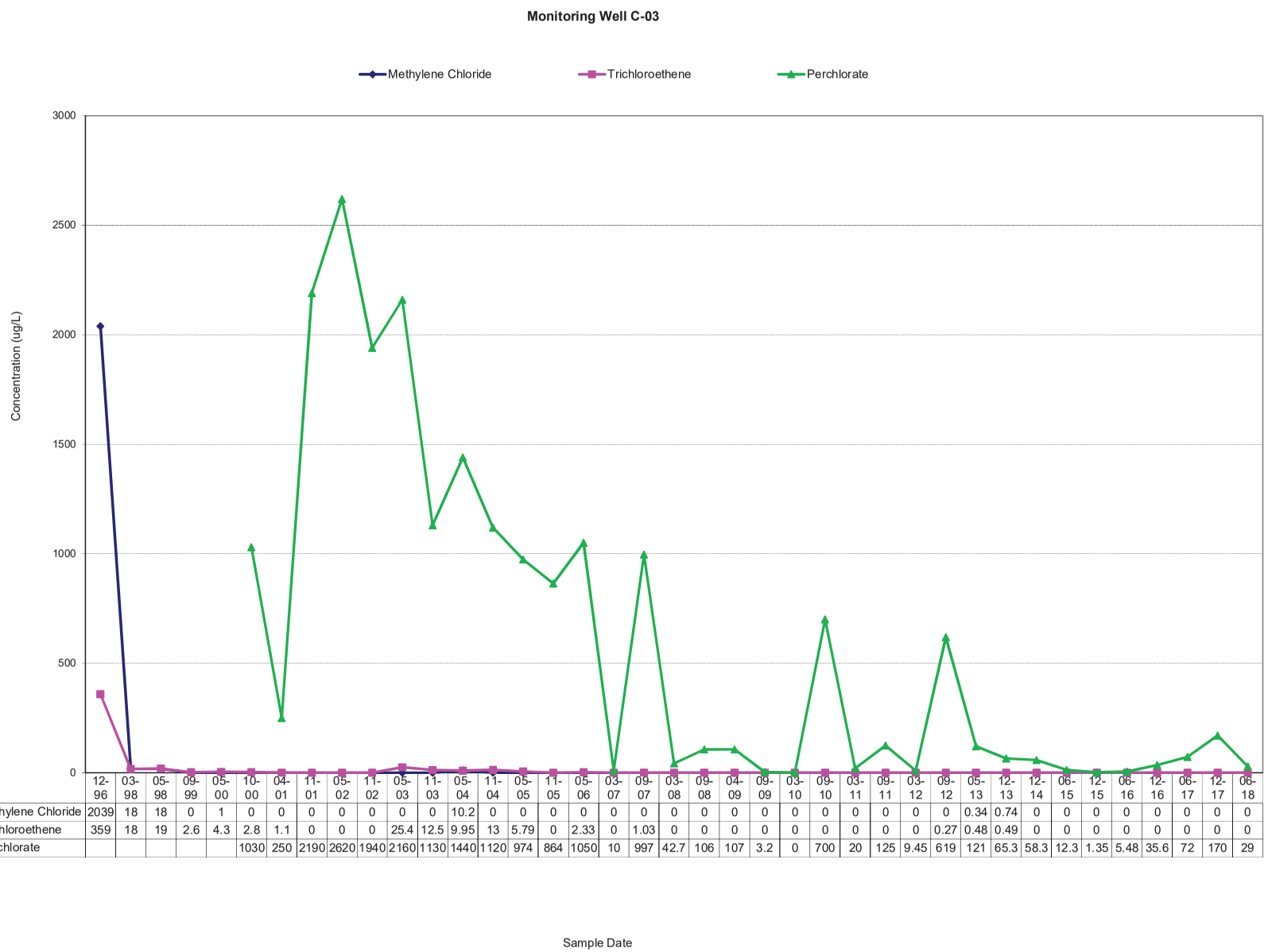
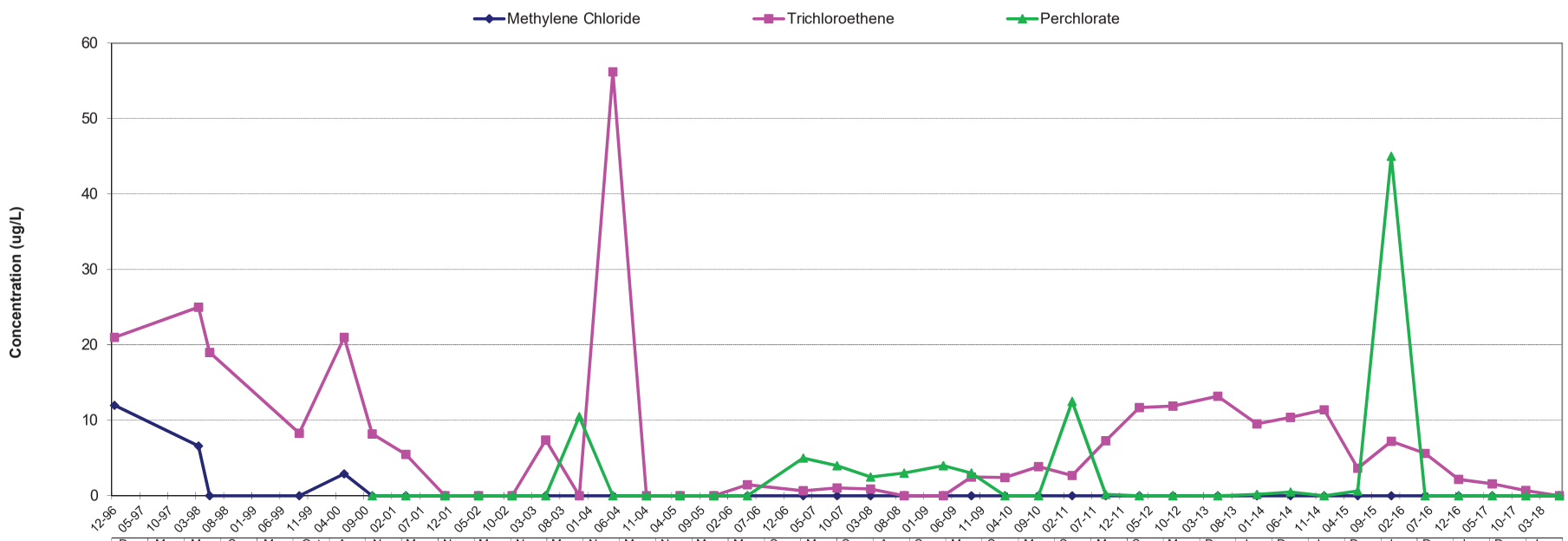


	Dec 1996	Mar 1998	May 1998	Sep 1999	May 2000	Oct 2000	Apr 2001	Nov 2001	May 2002	Nov-2002	May 2003	Nov-2003	May-2004	Nov-2004	May-2005	Nov-2005	Sep-2011	Mar-2012	Sep-2012	Dec-2013	Jun-2014	Dec-2014	Jun-2015	Dec-2015	Dec-2016	Jun-2017	Dec-2017	Jun-2018
Methylene Chloride	39	2400	220	0	23	0	0	0	0	0	0	0	0	0	0	0	2.92J	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	130	1300	600	510	160	310	200	212	200	639	303	909	170	1010	329	1190	1480	716	3125	530	499	417	477	547	285	122	470	100
Perchlorate						2300	38.3	209	52.5	11200	176	19200	225	55.6	1100	14200	342	3.88	14100	67.2	25	13.6	8.33	33.8	140	95.4	8800	250

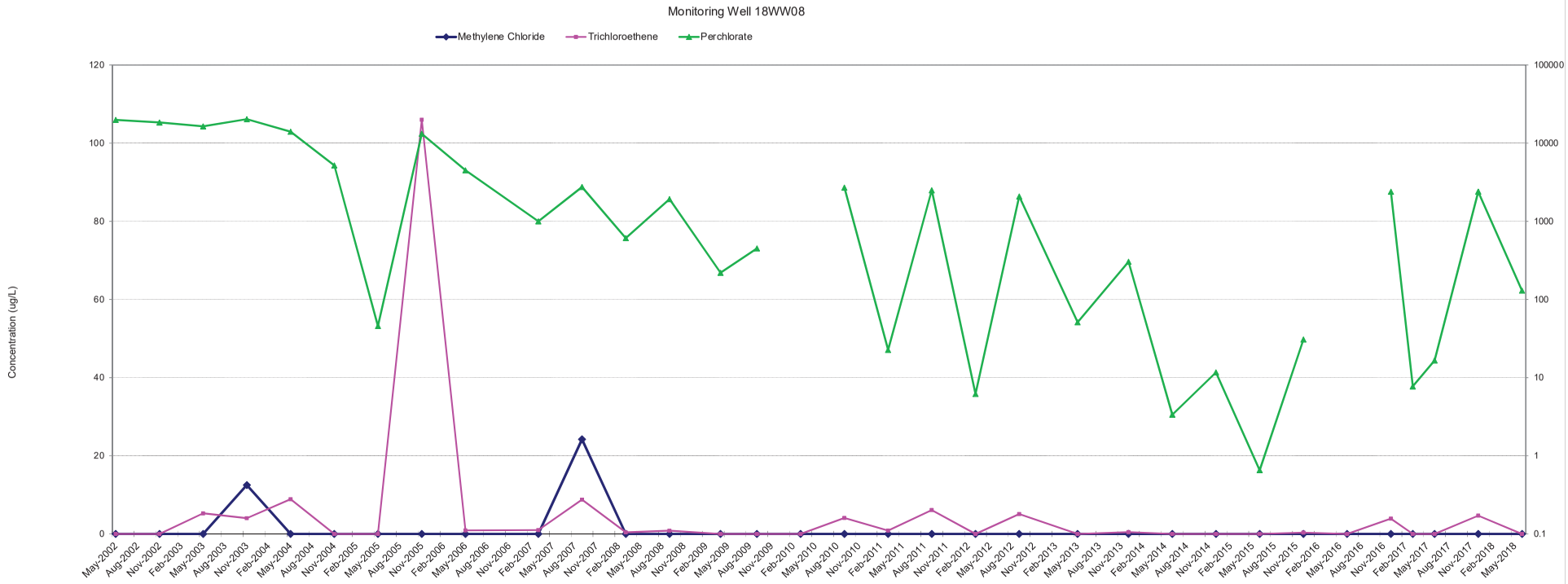
Sample Date



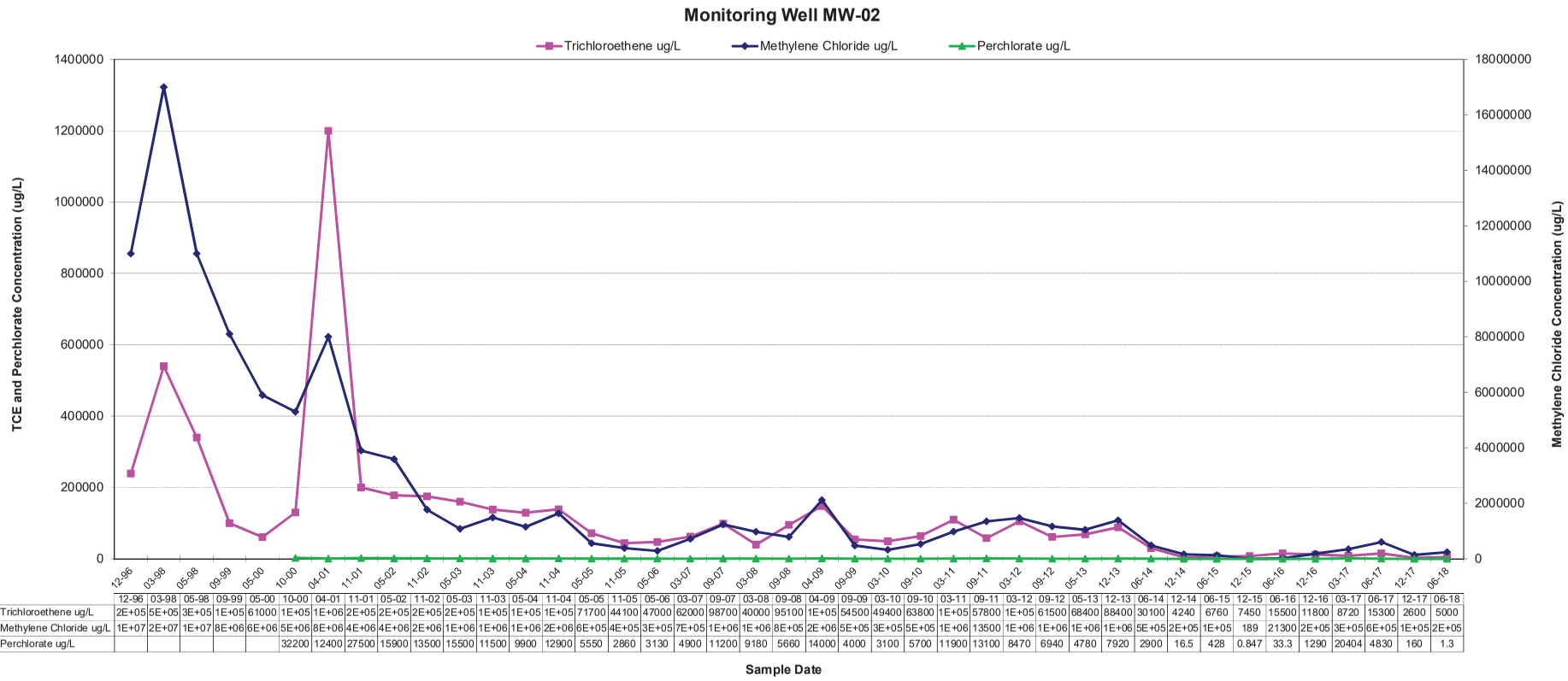
	12-96	03-98	05-98	09-99	05-00	10-00	04-01	11-01	05-02	11-02	05-03	11-03	05-04	11-04	05-05	11-05	05-06	03-07	09-07	03-08	09-08	04-09	09-09	03-10	09-10	03-11	09-11	03-12	09-12	05-13	12-13	12-14	06-15	12-15	06-16	12-16	06-17	12-17	06-18
Methylene Chloride	2039	18	18	0	1	0	0	0	0	0	0	0	10.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.34	0.74	0	0	0	0	0	0	0	0
Trichloroethene	359	18	19	2.6	4.3	2.8	1.1	0	0	0	25.4	12.5	9.95	13	5.79	0	2.33	0	1.03	0	0	0	0	0	0	0	0	0	0.27	0.48	0.49	0	0	0	0	0	0	0	0
Perchlorate						1030	250	2190	2620	1940	2160	1130	1440	1120	974	864	1050	10	997	42.7	106	107	3.2	0	700	20	125	9.45	619	121	65.3	58.3	12.3	1.35	5.48	35.6	72	170	29



	Dec 1996	Mar 1998	May 1998	Sep 1999	May 2000	Oct 2000	Apr 2001	Nov 2001	May-2002	Nov-2002	May-2003	Nov-2003	May-2004	Nov-2004	May-2005	Nov-2005	May-2006	Mar-2007	Sep-2007	Mar-2008	Sep-2008	Apr-2009	Sep-2009	Mar-2010	Sep-2010	Mar-2011	Sep-2011	Mar-2012	Sep-2012	May-2013	Dec-2013	Jun-2014	Dec-2014	Jun-2015	Dec-2015	Jun-2016	Dec-2016	Jun-2017	Dec-2017	Jun-18
Methylene Chloride	12	6.6	0	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	21	25	19	8.3	21	8.2	5.5	0	0	0	7.4	0	56.2	0	0	0	1.45	0.67	1.04	0.896	0	0	2.49	2.41	3.87	2.7	7.3	11.7	11.9	13.2	9.54	10.4	11.4	3.64	7.21	5.61	2.18	1.57	0.7	0
Perchlorate						0	0	0	0	0	0	10.5	0	0	0	0	0	5	4	2.5	3	4	3	0	0	12.5	0.179	0	0	0	0.17	0.501	0	0.648	45	0	0	0	0	0



	May-2002	Nov-2002	May-2003	Nov-2003	May-2004	Nov-2004	May-2005	Nov-2005	May-2006	Mar-2007	Sep-2007	Mar-2008	Sep-2008	Apr-2009	Sep-2009	Mar-2010	Sep-2010	Mar-2011	Sep-2011	Mar-2012	Sep-2012	May-2013	Dec-2013	Jun-2014	Dec-2014	Jun-2015	Dec-2015	Jun-2016	Dec-2016	Mar-2017	Jun-2017	Dec-2017	Jun-2018
Methylene Chloride	0	0	0	12.5	0	0	0	0	0	0	24.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	0	0	5.27	4.03	8.89	0	0	106	0.914	1	8.79	0.405	0.83	0	0	0	4.09	0.858	6.12	0	5.09	0	0.459	0	0	0	0.331	0	3.91	0	0	4.7	0
Perchlorate	19800	18400	16400	20300	14000	5200	45.7	13200	4500	1000	2750	610	1920	220	450	0	2700	22.6	2500	6.19	2080	51.2	304	3.36	11.7	0.655	30.8	0	2390	7.72	16.6	2400	130



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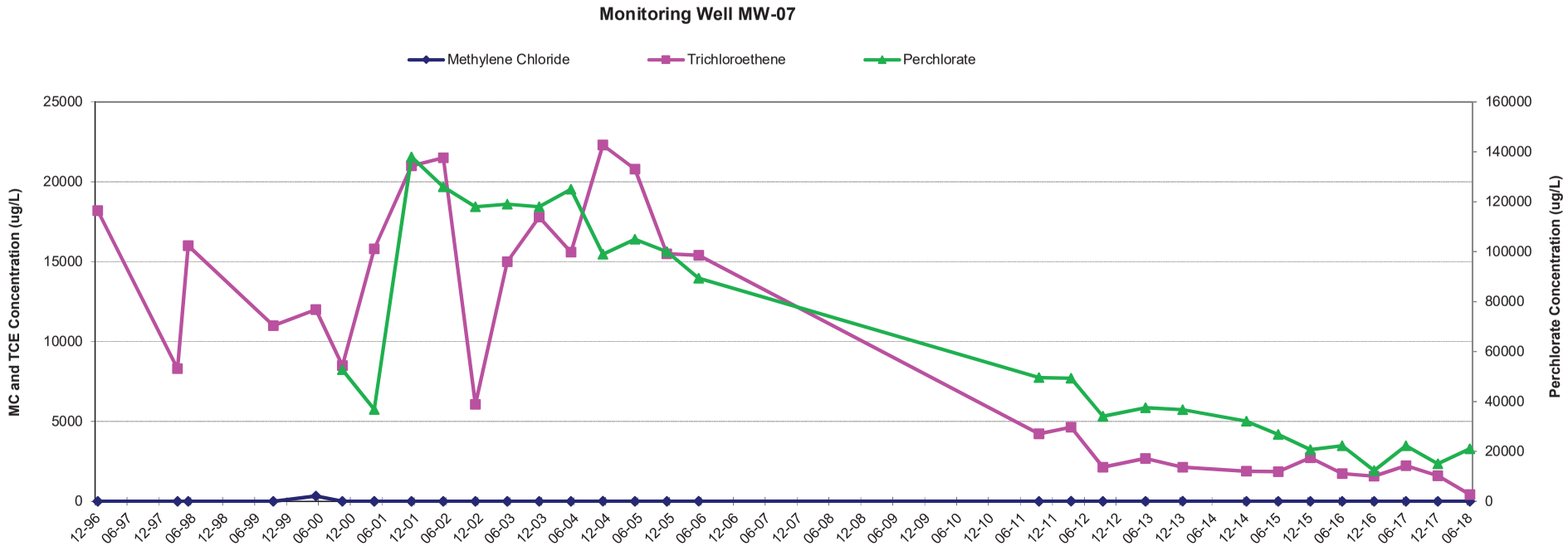
Trichloroethene ug/L	2E+05	5E+05	3E+05	1E+05	61000	1E+05	1E+06	2E+05	2E+05	2E+05	2E+05	1E+05	1E+05	1E+05	71700	44100	47000	62000	98700	40000	95100	1E+05	54500	49400	63800	1E+05	57800	1E+05	61500	68400	88400	30100	4240	6760	7450	15500	11800	8720	15300	2600	5000
Methylene Chloride ug/L	1E+07	2E+07	1E+07	8E+06	6E+06	5E+06	8E+06	4E+06	4E+06	2E+06	1E+06	1E+06	1E+06	2E+06	6E+05	4E+05	3E+05	7E+05	1E+06	1E+06	8E+05	2E+06	5E+05	3E+05	5E+05	1E+06	13500	1E+06	1E+06	1E+06	1E+06	5E+05	2E+05	1E+05	189	21300	2E+05	3E+05	6E+05	1E+05	2E+05
Perchlorate ug/L						32200	12400	27500	15900	13500	15500	11500	9900	12900	5550	2860	3130	4900	11200	9180	5660	14000	4000	3100	5700	11900	13100	8470	6940	4780	7920	2900	16.5	428	0.847	33.3	1290	20404	4830	160	1.3



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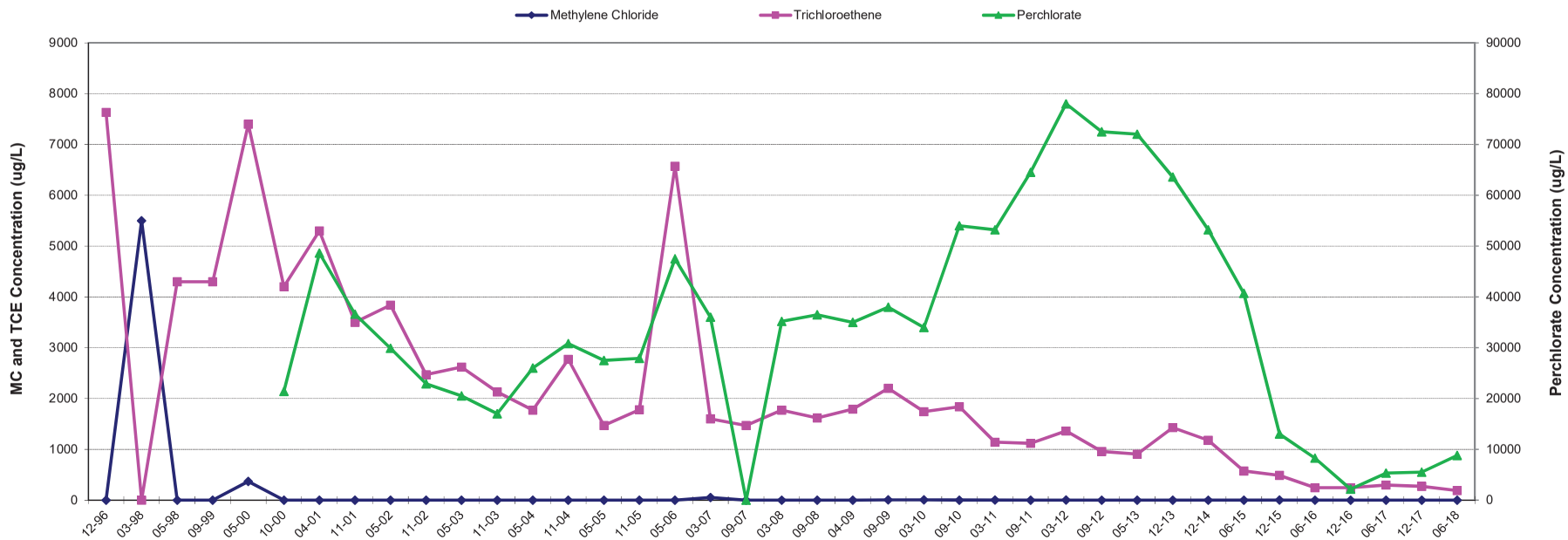
Methylene Chloride	0	0	0	0	330	0	0	0	0	0	0	0	0	5.42	0	0	2.33	0	7.75	0	0	7.81	0	0.352	0	0	0	0.314	0	0
Trichloroethene	18200	8300	16000	11000	12000	8500	15800	21,00	21500	6070	15000	17800	15600	22300	20800	15500	15400	4220	4640	2130	2690	2140	1880	1860	2730	1740	1570	2230	1600	420
Perchlorate						52700	36800	13800	12600	11800	11900	11800	12500	99000	10500	10000	89400	49600	49300	34100	37500	36700	32100	26800	20700	22200	12300	22200	15000	21000

Sample Date



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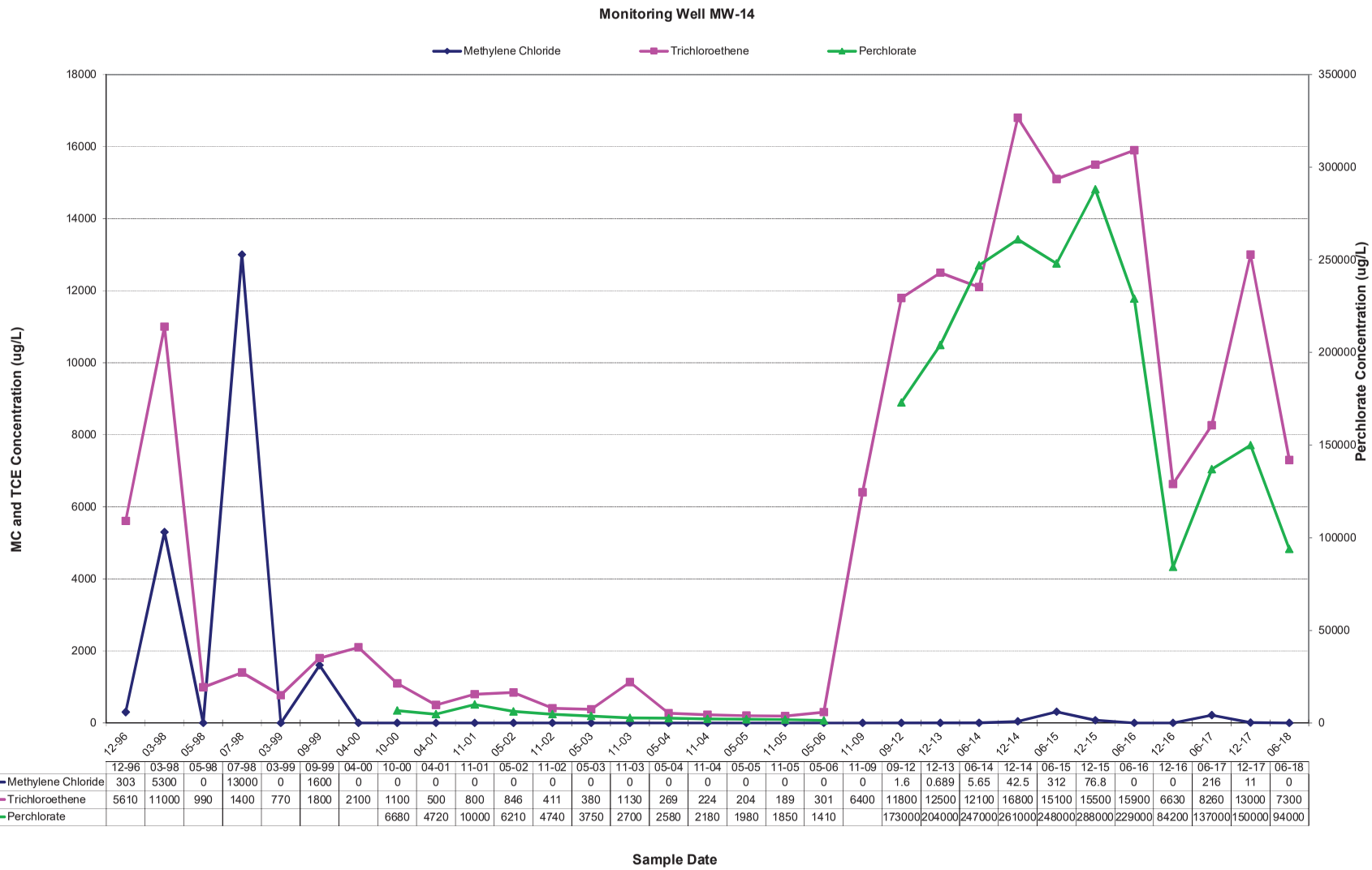
Methylene Chloride	0	5500	0	0	370	0	0	0	0	0	0	0	0	0	0	0	0	50	0	0	0	0	6.07	6.27	0	4.11	0	3.25	0	0.351	0	0	0	1.44	0	0	0	0	0
Trichloroethene	7630	0	4300	4300	7400	4200	5300	3,500	3840	2470	2620	2130	1770	2770	1470	1780	6570	1600	1470	1770	1620	1790	2200	1740	1840	1140	1120	1360	959	907	1430	1180	575	487	247	245	296	270	190
Perchlorate						21400	48600	36600	29900	22900	20500	17000	26000	30800	27500	27900	47500	36000	0	35200	36500	35000	38000	34000	54000	53200	64500	78000	72500	72000	63600	53200	40700	13000	8290	2160	5320	5500	8800



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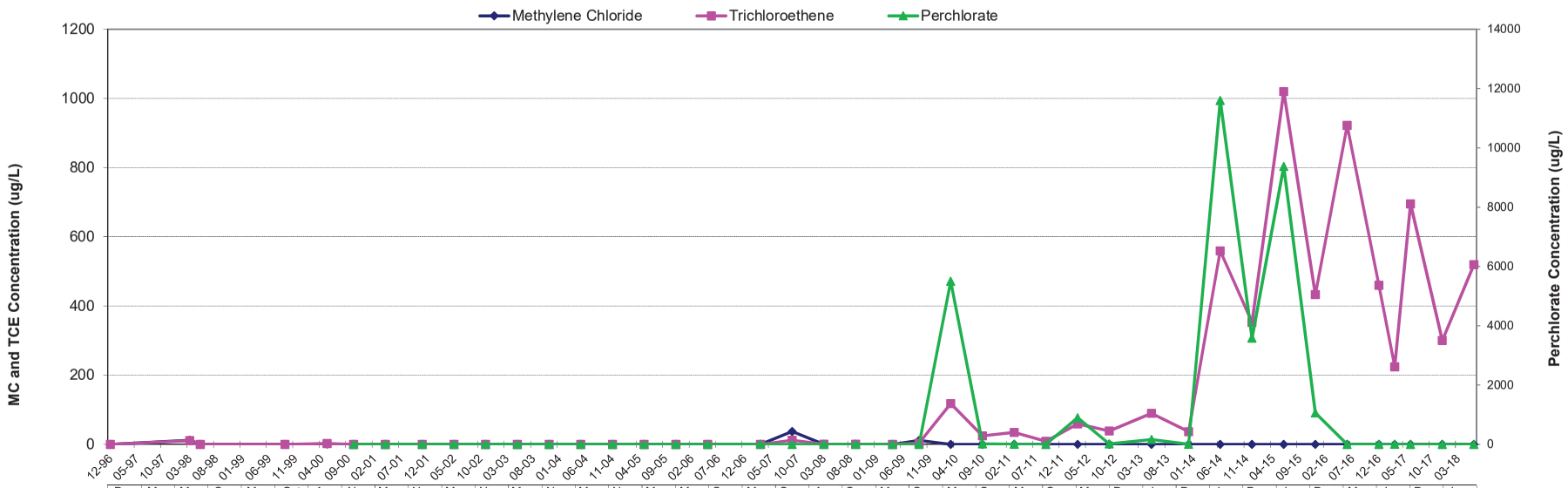
Methylene Chloride	303	5300	0	13000	0	1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6	0.689	5.65	42.5	312	76.8	0	0	216	11	0
Trichloroethene	5610	11000	990	1400	770	1800	2100	1100	500	800	846	411	380	1130	269	224	204	189	301	6400	11800	12500	12100	16800	15100	15500	15900	6630	8260	13000	7300
Perchlorate								6680	4720	10000	6210	4740	3750	2700	2580	2180	1980	1850	1410		173000	204000	247000	261000	248000	288000	229000	84200	137000	150000	94000



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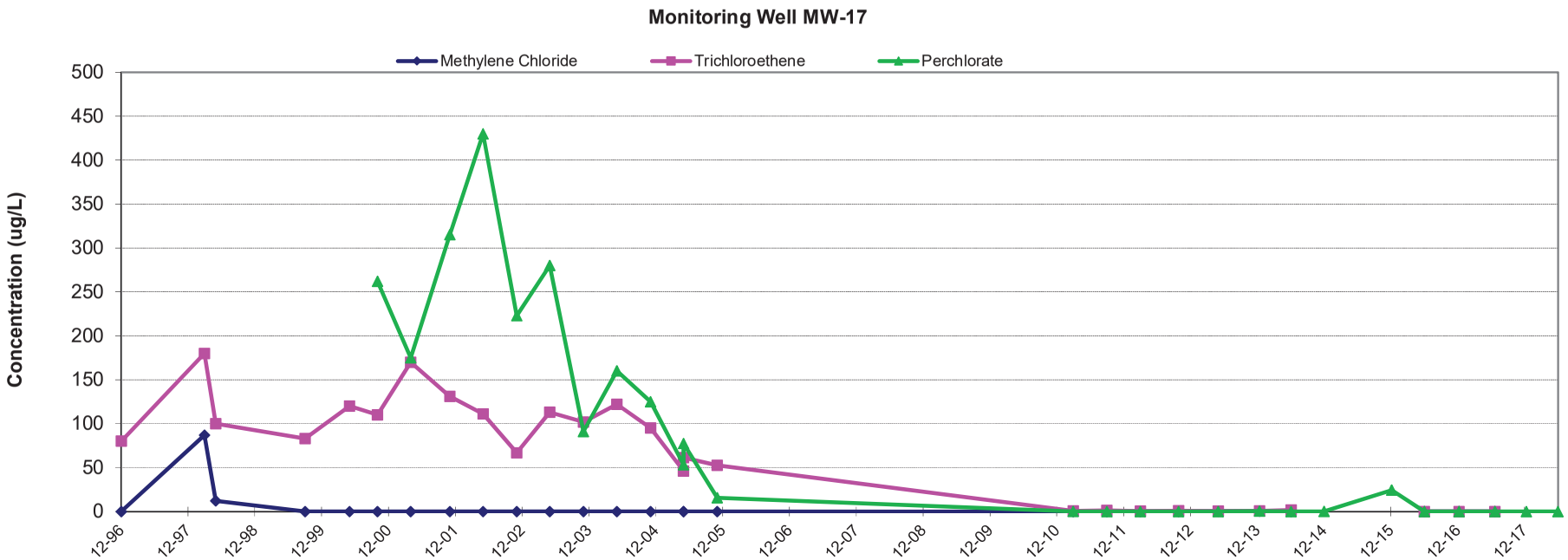
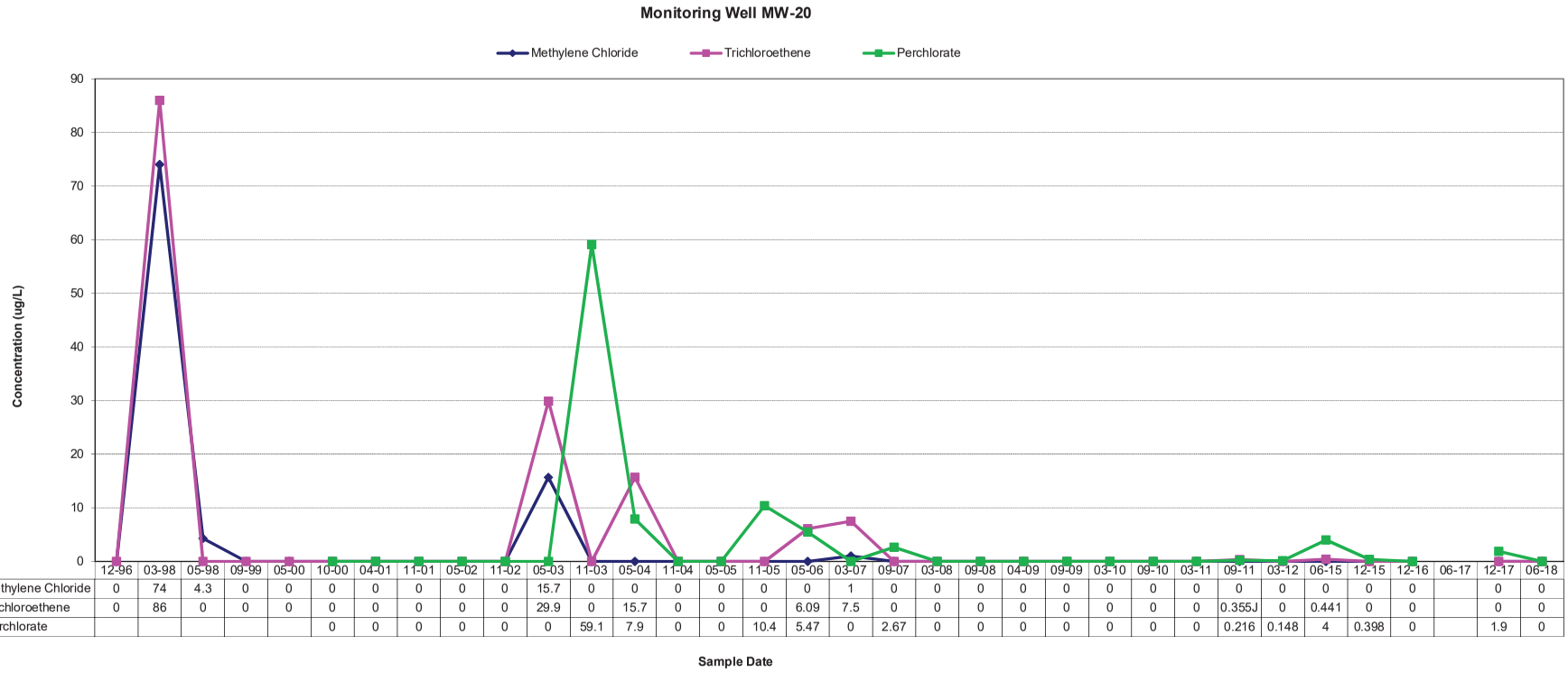
Methylene Chloride	0	12	0	0	0.66	0	0	0	0	0	0	0	0	0	0	0	0	0	37.3	0	0	0	11.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	0	11	0	0	2.7	0	0	0	0	0	0	0	0	0	0	0	0	0	12.1	0.47	0.32	0	3.49	118	24.3	34.5	8.52	59.1	38.7	89.9	36.6	559	353	1020	433	922	460	224	695	300	520
Perchlorate						0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	5500	17	5.24	0	896	16.5	166	1.25	1160	3580	9370	1060	0.62	0	1.3	0	0	0



	Dec 1996	Mar 1998	May 1998	Sep 1999	May 2000	Oct 2000	Apr 2001	Nov 2001	May-2002	Nov-2002	May-2003	Nov-2003	May-2004	Nov-2004	May-2005	May-2005	Nov-2005	Mar-2011	Sep-2011	Mar-2012	Sep-2012	May-2013	Dec-2013	Jun-2014	Dec-2014	Dec-2015	Jun-2016	Dec-2016	Jun-2017	Dec-2017	Jun-2018
Methylene Chloride	0	87	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.335	0.346	0			0	0	0		
Trichloroethene	80	180	100	83	120	110	170	131	111	66.8	113	102	122	95.1	46.1	52.7	61.4	0.551	1.14	0.537	0.943	0.519	0.656	1.69			0	0	0		
Perchlorate						262	175	315	430	223	280	91	160	125	53.2	15.6	77.3	0.179	0	0	0	0	0.376	0	0.143	24.4	0	0	0	0	0

Sample Date



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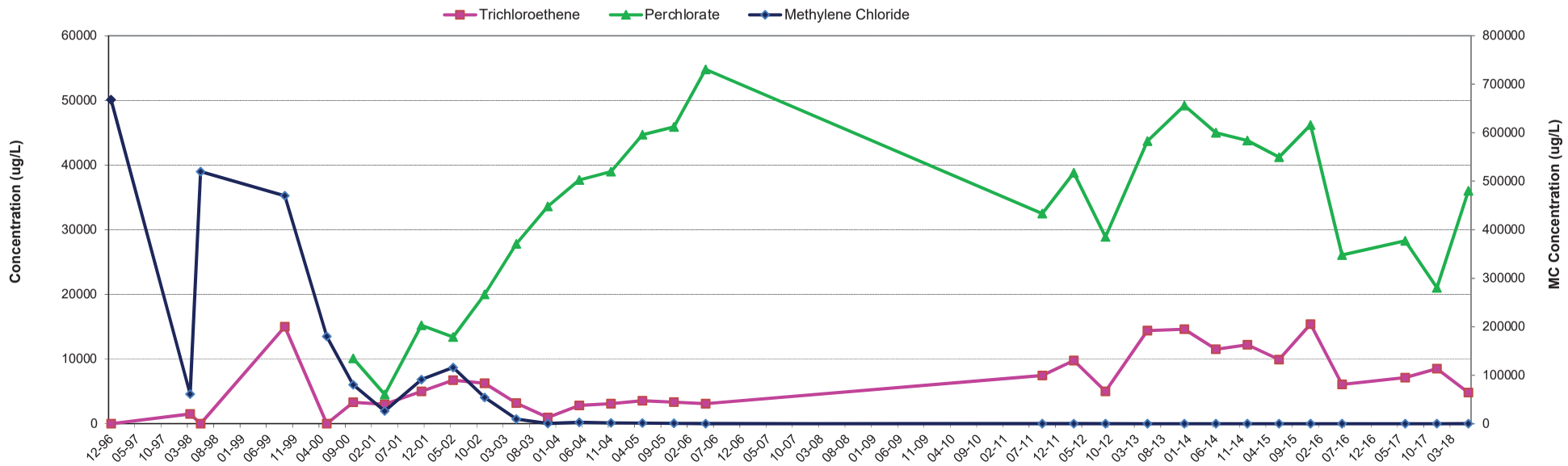
Methylene Chloride	0	74	4.3	0	0	0	0	0	0	0	15.7	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
Trichloroethene	0	86	0	0	0	0	0	0	0	0	29.9	0	15.7	0	0	0	6.09	7.5	0	0	0	0	0	0	0	0	0.355J	0	0.441	0	0		0	0
Perchlorate						0	0	0	0	0	0	59.1	7.9	0	0	10.4	5.47	0	2.67	0	0	0	0	0	0	0	0.216	0.148	4	0.398	0		1.9	0



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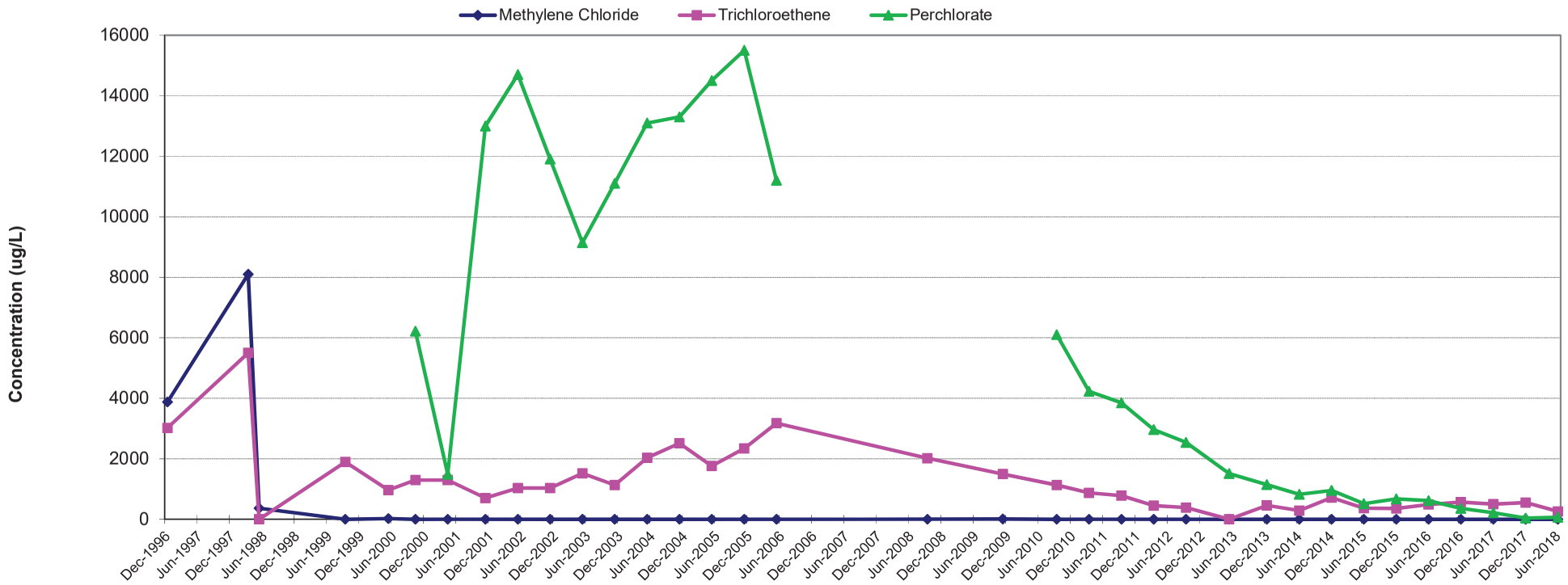
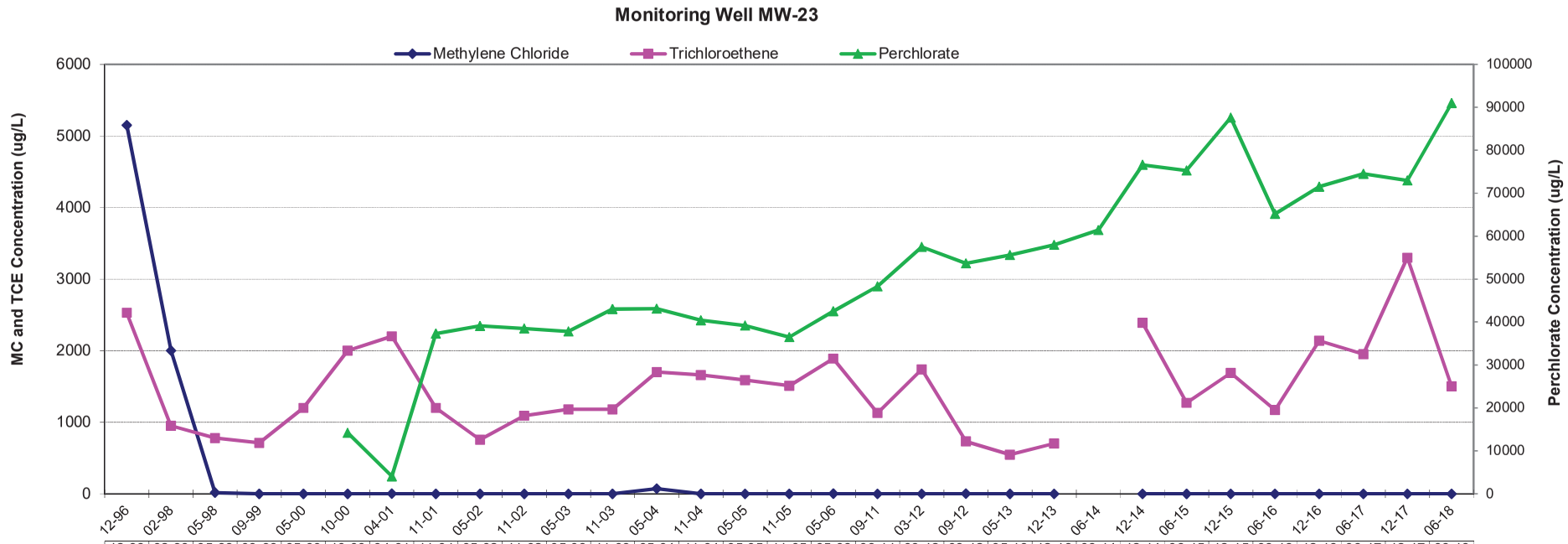
Trichloroethene	0	1500	0	15000	0	3300	3000	5,000	6730	6260	3200	965	2830	3110	3540	3330	3090	7470	9760	4980	14400	14600	11500	12200	9910	15400	6080	7140	8500	4800
Perchlorate						10100	4510	15,200	13400	20000	27800	33600	37700	39000	44700	45900	54800	32500	38800	28900	43700	49200	45000	43800	41200	46200	26100	28300	21000	36000
Methylene Chloride	668000	61000	520000	470000	180000	80000	26000	91,000	116000	54000	9770	320	2740	1490	1370	816	59.5	18.3J	12.5	11.9	0	0	0	0	0	0	0	0	0	1.5



	Dec-1996	Mar-1998	May-1998	Sep-1999	May-2000	Oct-2000	Apr-2001	Nov-2001	May-2002	Nov-2002	May-2003	Nov-2003	May-2004	Nov-2004	May-2005	Nov-2005	May-2006	Sep-2008	Nov-2009	Sep-2010	Mar-2011	Sep-2011	Mar-2012	Sep-2012	May-2013	Dec-2013	Jun-2014	Dec-2014	Jun-2015	Dec-2015	Jun-2016	Dec-2016	Jun-2017	Dec-2017	Jun-18
Methylene Chloride	3880	8100	370	0	24	0	0.91	0	0	0	0	0	0	0	0	0	0.39	5.45	12	0	3.04	0	0	0	0.53	0	0	0	0.6	0	0	0	0	0	0
Trichloroethene	3020	5500	0	1900	970	1300	1300	700	1030	1030	1520	1130	2030	2510	1760	2340	3180	2020	1500	1130	877	779	450	388	0	463	288	719	364	359	488	566	500	550	260
Perchlorate						6220	1490	13,0	1470	1190	9140	1110	1310	1330	1450	1550	1120			6100	4230	3850	2960	2540	1510	1150	824	953	519	671	615	363	214	40	66



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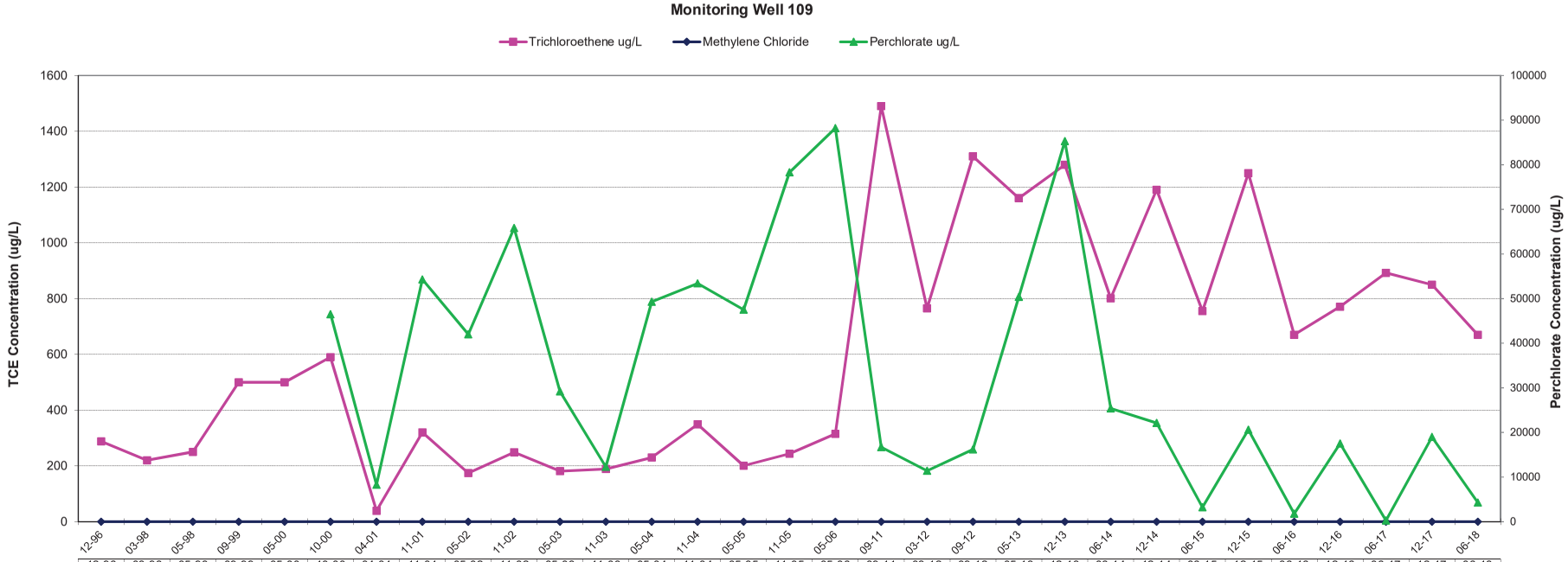
Methylene Chloride	5150	2000	16	0	0	0	0.6	0	0	0	0	0	72.5	0	0	0	0.708	0	0	1.34	0	0.338		0	0.492	0	0	0	0	0	0
Trichloroethene	2530	950	780	710	1200	2000	2200	1,200	756	1090	1180	1180	1700	1660	1590	1510	1890	1130	1740	731	547	703		2390	1270	1690	1170	2140	1950	3300	1500
Perchlorate						14200	4080	37,30	39100	38500	37800	43000	43100	40400	39200	36500	42500	48300	57500	53650	55600	58000	61400	76600	75300	87600	65200	71500	74500	73000	91000

Sample Date



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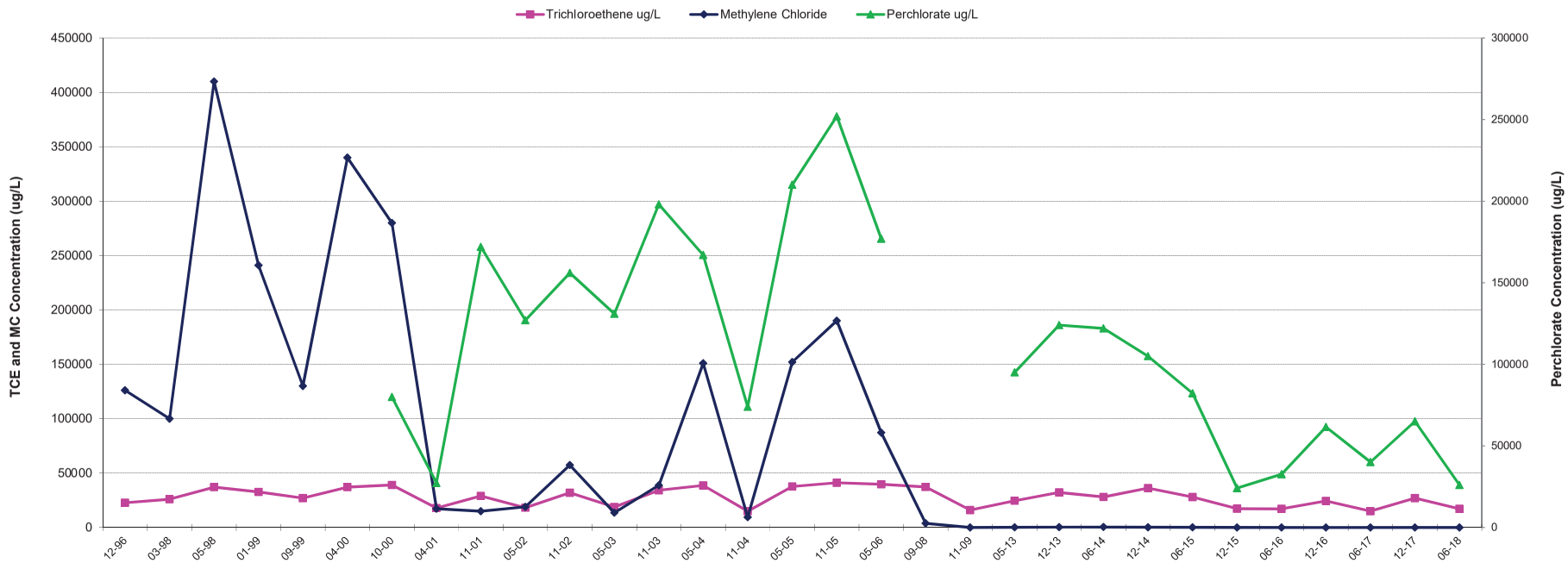
Trichloroethene ug/L	288	220	250	500	500	590	39	320	174	249	181	189	230	349	201	244	315	1490	765	1310	1160	1280	801	1190	755	1250	670	771	892	850	670
Methylene Chloride	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Perchlorate ug/L						46500	8270	54300	42000	65800	29200	12300	49300	53400	47500	78300	88200	16700	11400	16200	50400	85300	25400	22100	3220	20600	1810	17500	265	19000	4300



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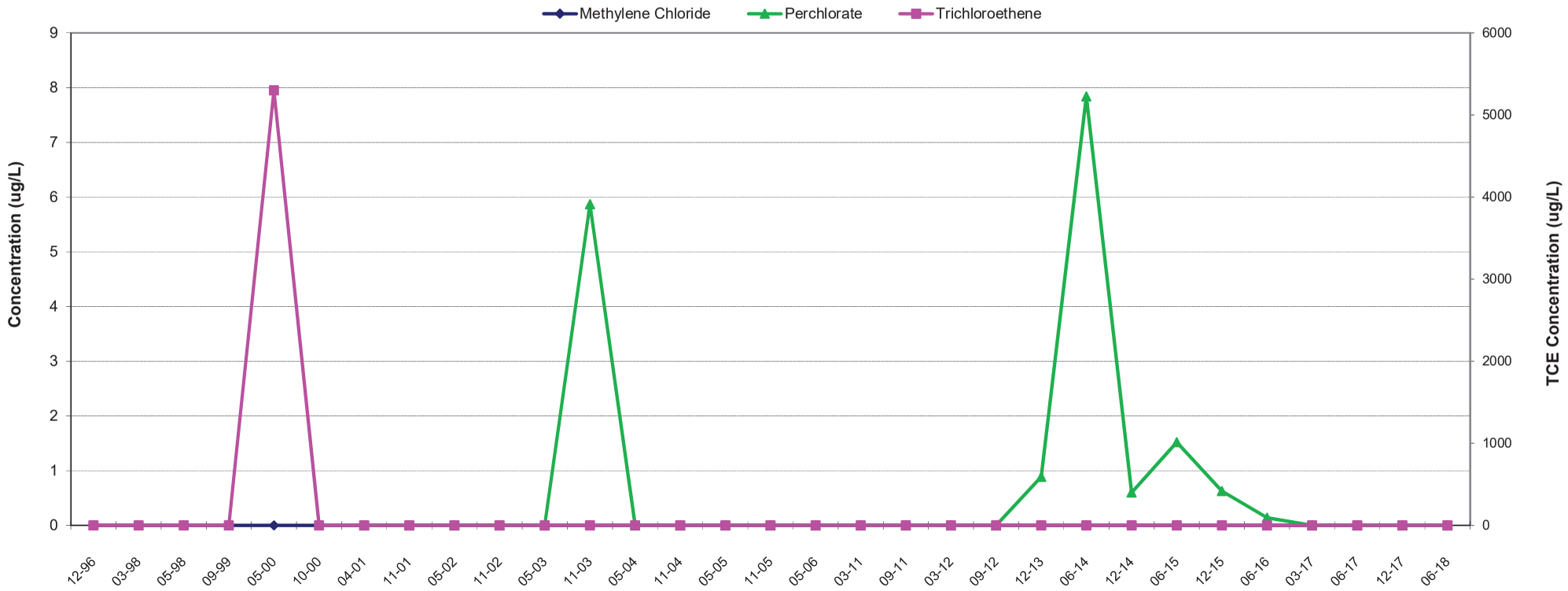
Trichloroethene ug/L	22700	26000	37000	32700	27000	37000	39000	17900	29000	18100	31900	18700	34100	38600	14900	37700	41100	39600	37200	16000	24600	32200	28100	36200	27900	17200	17100	24400	15000	27000	17000
Methylene Chloride	126000	100000	410000	241000	130000	340000	280000	17200	15000	18900	57400	13600	38800	151000	9380	152000	190000	87100	3810	0	170	214	363	71.1	125	0	0	0	0	0	0
Perchlorate ug/L							80000	27300	172000	127000	156000	131000	198000	167000	74000	210000	252000	177000			95000	124000	122000	105000	82200	24100	32700	61600	40100	65000	26000



Sample Date	12-96	03-98	05-98	09-99	05-00	10-00	04-01	11-01	05-02	11-02	05-03	11-03	05-04	11-04	05-05	11-05	05-06	03-11	09-11	03-12	09-12	12-13	06-14	12-14	06-15	12-15	06-16	03-17	06-17	12-17	06-18
Methylene Chloride	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Perchlorate							0	0	0	0	0	5.87	0	0	0	0	0	0	0	0	0	0.887	7.84	0.602	1.52	0.629	0.14	0	0	0	0
Trichloroethene	0	0	0	0	5300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX F
GWTP WATER SAMPLING LABORATORY ANALYTICAL RESULTS FOR THE 2ND QUARTER 2018 (PROVIDED ON CD ONLY)

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS18040240

Longhorn GW Treatment Plant

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

27-Apr-2018

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

April 19, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18040240**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 1 sample(s) on Apr 05, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18040240

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18040240-01	LH18/24-SP650_040418	Water		04-Apr-2018 14:00	05-Apr-2018 08:50	☐

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order:

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

WetChemistry by Method E415.1

Batch ID: R314101

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E350.3

Batch ID: R314024

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E365.3

Batch ID: R313918

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_040418
Collection Date: 04-Apr-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18040240
Lab ID:HS18040240-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: MZD
Nitrogen, Ammonia (As N)	**12**		**0.20**	**0.20**	**0.20**	**mg/L**	1	09-Apr-2018 17:00
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**3.74**		**0.100**	**0.500**	**0.250**	**mg/L**	10	06-Apr-2018 11:45
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: AJH
Organic Carbon, Total	**40.1**		**1.00**	**2.50**	**2.00**	**mg/L**	2	10-Apr-2018 14:50
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Apr-2018 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18040240

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R313918	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3			**Matrix:** Water		
HS18040240-01	LH18/24-SP650_040418	04 Apr 2018 14:00			06 Apr 2018 11:45	10
Batch ID R314024	**Test Name :** AMMONIA AS N BY E350.3(ISE)			**Matrix:** Water		
HS18040240-01	LH18/24-SP650_040418	04 Apr 2018 14:00			09 Apr 2018 17:00	1
Batch ID R314101	**Test Name :** TOTAL ORGANIC CARBON BY E415.1			**Matrix:** Water		
HS18040240-01	LH18/24-SP650_040418	04 Apr 2018 14:00			10 Apr 2018 14:50	2
Batch ID R314688	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18040240-01	LH18/24-SP650_040418	04 Apr 2018 14:00			19 Apr 2018 14:00	1

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18040240

QC BATCH REPORT

Batch ID: R313918 **Instrument: UV-2450** **Method: E365.3**

MBLK Sample ID: **MBLK-313918** Units: **mg/L** Analysis Date: **06-Apr-2018 11:45**
Client ID: Run ID: **UV-2450_313918** SeqNo: **4508306** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0500	0.0250								U

LCS Sample ID: **LCS-313918** Units: **mg/L** Analysis Date: **06-Apr-2018 11:45**
Client ID: Run ID: **UV-2450_313918** SeqNo: **4508305** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.282	0.0250	0.25	0	113	85 - 115				

MS Sample ID: **HS18040240-01MS** Units: **mg/L** Analysis Date: **06-Apr-2018 11:45**
Client ID: **LH18/24-SP650_040418** Run ID: **UV-2450_313918** SeqNo: **4508300** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	6.69	0.250	2.5	3.74	118	80 - 120				

MSD Sample ID: **HS18040240-01MSD** Units: **mg/L** Analysis Date: **06-Apr-2018 11:45**
Client ID: **LH18/24-SP650_040418** Run ID: **UV-2450_313918** SeqNo: **4508301** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	6.53	0.250	2.5	3.74	112	80 - 120	6.69	2.42	20	

The following samples were analyzed in this batch: HS18040240-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18040240

QC BATCH REPORT

Batch ID: R314024 **Instrument: WetChem_HS** **Method: E350.3**

MBLK Sample ID: **MBLK-314024** Units: **mg/L** Analysis Date: **09-Apr-2018 17:00**
Client ID: Run ID: **WetChem_HS_314024** SeqNo: **4511099** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.20	0.20								U

LCS Sample ID: **LCS-314024** Units: **mg/L** Analysis Date: **09-Apr-2018 17:00**
Client ID: Run ID: **WetChem_HS_314024** SeqNo: **4511100** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.84	0.20	10	0	108	80 - 120				

MS Sample ID: **HS18040240-01MS** Units: **mg/L** Analysis Date: **09-Apr-2018 17:00**
Client ID: **LH18/24-SP650_040418** Run ID: **WetChem_HS_314024** SeqNo: **4511102** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	22.54	0.20	10	12.14	104	80 - 120				

MSD Sample ID: **HS18040240-01MSD** Units: **mg/L** Analysis Date: **09-Apr-2018 17:00**
Client ID: **LH18/24-SP650_040418** Run ID: **WetChem_HS_314024** SeqNo: **4511101** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	23.22	0.20	10	12.14	111	80 - 120	22.54	2.97	20	

The following samples were analyzed in this batch: HS18040240-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18040240

QC BATCH REPORT

Batch ID: R314101 **Instrument: TOC_02** **Method: E415.1**

MBLK Sample ID: **WBLKW1-041018** Units: **mg/L** Analysis Date: **10-Apr-2018 13:37**
Client ID: Run ID: **TOC_02_314101** SeqNo: **4512512** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	1.25	1.00								U

LCS Sample ID: **WLCSW1-041018** Units: **mg/L** Analysis Date: **10-Apr-2018 13:50**
Client ID: Run ID: **TOC_02_314101** SeqNo: **4512513** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.846	1.00	10	0	98.5	80 - 120				

LCSD Sample ID: **WLCSDW1-041018** Units: **mg/L** Analysis Date: **10-Apr-2018 14:05**
Client ID: Run ID: **TOC_02_314101** SeqNo: **4512514** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.12	1.00	10	0	101	80 - 120	9.846	2.74	20	

MS Sample ID: **HS18040249-01MS** Units: **mg/L** Analysis Date: **10-Apr-2018 15:16**
Client ID: Run ID: **TOC_02_314101** SeqNo: **4512519** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	23.47	1.00	10	12.7	108	80 - 120				

The following samples were analyzed in this batch: HS18040240-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Apr-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18040240**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 19-Apr-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019

Date: 19-Apr-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**05-Apr-2018 08:50**
Work Order:	HS18040240	Received by:	**JRM**

Checklist completed by:	*Pablo Marinez* eSignature	5-Apr-2018 Date	Reviewed by:	*RJ Modashia* eSignature	6-Apr-2018 Date

Matrices: **WATER** Carrier name: **FedEx Priority Overnight**

	Yes	No	Not Present / N/A
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	
Temperature(s)/Thermometer(s):	2.4C/1.9C UC/C		IR # 11
Cooler(s)/Kit(s):	BLUE		
Date/Time sample(s) sent to storage:	4/5/2018 16:45		
Water - VOA vials have zero headspace?	☐	☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

HS18040240

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: SONIA WEST

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job:
GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O. Number

Analyses

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	PERCHLORATE							Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_040418	Water	04/04/18 / 14:00		2	X	X									H2SO4	
LH18/24-SP650_040418	Water	04/04/18 / 14:00		2			X	X							NONE	

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	04/04/18	14:30									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
Jm	4/5/18	08:50							

Remarks: Cooler - Blue IR11
Temp 2.4 uC CF-0.5

(Word) S:\1-ccs\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
Blue

CUSTODY SEAL
Date: 4/4/18 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Number: PM
Date: 4-5-18

FedEx
TRK# 0221 7376 9752 7495
THU - 05 APR 10:30A
PRIORITY OVERNIGHT
AB SGRA Blue
77099
TX-US
IAH

FED 162705 04APR10 GGGA 546C1/9132/0CRA

Wet Chemistry Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
ALS WO# HS18040240

NIT-AMM-ISE-W / ISE-W 350.3
HS18040240

Logbook **30611**

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Ion Selective Electrode Logbook

Analyst: MD	Date: 04/09/2018
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F	

Probe Calibration Date:	Cal Std ID:	Probe ID:
04/09/2018	3060626(03--07)	SR15910

Std Level		mV	Conc., mg/L:
STD 1 (mg/L):	0.2	112.5	0.2010
STD 2 (mg/L):	1	73.4	0.9912
STD 3 (mg/L):	5	33.9	5.130

Sodium Thiosulfate ID:		
Std Level	mV	Conc., mg/L:
STD 4 (mg/L): 10	15.6	10.15
STD 5 (mg/L): 50	-25.7	49.86

LSC / MS Spike ID: 2970205919
ICV Cal STD ID: ~~2970205919~~ MD 30606508
DPD Reagent ID: 2970204302

ICAL Date & Slope: -59.8mV / 100.34.

WO # / SX #	Bottle #	Initial g or ml	Final Vol. ml	Dilution Factor	Initial Conc. mg/L	Final Conc. mg/L	Chlorine Check (+/-)	Comments
CCV		50ml	50ml		10.03			
CCB					0.03120			
MBK					0.0355			
LCS					10.54			
HS18040240-01					12.14		-ve	
HS18040245-01		1ml	50ml	50x	5.0220		+ve	DP dye to chlorize
HS18040340-01		1ml		50x	1.172		+ve	
HS18040340-02		1ml		50x	1.108		+ve	
HS18040313-01		50ml	50ml		8.950		-ve	
HS18040240-01 MS					22.54			
HS18040240-01 MSD					23.22			
CCV					10.41			
CCB					0.03423			

Batch ID:		Reported By	Reviewed By:
ISE 350.3 314024	NIT_AMMON_ISE_W 314025	MD	MD

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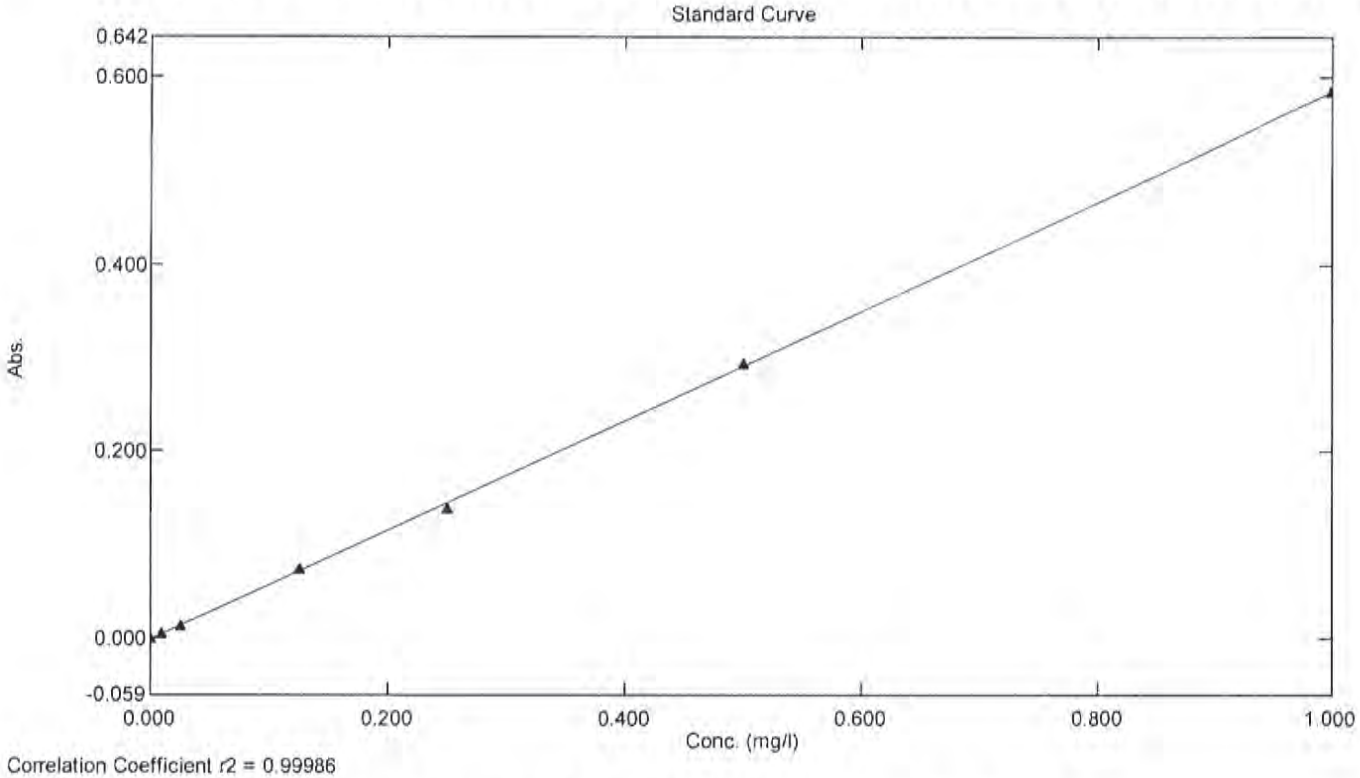
HS1804024O

Standard Table Report

04/24/2018 02:32:11 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180406_P_ORTH



Correlation Coefficient r2 = 0.99986

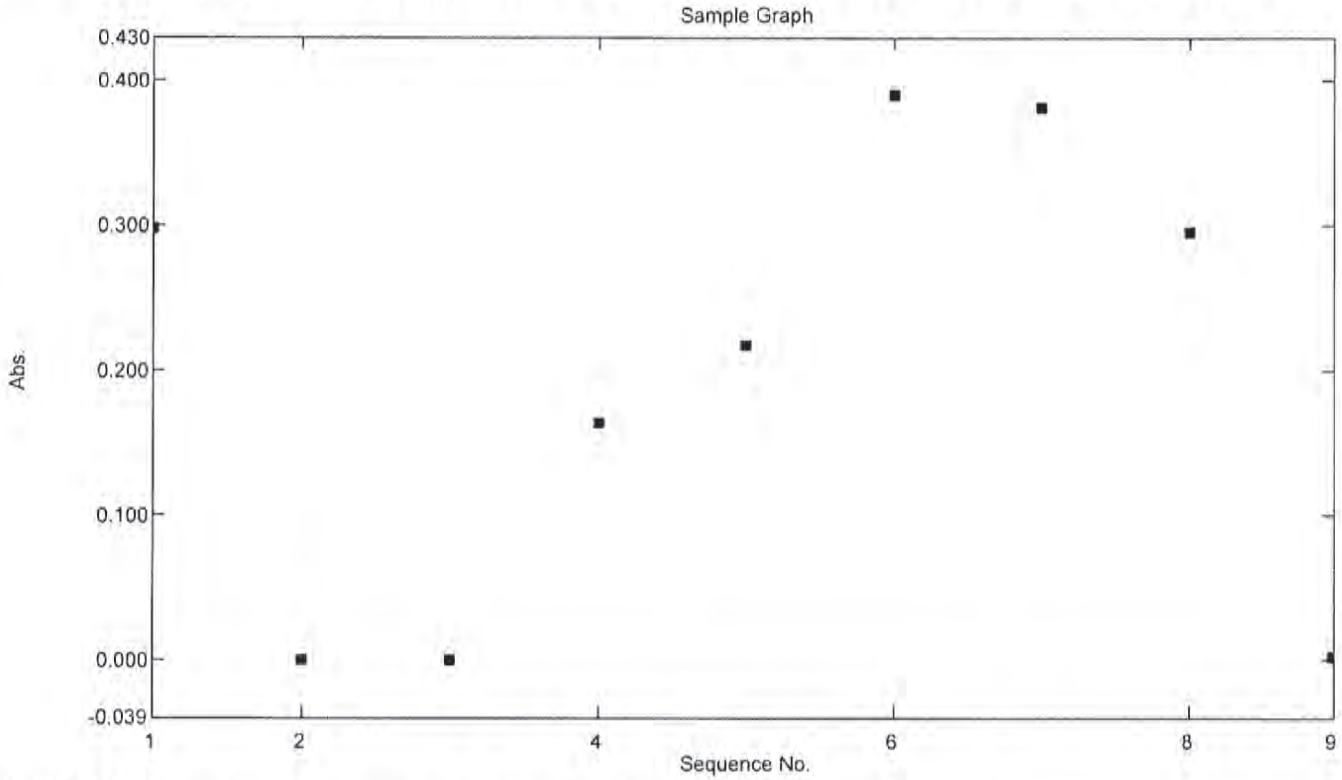
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.000	1.000	
2	STD2	Standard		0.010	0.006	1.000	
3	STD3	Standard		0.025	0.014	1.000	
4	STD4	Standard		0.125	0.075	1.000	
5	STD5	Standard		0.250	0.140	1.000	
6	STD6	Standard		0.500	0.294	1.000	
7	STD7	Standard		1.000	0.584	1.000	
8							

Sample Table Report

04/24/2018 02:32:13 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180406_P_ORT



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.510	0.297	
2	CCB	Unknown		0.002	0.001	
3	MBLK	Unknown		0.001	-0.000	
4	LCS	Unknown		0.282	0.164	
5	1804240.01	Unknown		0.374	0.218	PF:10X,FILTER,11:45A M
6	18040240.01MS	Unknown		0.669	0.390	10X
7	18040240.01MSD	Unknown		0.653	0.381	10X
8	CCV2	Unknown		0.507	0.296	
9	CCB2	Unknown		0.005	0.002	
10						

C:\TOC3201\Data\2018_04_10_001.t32 HS18040240

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
1	U	NPOC	CCV	306.064.702	01-20-2018_	NPOC:24.84mg/L	Completed	4/10/2018 1:13:13 PM	1
2	U	NPOC	CCB	UNTITLED	01-20-2018_	NPOC:0.1620mg/L	Completed	4/10/2018 1:28:31 PM	2
3	U	NPOC	WBLKW1-041018	TOC_W	01-20-2018_	NPOC:0.1775mg/L	Completed	4/10/2018 1:41:39 PM	3
4	U	NPOC	WLCSW1-041018	297.020.4301	01-20-2018_	NPOC:9.846mg/L	Completed	4/10/2018 1:56:57 PM	4
5	U	NPOC	WLCSDW1-041018	UNTITLED	01-20-2018_	NPOC:10.12mg/L	Completed	4/10/2018 2:10:09 PM	5
6	U	NPOC	HS18040421-01DF100	1/1	01-20-2018_	NPOC:2.694mg/L	Completed	4/10/2018 2:25:27 PM	6
7	U	NPOC	HS18040421-02DF100	1/2	01-20-2018_	NPOC:2.266mg/L	Completed	4/10/2018 2:40:40 PM	7
8	U	NPOC	HS18040240-01DF2	1/2	01-20-2018_	NPOC:20.07mg/L	Completed	4/10/2018 2:54:10 PM	8
9	U	NPOC	HS18040249-01	1/2	01-20-2018_	NPOC:12.70mg/L	Completed	4/10/2018 3:07:23 PM	9
10	U	NPOC	HS18040249-01MS	1/2	01-20-2018_	NPOC:23.47mg/L	Completed	4/10/2018 3:20:54 PM	10
11	U	NPOC	HS18040265-01DF5	TOC_W 5310B 1/2	01-20-2018_	NPOC:27.68mg/L	Completed	4/10/2018 3:34:14 PM	11
12	U	NPOC	HS18040024-01	TOC_W 5310B 1/2	01-20-2018_	NPOC:15.09mg/L	Completed	4/10/2018 3:49:32 PM	12
13	U	NPOC	CCV	306.064.702	01-20-2018_	NPOC:26.48mg/L	Completed	4/10/2018 4:03:19 PM	13
14	U	NPOC	CCB	UNTITLED	01-20-2018_	NPOC:0.1838mg/L	Completed	4/10/2018 4:18:37 PM	14
15	U	NPOC	HS18040403-01	TOC_W 5310B 1/2	01-20-2018_	NPOC:14.64mg/L	Completed	4/10/2018 4:32:13 PM	15
16	U	NPOC	HS18040355-01DF2	TOC_W 5310B 1/2	01-20-2018_	NPOC:21.06mg/L	Completed	4/10/2018 4:45:27 PM	16
17	U	NPOC	HS18040404-01	TOC_W 5310B 1/2	01-20-2018_	NPOC:22.96mg/L	Completed	4/10/2018 4:58:45 PM	17
18	U	NPOC	CCV	306.064.702	01-20-2018_	NPOC:27.36mg/L	Completed	4/10/2018 5:14:27 PM	18
19	U	NPOC	CCB	UNTITLED	01-20-2018_	NPOC:0.4336mg/L	Completed	4/10/2018 5:29:40 PM	19

Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

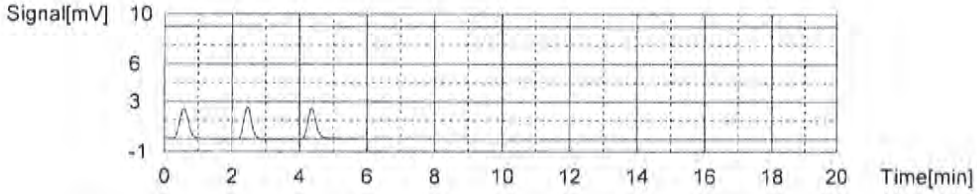
Sample Name:	CAL
Sample ID:	304.185:(403-408)
Cal. Curve:	01-20-2018_W.2018_01_20_14_48_29.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.293	50uL	1	*******		1/20/2018 2:57:14 PM
2	4.151	50uL	1	*******		1/20/2018 2:59:19 PM
3	4.214	50uL	1	*******		1/20/2018 3:01:24 PM

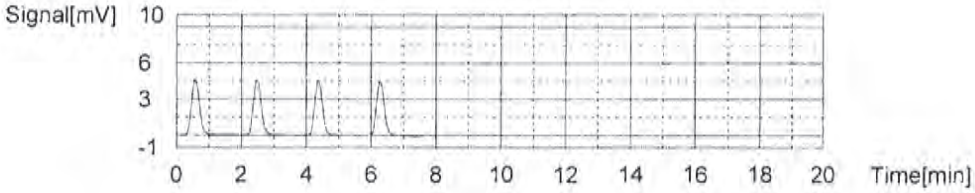
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 4.219



Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.666	50uL	1	*******		1/20/2018 3:10:27 PM
2	7.701	50uL	1	*******		1/20/2018 3:12:32 PM
3	7.418	50uL	1	*******	E	1/20/2018 3:14:37 PM
4	7.476	50uL	1	*******		1/20/2018 3:16:42 PM

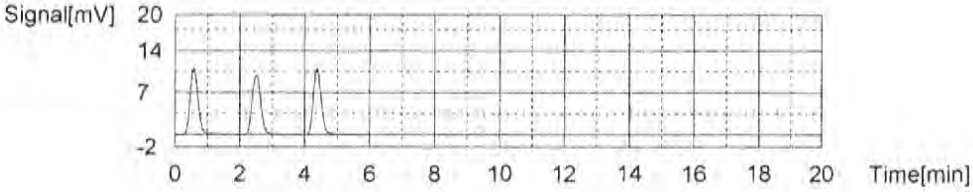
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 7.614



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	18.51	50uL	1	*******		1/20/2018 3:25:40 PM
2	18.31	50uL	1	*******		1/20/2018 3:27:45 PM
3	18.12	50uL	1	*******		1/20/2018 3:29:50 PM

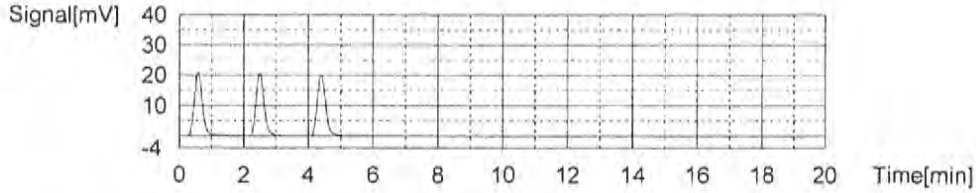
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 18.31



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	36.74	50uL	1	*******		1/20/2018 3:38:54 PM
2	36.11	50uL	1	*******		1/20/2018 3:40:59 PM
3	36.04	50uL	1	*******		1/20/2018 3:43:04 PM

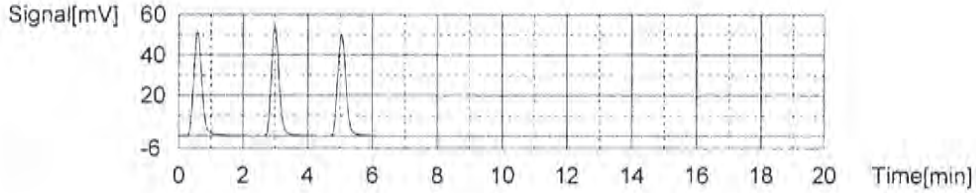
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 36.30



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	92.73	50uL	1	*******		1/20/2018 3:52:38 PM
2	92.73	50uL	1	*******		1/20/2018 3:54:51 PM
3	91.34	50uL	1	*******		1/20/2018 3:56:58 PM

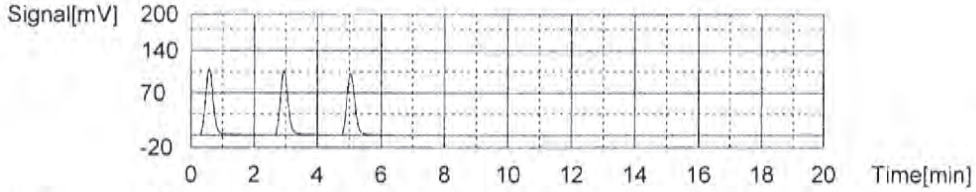
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 92.27



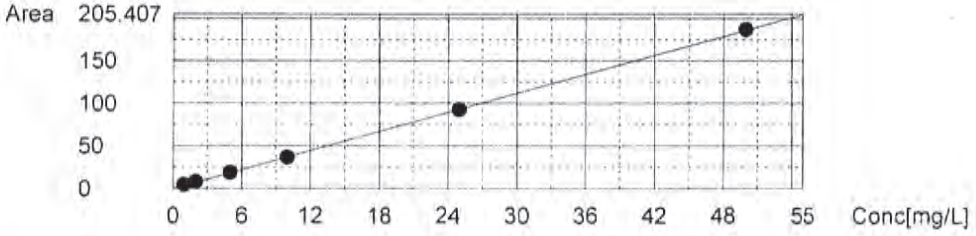
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	189.1	50uL	1	*******		1/20/2018 4:06:29 PM
2	186.6	50uL	1	*******		1/20/2018 4:08:46 PM
3	184.5	50uL	1	*******		1/20/2018 4:11:02 PM

Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 186.7



Slope: 3.729
Intercept -0.2289
r^2 0.9999
r 1.0000
Zero Shift No



Sample

Sample Name: ICV
Sample ID: 304.185.409
Origin: TOC_W_9060.met
Status Completed
Chk. Result

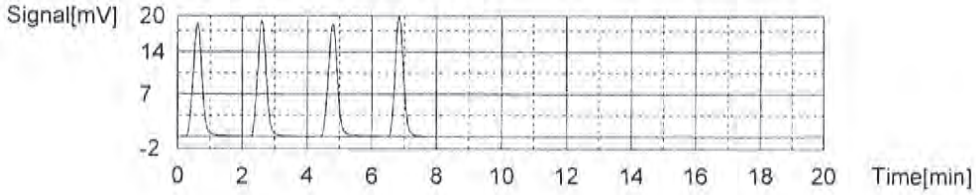
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.719mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.94	9.699mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:20:09 PM
2	36.11	9.744mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:22:31 PM
3	36.38	9.817mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:24:46 PM
4	35.63	9.616mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:26:51 PM

Mean Area 36.02
Mean Conc. 9.719mg/L



Sample

Sample Name: ICB
Sample ID: Untitled
Origin: TOC_W_9060.met
Status Completed
Chk. Result

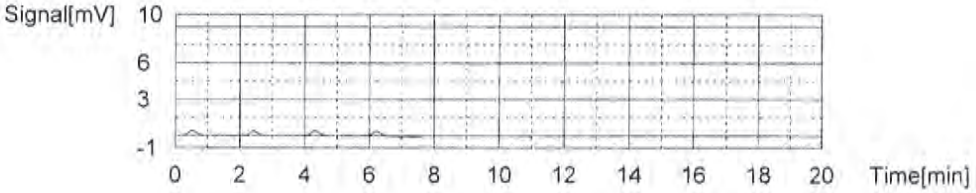
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.2186mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.6786	0.2434mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:35:53 PM
2	0.5291	0.2033mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:37:58 PM
3	0.5827	0.2176mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:40:03 PM
4	0.5540	0.2099mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	1/20/2018 4:42:08 PM

Mean Area 0.5861
Mean Conc. 0.2186mg/L



Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Sample

Sample Name:	CCV
Sample ID:	306.064.702
Origin:	01-20-2018_W.cal
Status	Completed
Chk. Result	

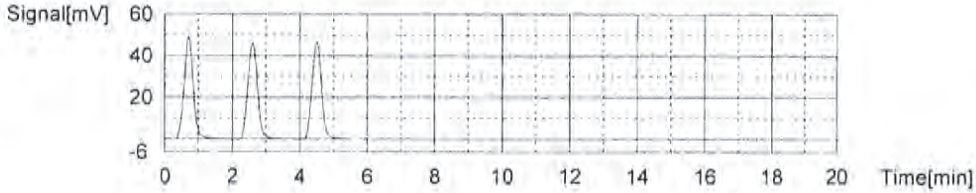
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.84mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	93.06	25.02mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:08:57 PM
2	92.77	24.94mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:11:02 PM
3	91.38	24.57mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:13:13 PM

Mean Area 92.40
Mean Conc. 24.84mg/L



Sample

Sample Name:	CCB
Sample ID:	UNTITLED
Origin:	01-20-2018_W.cal
Status	Completed
Chk. Result	

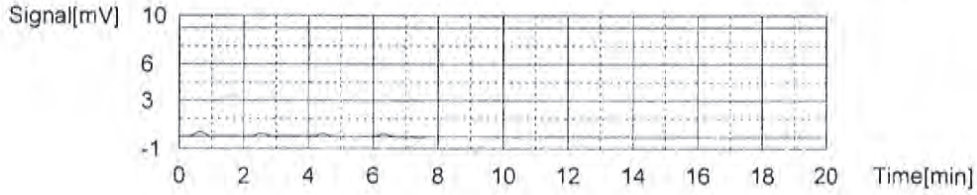
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1620mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.6779	0.2432mg/L	50uL	1	E	01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:22:16 PM
2	0.3690	0.1603mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:24:21 PM
3	0.4089	0.1710mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:26:26 PM
4	0.3475	0.1546mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:28:31 PM

Mean Area 0.3751
Mean Conc. 0.1620mg/L



Sample

Sample Name: WBLKW1-041018
Sample ID: TOC_W
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

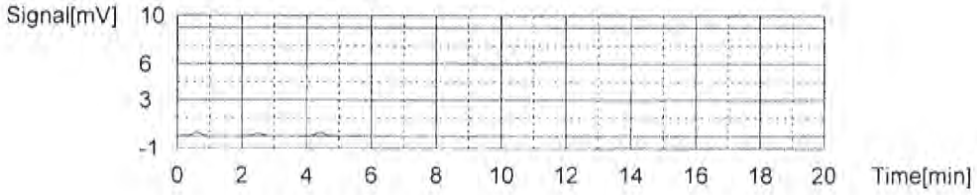
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1775mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4653	0.1862mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:37:29 PM
2	0.3412	0.1529mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:39:34 PM
3	0.4930	0.1936mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:41:39 PM

Mean Area 0.4332
Mean Conc. 0.1775mg/L



Sample

Sample Name: WLCSW1-041018
Sample ID: 297.020.4301
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

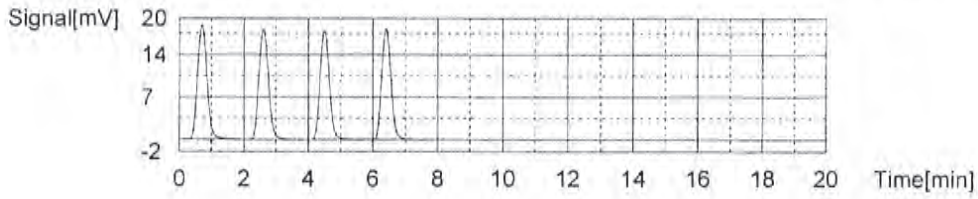
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.846mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.18	10.30mg/L	50uL	1	E	01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:50:42 PM
2	37.37	10.08mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:52:47 PM
3	35.76	9.651mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:54:52 PM
4	36.34	9.806mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 1:56:57 PM

Mean Area 36.49
Mean Conc. 9.846mg/L



Sample

Sample Name: WLCSDW1-041018
Sample ID: UNTITLED
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

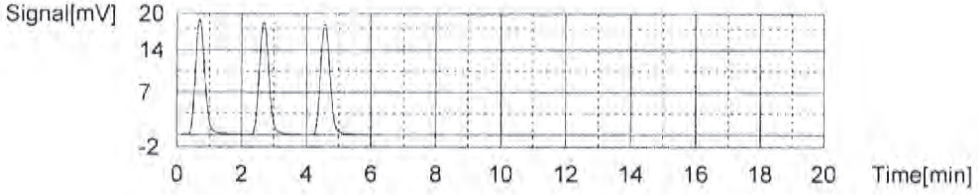
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.12mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	37.74	10.18mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 2:05:59 PM
2	37.77	10.19mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 2:08:04 PM
3	36.99	9.980mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 2:10:09 PM

Mean Area 37.50
Mean Conc. 10.12mg/L



Sample

Sample Name: HS18040240-01DF2
Sample ID: 1/2
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

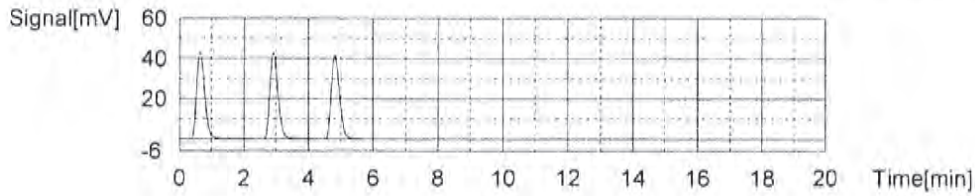
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:20.07mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	75.31	20.26mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 2:50:00 PM
2	74.48	20.03mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 2:52:05 PM
3	74.05	19.92mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 2:54:10 PM

Mean Area 74.61
Mean Conc. 20.07mg/L



Sample

Sample Name: HS18040249-01
Sample ID: 1/2
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

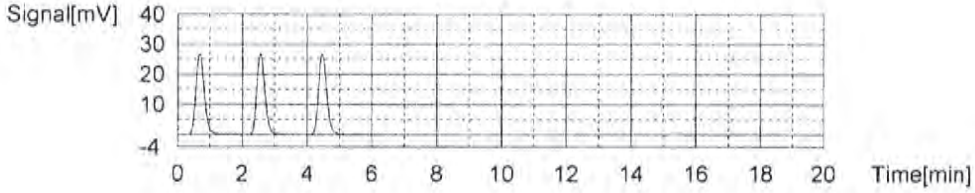
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:12.70mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	48.00	12.93mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 3:03:13 PM
2	46.71	12.59mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 3:05:18 PM
3	46.73	12.59mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 3:07:23 PM

Mean Area 47.15
Mean Conc. 12.70mg/L



Sample

Sample Name: HS18040249-01MS
Sample ID: 1/2
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

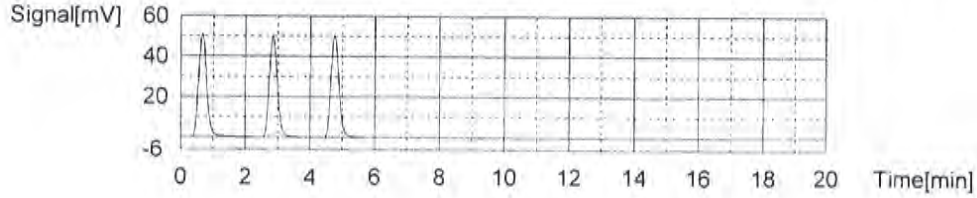
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:23.47mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	88.60	23.82mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 3:16:44 PM
2	86.65	23.30mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 3:18:49 PM
3	86.66	23.30mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 3:20:54 PM

Mean Area 87.30
Mean Conc. 23.47mg/L



Sample

Sample Name: CCV
Sample ID: 306.064.702
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

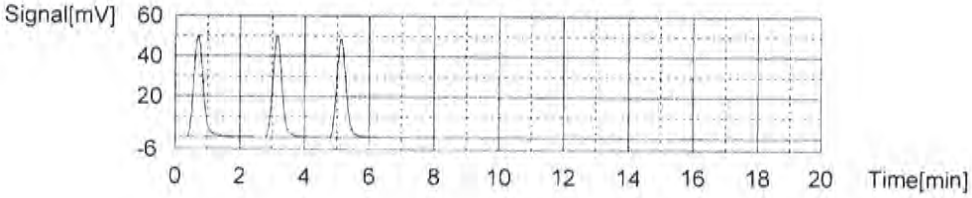
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:26.48mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	99.94	26.86mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 3:59:02 PM
2	98.40	26.45mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 4:01:13 PM
3	97.25	26.14mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 4:03:19 PM

Mean Area 98.53
Mean Conc. 26.48mg/L



Sample

Sample Name: CCB
Sample ID: UNTITLED
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

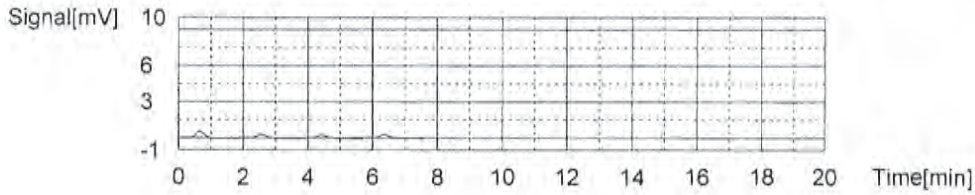
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1838mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.9296	0.3107mg/L	50uL	1	E	01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 4:12:22 PM
2	0.4741	0.1885mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 4:14:27 PM
3	0.3837	0.1643mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 4:16:32 PM
4	0.5121	0.1987mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 4:18:37 PM

Mean Area 0.4566
Mean Conc. 0.1838mg/L



Sample

Sample Name: CCV
Sample ID: 306.064.702
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

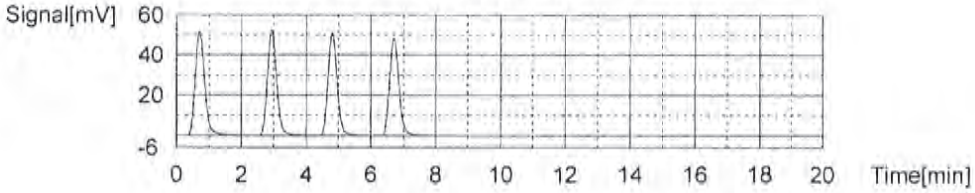
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:27.36mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	103.0	27.68mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:08:06 PM
2	103.2	27.73mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:10:11 PM
3	99.23	26.67mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:12:16 PM
4	97.81	26.29mg/L	50uL	1	E	01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:14:27 PM

Mean Area 101.8
Mean Conc. 27.36mg/L



Sample

Sample Name: CCB
Sample ID: UNTITLED
Origin: 01-20-2018_W.cal
Status Completed
Chk. Result

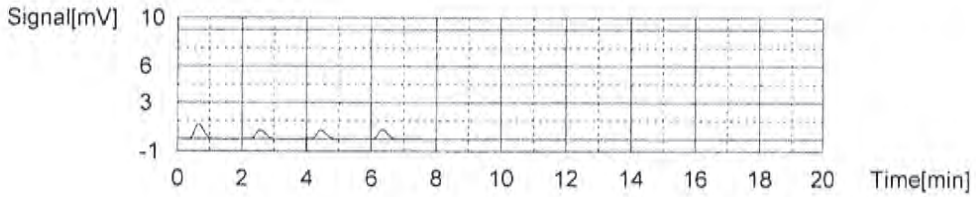
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.4336mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2.290	0.6755mg/L	50uL	1	E	01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:23:25 PM
2	1.411	0.4398mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:25:30 PM
3	1.356	0.4250mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:27:35 PM
4	1.397	0.4360mg/L	50uL	1		01-20-2018_W.2018_01_20_14_48_29.cal	4/10/2018 5:29:40 PM

Mean Area	1.388
Mean Conc.	0.4336mg/L



Sub Contract Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
ALS WO# HS18040240

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1809681; 1810423; 1810427; 1810428

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2081 (212824)

General Set Information: There were four field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Sample 1810423001 was analyzed and reported at 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 596169) was less than 1/2 the CRDL. The recovery for the LCS (596170) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1808267001 (Client ID: LH18/24-SP650_040418). The Matrix Spike and duplicate (MS/MSD – 596171/72) failed QC acceptance criteria for percent recoveries, biased high. This is due to the fact that the unspiked sample result of 2.3µg/L was not subtracted from the MS/MSD results. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected. The MS/MSD relative percent difference (RPD) was within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1. Manual Integrations was performed for datafile 02APRD01/02.

Thomas Bosch April 18, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: April 18, 2018

RJ Masahisa
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1809681**
Project ID: HS18040240 040418
Purchase Order: HS18040240
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_040418	1809681001	04/04/18	04/06/18	

ANALYTICAL REPORT

Workorder: 34-1809681
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID:	LH18/24-SP650_040418	Sampling Site:	NA	Collected:	04/04/2018
Lab ID:	1809681001	Media:	125 mL Nalgene	Received:	04/06/2018
Matrix:	Water	Sampling Parameter:	NA		

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04	
	Batch: ELMS/2081 (HBN: 212824)	**Percent Solid:** NA	
	Analyzed: 04/17/2018 09:58	**Report Basis:** Wet	

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	2.3	1.0	2.0	4.0	1	J

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 04/18/2018 12:28	/S/ Stephen Brose 04/18/2018 15:35

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1809681
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1809681

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2081 (HBN: 212824)
Analyzed By: Thomas Bosch

Blank

LMB: 596169
Analyzed: 04/17/2018 09:29
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 596170
Analyzed: 04/17/2018 09:44
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.04	5.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1809681001
Analyzed: 04/17/2018 09:58
Dilution: 1
Units: ug/L

MS: 596171
Analyzed: 04/17/2018 10:12
Dilution: 1
Units: ug/L

MSD: 596172
Analyzed: 04/17/2018 10:26
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	2.30	6.24	5	# 125	78.8	123.8	6.15	123	1.41	0.0	20.0

Continuing Calibration Verification

CCV: 596166
Analyzed: 04/17/2018 08:41
Units: ug/L
Criteria: ± 15%

CCV: 596173
Analyzed: 04/17/2018 11:23
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	27.3	25.0	109	28.3	25.0	113

Interference Check Sample

ICSA: 596168
Analyzed: 04/17/2018 09:15
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.989	1.00	98.9

Limit of Detection Verification

LODV: 596167
Analyzed: 04/17/2018 09:01
Units: ug/L
Criteria: ± 50%

LODV: 596174
Analyzed: 04/17/2018 11:53
Units: ug/L
Criteria: ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.957	1.00	95.7	1.04	1.00	104

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1809681

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2081 (HBN: 212824)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
04/18/2018 12:28	04/18/2018 15:34

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

W 1809681

ontract Chain of Custody

COC ID: 8890

1809681

SUBCONTRACT TO:

ALS Laboratory Group
960 West LeVoy Drive
Salt Lake City, UT 84123

Phone: +1 800 356 9135

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18040240
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18040240-01**	**LH18/24-SP650_040418**	**Water**	**04 Apr 2018 14:00**
	SUB_Perch-6850			19 Apr 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 4/5/18 1800

Received By: _____ Date/Time: 4/6/18 9:30

Cooler ID(s): _____ Temperature(s): _____

ALS Environmental
CHAIN-OF-CUSTODY

Project / Job / Task: HS18040240	Split:	Workorder ID: 1809681	Level: ENV_LVL4
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
Comments:			Preservatives: COOL

Requested Analysis: EPA 6850, DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	04/04/2018 14:00	LH18/24-SP650_040418	1809681001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

39 of 114

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	04/06/2018 09:30	ALS Sample Receiving	Sample Login
Julie Warath	4/9/18 0800	14C	storage
R.33.1	4-16-18 / 12:07	T.Bosch	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1869681

Date/Time of Receipt: 4/6/18 9:30

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8427	3 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) Jessica Davies (Printed Name) 4/6/18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc Revised 01/01/2018

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 05APR18
ACTWGT: 8.85 LB
CAD: 300130/CAFE31
DIMS: 14x11x10 IN

BILL SENDER

RT 90
ST 1

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18040240 - RJ

FedEx Express

E

J171016102001 uv

FRI - 06 APR 3:00P
STANDARD OVERNIGHT

TRK# 0201 7376 9754 0595

AX BTFA

84123
UT-US SLC

tch Worklist

Batch: ELMS/ 2081 **Created:** 4/16/2018 16:57 **Instrument:** **HBN:** 212824

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1809681 [ENV_LVL4]
Workorder: 1810423 [ENV_LVL4]
Workorder: 1810427 [ENV_LVL4]
Workorder: 1810428 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	596166	CCV for HBN 212824 [ELMS/2081]				CCV	3		E685041C3Q	5311		4/19/2018	
2	596167	LODV for HBN 212824 [ELMS/2081				LODV	3		E6850..D3Q	5311		4/19/2018	
3	596168	ICS for HBN 212824 [ELMS/2081]				ICS	3		E6850..D3Q	5311		4/19/2018	
4	596169	LMB for HBN 212824 [ELMS/2081]				LMB	3		E6850Q413Q	5311		4/19/2018	
5	596170	LCS for HBN 212824 [ELMS/2081]				LCS	3		E6850Q413Q	5311		4/19/2018	
6	1809681001	LH18/24-SP650_040418				SAMPLE	3	1809681001-A	E6850Q41.3	5480	5/2/2018	4/19/2018	
7	596171	LH18/24-SP650...(1809681001MS)				MS	3		E6850Q413Q	5311		4/19/2018	
8	596172	LH18/24-SP65...(1809681001MSD)				MSD	3		E6850Q413Q	5311		4/19/2018	
9	1810423001	LH18/24-SP140_041118				SAMPLE	3	1810423001-A	E6850Q41.3	5480	5/9/2018	4/26/2018	
10	1810427001	LH18/24-SP650_041118				SAMPLE	3	1810427001-A	E6850Q41.3	5480	5/9/2018	4/26/2018	
11	1810428001	LH18/24-SP650_041118				SAMPLE	3	1810428001-A	E6850Q41.3	5480	5/9/2018	4/26/2018	
12	596173	CCV for HBN 212824 [ELMS/2081]				CCV	3		E685041C3Q	5311		4/19/2018	
13	596174	LODV for HBN 212824 [ELMS/2081				LODV	3		E6850..D3Q	5311		4/19/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1809681 (001); 1810423 (001); 1810427 (001); 1810428 (001)
ELMS Batch/HBN ID: 2081 (212824)
Prep Date: 04/17/2018 Analysis Date: 04/17/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\APR\17APR18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 38780. Dilutions of Working Standard Solution ID 32373 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 04/02/2018, sequence 02APR18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 36749 was used for LCS 596170; Target = 5.0µg/L. ASTM type II water was used for LMB 596169.

MS/MSD: MS/MSD was performed on sample 1809681001 (Client ID: LH18/24-SP650_040418). 5.0µl of Working Standard Solution Horizon ID 36735 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:

1) Results reported in µg/L. Sample 1810423001 was analyzed and reported at 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 596171/72) failed QC acceptance criteria for percent recoveries, biased high. This is due to the fact that the unspiked sample result of 2.3µg/L was not subtracted from the MS/MSD results. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\APR\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 02APRD01/02.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\212824-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — Description - 6850 WKG Std 100.ug/L

Standard: 36735
MFG: ALS/SLC
MFG Lot: TNB: 05/10/17
Part ID:

Created By: T. Bosch
Create Date: 05/10/2017
Lab Lot: CLO4 WRK

Amount: 10 mL
Expires: 05/10/2018
Usable: Yes

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36734	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	05/10/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 36733	Created By: T. Bosch	Amount: 100 mL
MFG: AccuStandard	Create Date: 5/10/2017	Expires: 10/4/2018
MFG Lot: 216095148	Lab Lot: CLO4 STOCK	Usable: Yes
Part ID: IC-PER-10X-1		

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109		Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House		Create Date: 10/6/2005	Expires: 11/7/2025
MFG Lot:		Lab Lot: LAB 109	Usable: Yes
Part ID:			

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 36734
MFG: ALS/SLC
MFG Lot: TNB: 05/10/17
Part ID:

Created By: T. Bosch
Create Date: 05/10/2017
Lab Lot: CLO4 INT

Amount: 10 mL
Expires: 05/10/2018
Usable: Yes

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK Description - 6850 QC WKG STD 100ug/L

Standard: 36750
MFG: ALS/SLC
MFG Lot: TNB: 05/11/17
Part ID:

Created By: T. Bosch
Create Date: 05/11/2017
Lab Lot: CLO4 QC WRK 100.ug/L

Amount: 10 mL
Expires: 05/11/2018
Usable: Yes

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36749	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/11/2018

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 36749
MFG: ALS/SLC
MFG Lot: TNB: 05/11/2017
Part ID:

Created By: T. Bosch
Create Date: 05/11/2017
Lab Lot: CLO4 QC INT 10.ug/mL

Amount: 10 mL
Expires: 05/11/2018
Usable: Yes

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/6/2005	Expires: 11/7/2025
MFG Lot:	Lab Lot: LAB 109	Usable: Yes
Part ID:		

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock STD 1,000ug/mL
Standard: 36748	Created By: T. Bosch	Amount: 100 mL
MFG: Ultra Scientific	Create Date: 5/11/2017	Expires: 3/31/2020
MFG Lot: CP-0860	Lab Lot: CLO4 QC STOCK	Usable: Yes
Part ID: ICC-013		

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 38780	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 10/09/2017 01:10PM	Expires: 10/09/2018
MFG Lot: TNB: 10/09/17	Verified By: Thomas Bosch	Usable: Yes
Pipette ID: Not Provided	Verify Date:	Lab Lot: CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	Lab Lot: CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Number: ICC-013
Lot Number: CP-0860

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ALS

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO 9001 ISO GUIDE 34 ISO 17025

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

ALS

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/INO-001
Rev. 5/16

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\17APR18D\17APR18D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DPR.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	596166 CCV@25	Vial 71	1	Control	1	1.14280e6	8.753	27.33882
*	596167 LODV@1.	Vial 72	1	Control	2	6.41761e4	8.823	9.57277e-1
*	596168 ICS@1.0	Vial 73	1	Control	3	4.94133e4	8.575	9.89270e-1
*	596169 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	596170 QC@5	Vial 75	1	Control	5	2.59363e5	8.740	5.03626
*	1809681001	Vial 76	1	Sample	6	9.01797e4	8.361	2.27846
*	596171 96811MS	Vial 77	1	Control	7	2.46735e5	8.344	6.23564
*	596172 96811SD	Vial 78	1	Control	8	2.68950e5	8.350	6.14846
*	1810423001 1K	Vial 79	1	Sample	9	3.21292e5	8.738	6356.06430
*	1810427001	Vial 80	1	Sample	10	2.63119e5	8.374	6.87199
*	1810428001	Vial 81	1	Sample	11	4.74912e5	8.385	12.19300
*	596173 CCV@25	Vial 71	1	Control	12	1.42950e6	8.714	28.29573
*	596174 LODV@1.	Vial 72	1	Control	14	5.09575e4	8.590	1.03663

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	596166 CCV@25	Vial 71	1	Control	1	3.55217e5	8.769	27.39222
*	596167 LODV@1.	Vial 72	1	Control	2	2.24706e4	8.844	9.29806e-1
*	596168 ICS@1.0	Vial 73	1	Control	3	1.93427e4	8.583	1.09787
*	596169 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	596170 QC@5	Vial 75	1	Control	5	8.61836e4	8.756	5.14276
*	1809681001	Vial 76	1	Sample	6	3.09483e4	8.376	2.33050
*	596171 96811MS	Vial 77	1	Control	7	8.35679e4	8.358	6.52866
*	596172 96811SD	Vial 78	1	Control	8	9.06309e4	8.366	6.40262
*	1810423001 1K	Vial 79	1	Sample	9	1.05474e5	8.752	6454.26200
*	1810427001	Vial 80	1	Sample	10	8.92737e4	8.390	7.22479
*	1810428001	Vial 81	1	Sample	11	1.54422e5	8.398	12.46426
*	596173 CCV@25	Vial 71	1	Control	12	4.34571e5	8.729	27.82126
*	596174 LODV@1.	Vial 72	1	Control	14	2.02342e4	8.602	1.17481

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	596166 CCV@25	Vial 71	1	Control	1	1.69004e5	8.776	5.00000
*	596167 LODV@1.	Vial 72	1	Control	2	3.01823e5	8.848	5.00000
*	596168 ICS@1.0	Vial 73	1	Control	3	2.25166e5	8.595	5.00000
*	596169 LMB	Vial 74	1	Control	4	2.62060e5	8.801	5.00000
*	596170 QC@5	Vial 75	1	Control	5	2.34788e5	8.764	5.00000
*	1809681001	Vial 76	1	Sample	6	1.81546e5	8.384	5.00000
*	596171 96811MS	Vial 77	1	Control	7	1.79397e5	8.365	5.00000
*	596172 96811SD	Vial 78	1	Control	8	1.98406e5	8.372	5.00000
*	1810423001 1K	Vial 79	1	Sample	9	2.29046e5	8.761	5000.00000
*	1810427001	Vial 80	1	Sample	10	1.73045e5	8.396	5.00000
*	1810428001	Vial 81	1	Sample	11	1.71055e5	8.407	5.00000
*	596173 CCV@25	Vial 71	1	Control	12	2.03222e5	8.737	5.00000
*	596174 LODV@1.	Vial 72	1	Control	14	2.21978e5	8.617	5.00000

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\APR\17APR18D.S

Sequence Table:

Method and Injection Info Part:

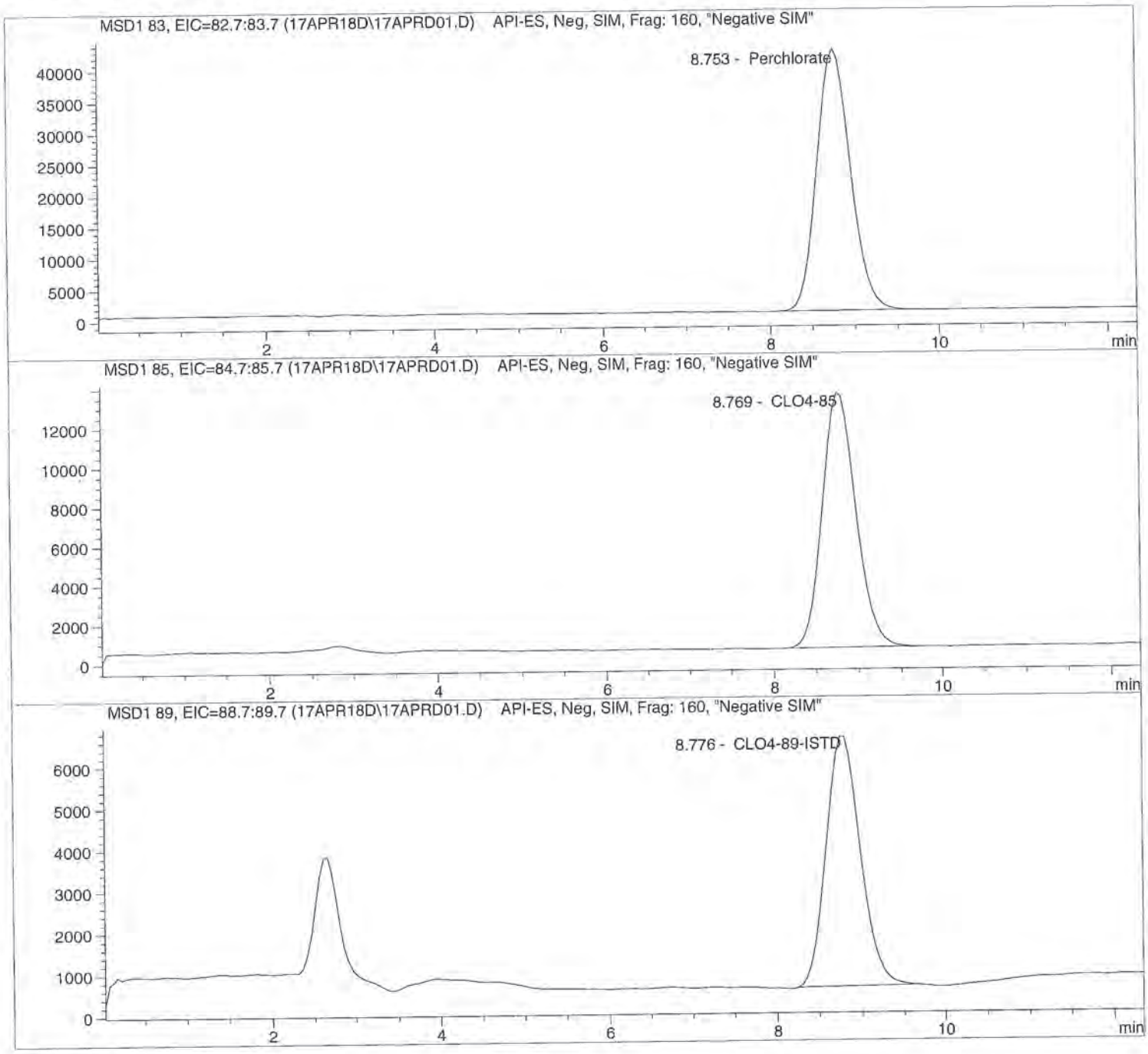
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	596166 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	596167 LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	596168 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	596169 LMB	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	596170 QC@5	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	1809681001	CLO4-DOD	1	Sample		
7	Vial 77	596171 96811MS	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	596172 96811SD	CLO4-DOD	1	Ctrl Samp		
9	Vial 79	1810423001 1K	CLO4-DOD	1	Sample		
10	Vial 80	1810427001	CLO4-DOD	1	Sample		
11	Vial 81	1810428001	CLO4-DOD	1	Sample		
12	Vial 71	596173 CCV@25	CLO4-DOD	1	Ctrl Samp		
13	Vial 72	596174 LODV@1.	CLO4-DOD	1	Ctrl Samp		
14	Vial 72	596174 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD01.D Sample Name: 596166 CCV@25

Injection Date:	4/17/2018 08:41:41	Seq Line:	1
Sample Name:	596166 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD01.D Sample Name: 596166 CCV@25

Injection Date:	4/17/2018 08:41:41	Seq Line:	1
Sample Name:	596166 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.753	PBA	1142798.1	27.3388	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.769	PBA	355217.3	27.3922	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.776	PBA	169004.3	5.0000	CLO4-89-ISTD

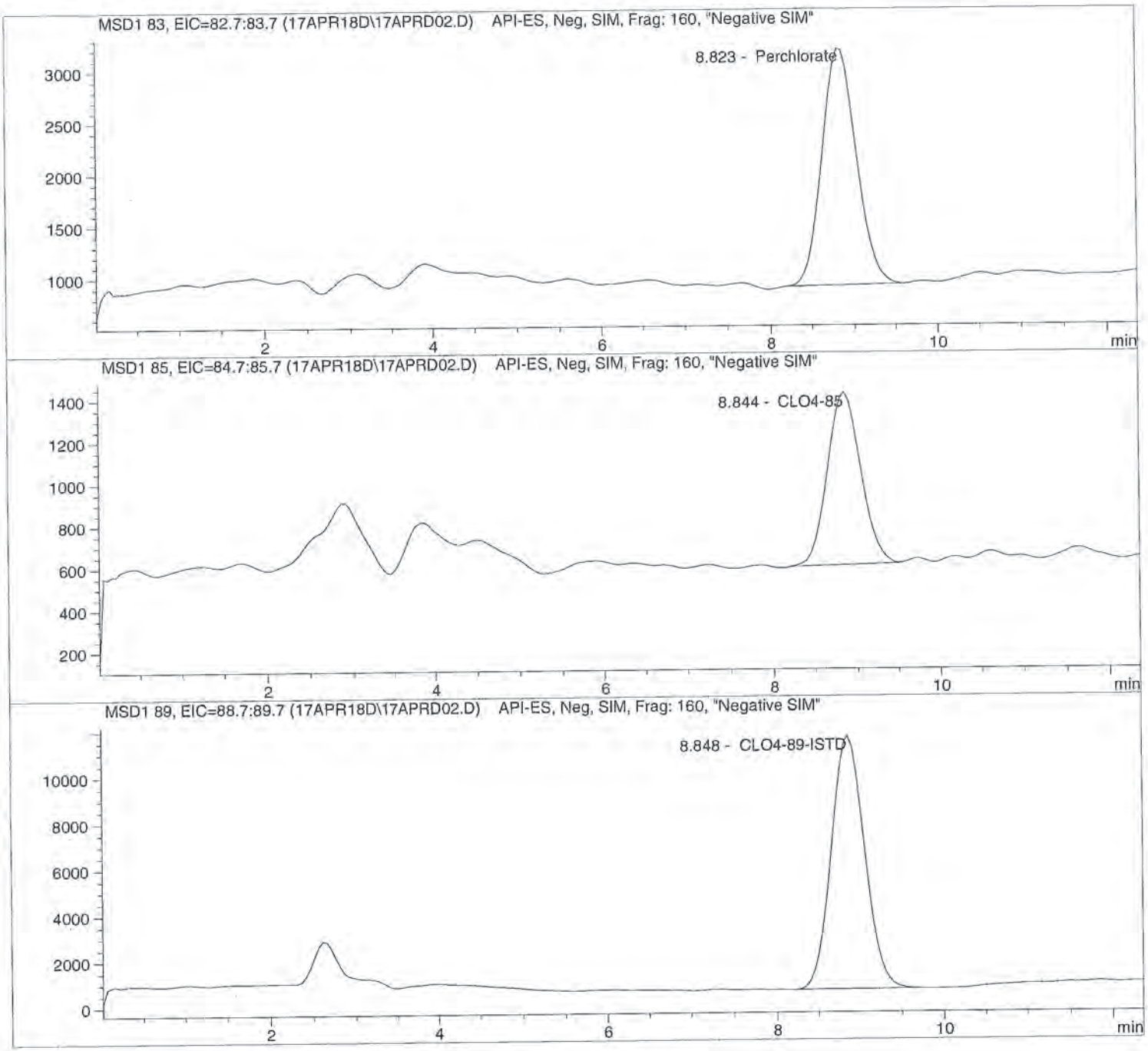
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD02.D Sample Name: 596167 LODV@1.

Injection Date:	4/17/2018 09:01:47	Seq Line:	2
Sample Name:	596167 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD02.D Sample Name: 596167 LODV@1.

Injection Date:	4/17/2018 09:01:47	Seq Line:	2
Sample Name:	596167 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.823	PBA	64176.1	0.9573	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.844	PBA	22470.6	0.9298	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.848	PBA	301823.1	5.0000	CLO4-89-ISTD

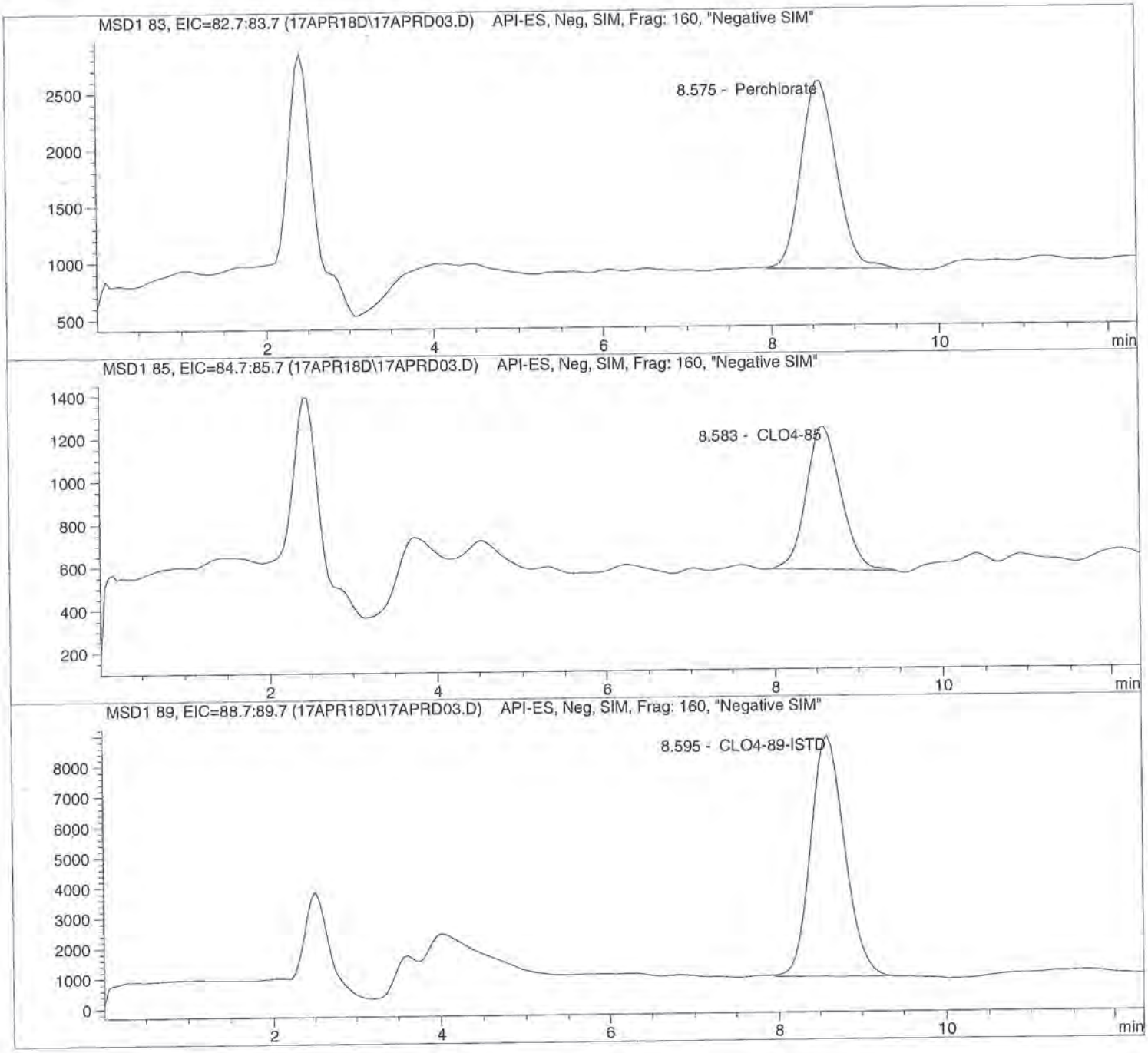
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD03.D Sample Name: 596168 ICS@1.0

Injection Date:	4/17/2018 09:15:52	Seq Line:	3
Sample Name:	596168 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD03.D Sample Name: 596168 ICS@1.0

Injection Date:	4/17/2018 09:15:52	Seq Line:	3
Sample Name:	596168 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.575	BBA	49413.3	0.9893	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.583	PBA	19342.7	1.0979	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.595	BBA	225165.6	5.0000	CLO4-89-ISTD

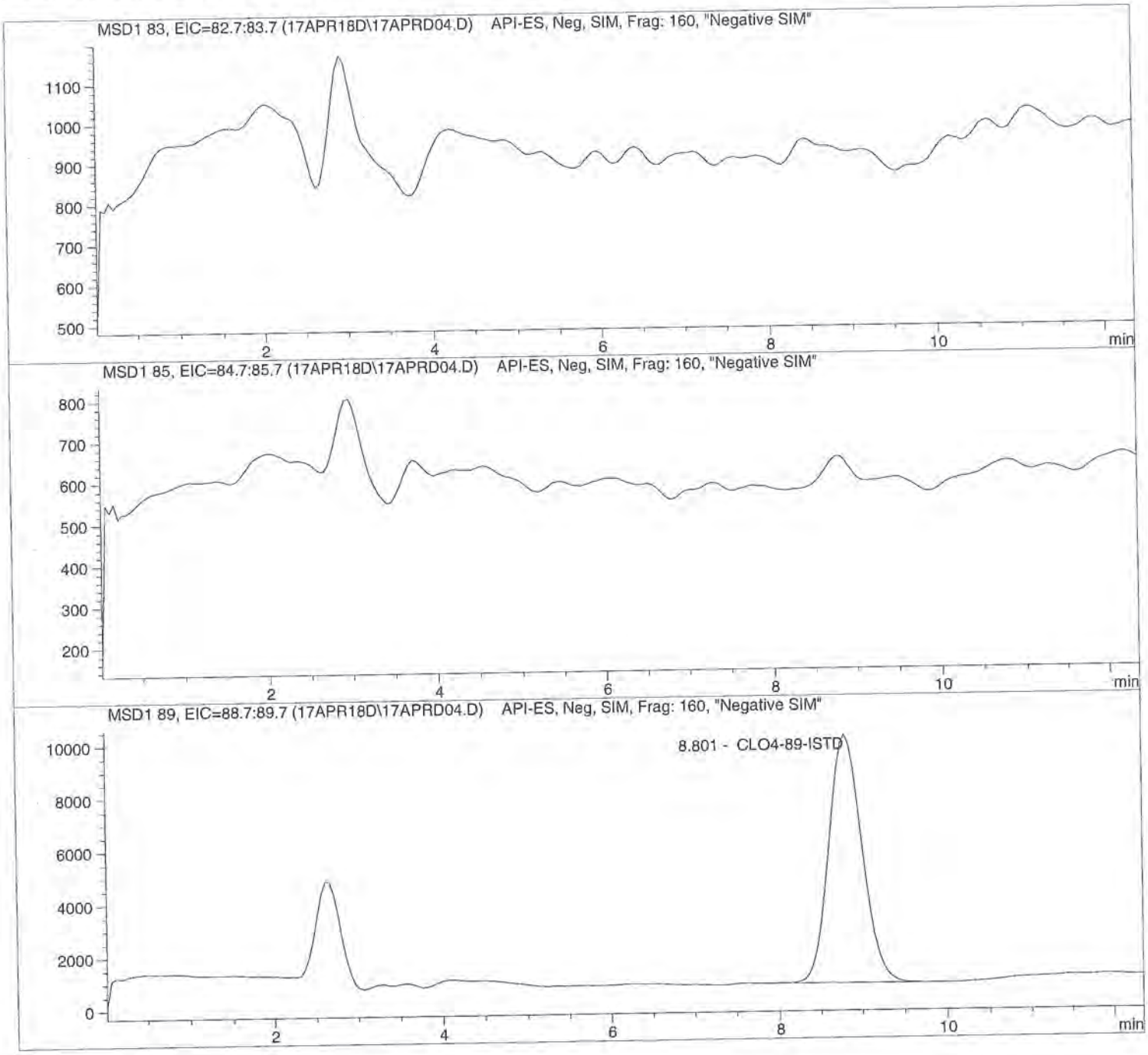
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD04.D Sample Name: 596169 LMB

Injection Date:	4/17/2018 09:29:59	Seq Line:	4
Sample Name:	596169 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD04.D Sample Name: 596169 LMB

Injection Date:	4/17/2018 09:29:59	Seq Line:	4
Sample Name:	596169 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.801	BBA	262060.1	5.0000	CLO4-89-ISTD

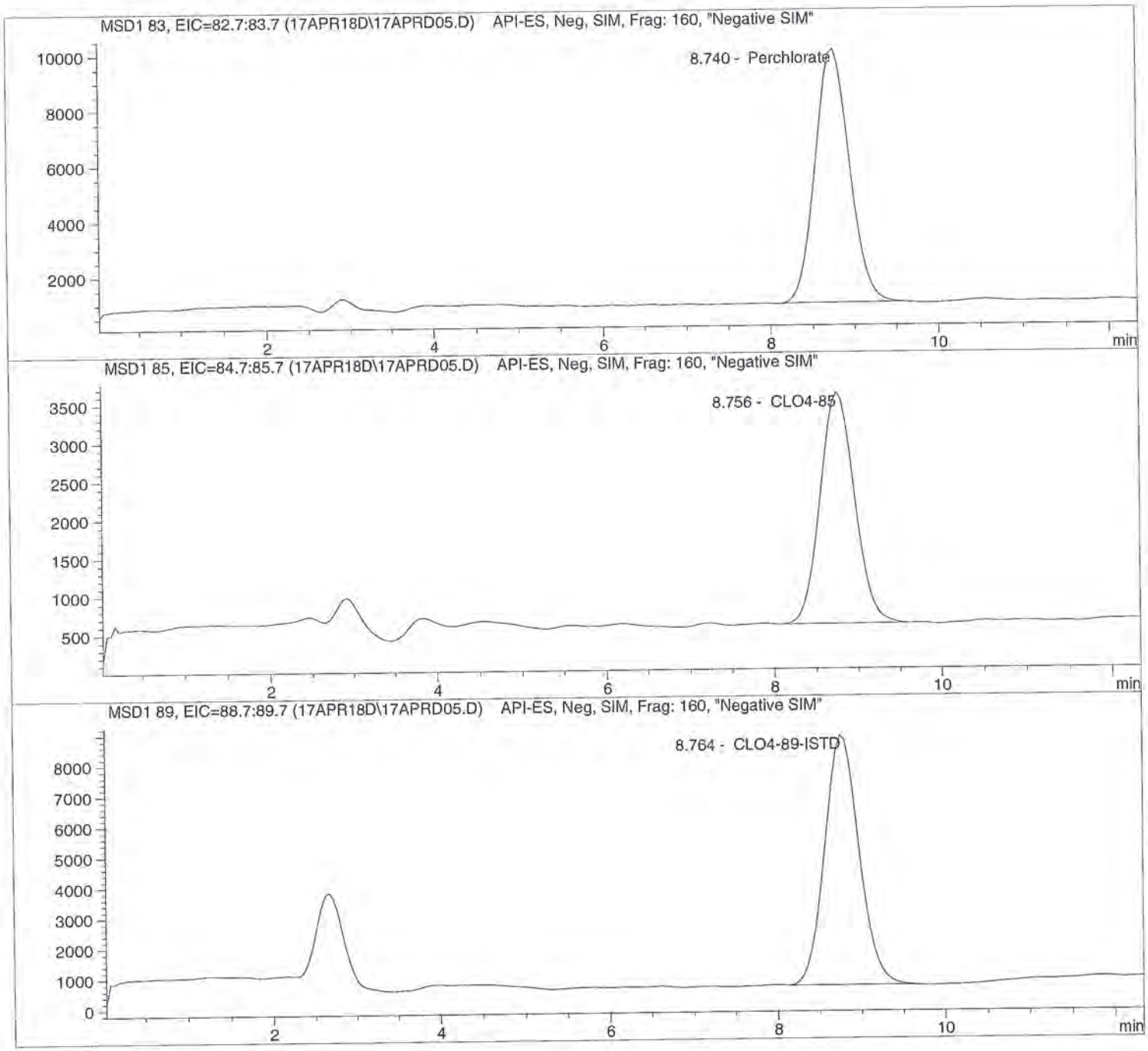
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD05.D Sample Name: 596170 QC@5

Injection Date:	4/17/2018 09:44:04	Seq Line:	5
Sample Name:	596170 QC@5	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD05.D Sample Name: 596170 QC@5

Injection Date:	4/17/2018 09:44:04	Seq Line:	5
Sample Name:	596170 QC@5	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.740	BBA	259362.7	5.0363	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.756	PBA	86183.6	5.1428	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.764	BBA	234787.9	5.0000	CLO4-89-ISTD

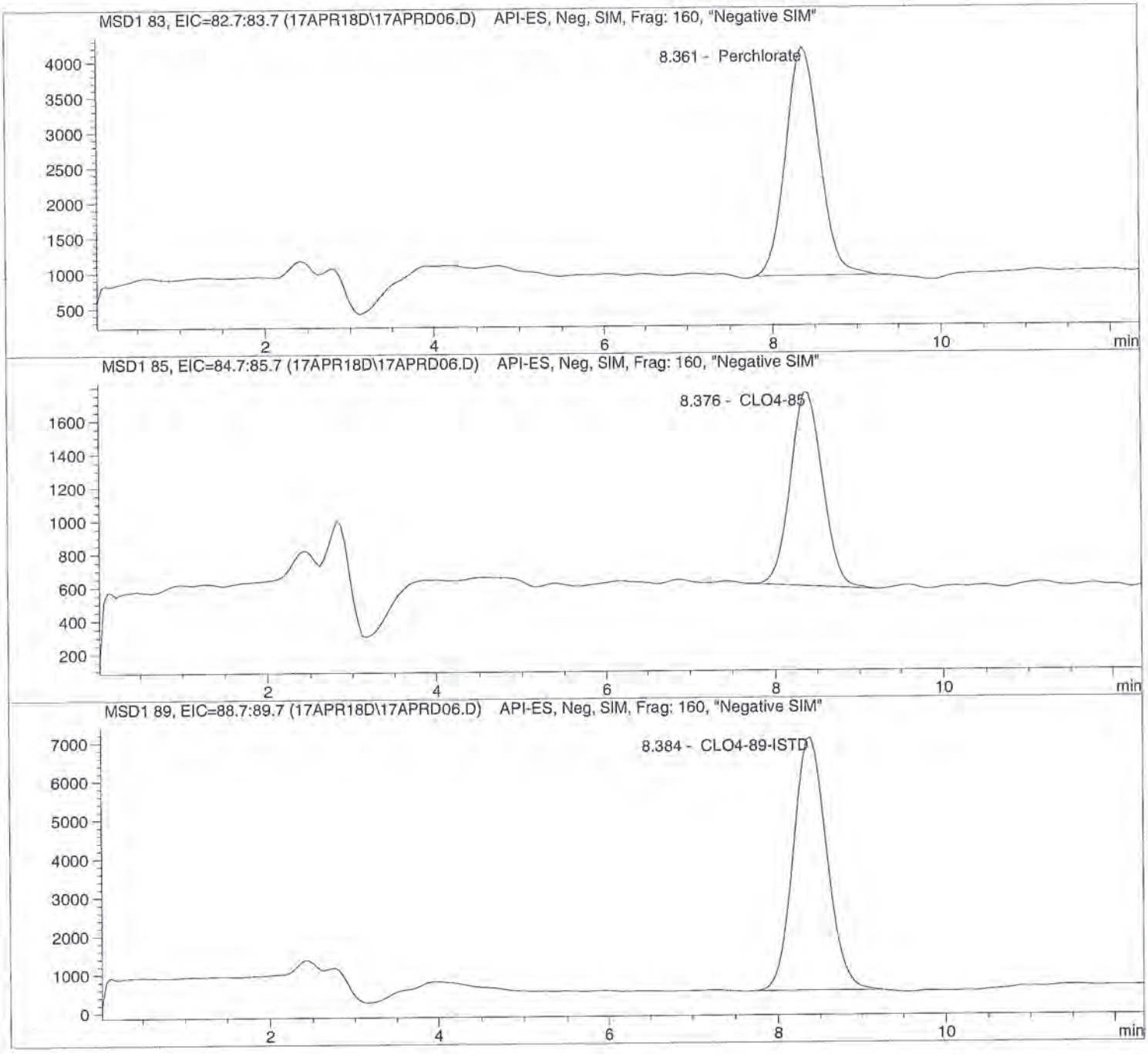
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD06.D Sample Name: 1809681001

Injection Date:	4/17/2018 09:58:45	Seq Line:	6
Sample Name:	1809681001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD06.D Sample Name: 1809681001

Injection Date:	4/17/2018 09:58:45	Seq Line:	6
Sample Name:	1809681001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.361	PBA	90179.7	2.2785	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.376	PBA	30948.3	2.3305	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.384	PBA	181546.0	5.0000	CLO4-89-ISTD

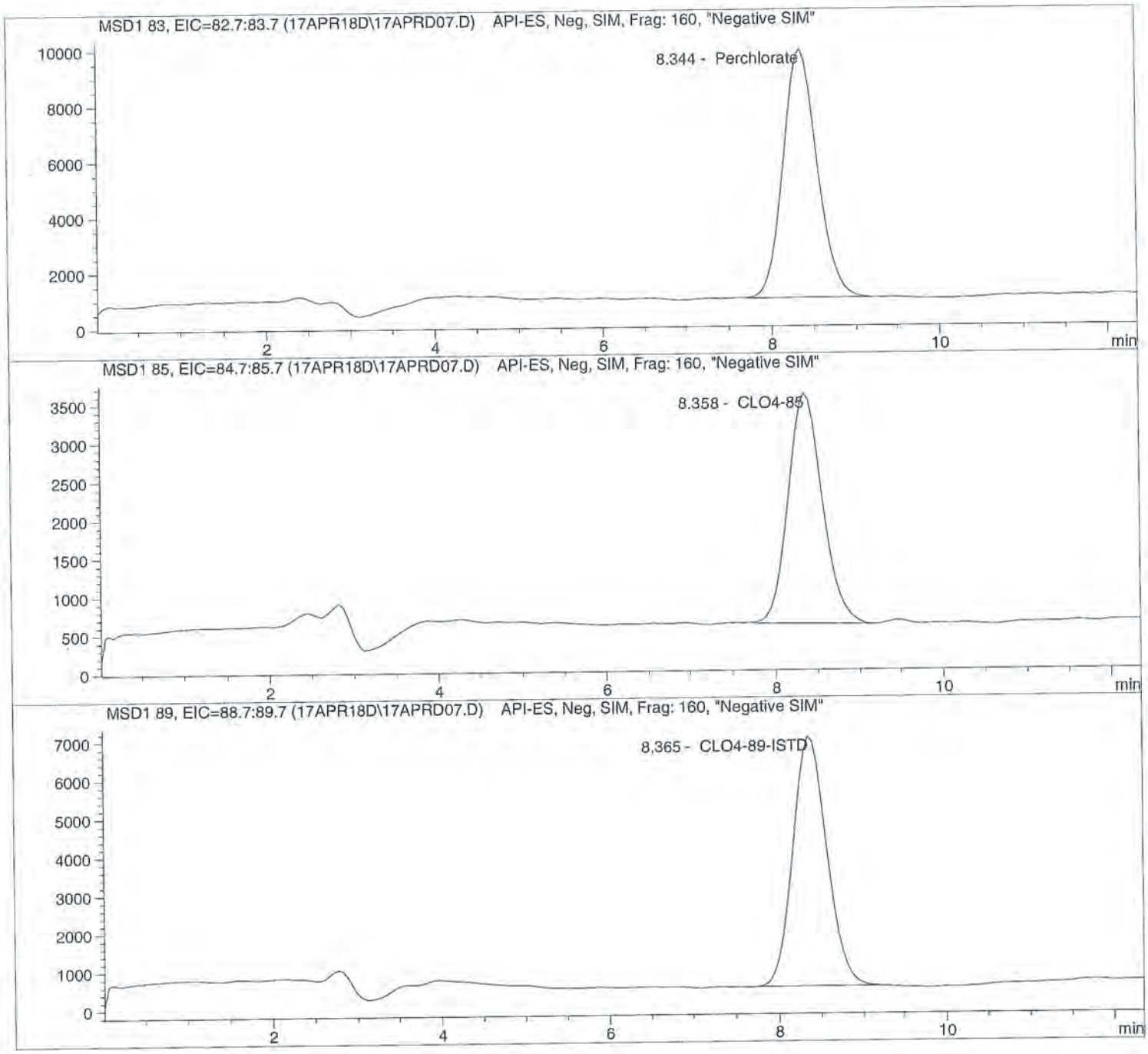
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD07.D Sample Name: 596171 96811MS

Injection Date:	4/17/2018 10:12:52	Seq Line:	7
Sample Name:	596171 96811MS	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD07.D Sample Name: 596171 96811MS

Injection Date:	4/17/2018 10:12:52	Seq Line:	7
Sample Name:	596171 96811MS	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.344	BBA	246734.9	6.2356	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.358	BBA	83567.9	6.5287	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.365	BBA	179397.1	5.0000	CLO4-89-ISTD

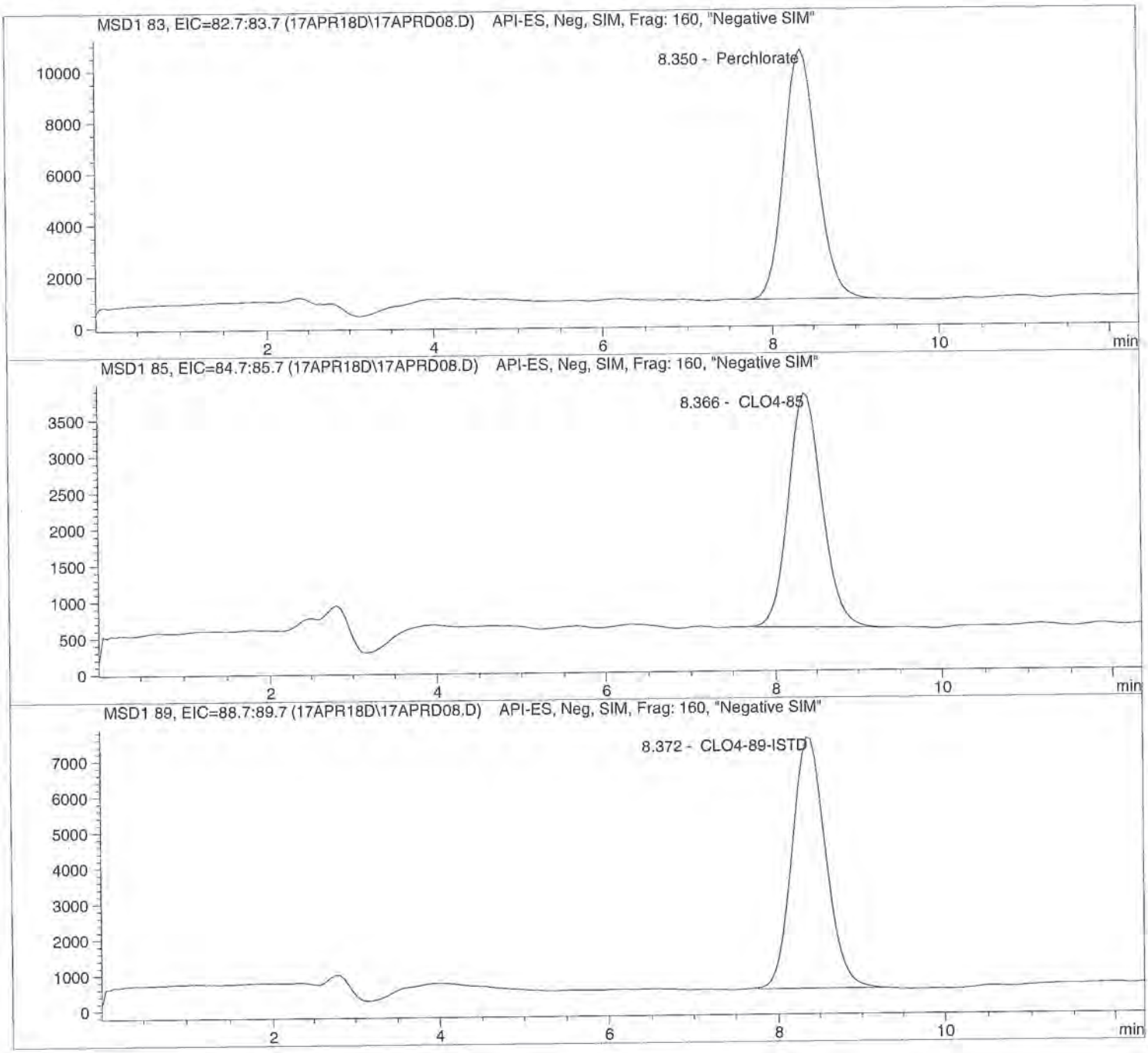
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD08.D Sample Name: 596172 96811SD

Injection Date:	4/17/2018 10:26:57	Seq Line:	8
Sample Name:	596172 96811SD	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD08.D Sample Name: 596172 96811SD

Injection Date:	4/17/2018 10:26:57	Seq Line:	8
Sample Name:	596172 96811SD	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.350	BBA	268949.8	6.1485	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.366	BBA	90630.9	6.4026	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.372	BBA	198406.3	5.0000	CLO4-89-ISTD

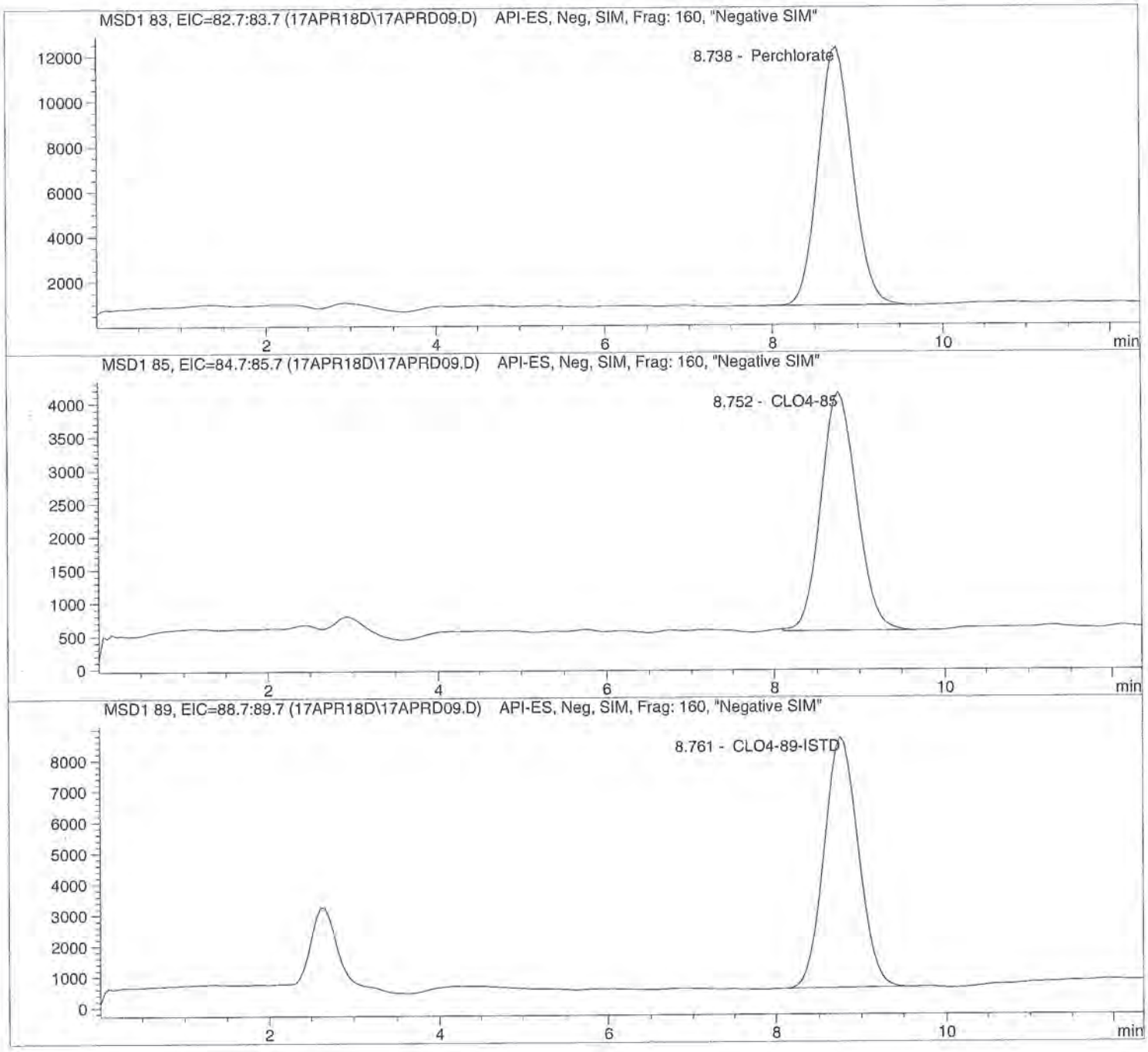
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD09.D Sample Name: 1810423001 1K

Injection Date:	4/17/2018 10:41:03	Seq Line:	9
Sample Name:	1810423001 1K	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD09.D Sample Name: 1810423001 1K

Injection Date:	4/17/2018 10:41:03	Seq Line:	9
Sample Name:	1810423001 1K	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.738	BBA	321292.2	6356.0643	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.752	BBA	105474.0	6454.2620	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.761	BBA	229045.5	5000.0000	CLO4-89-ISTD

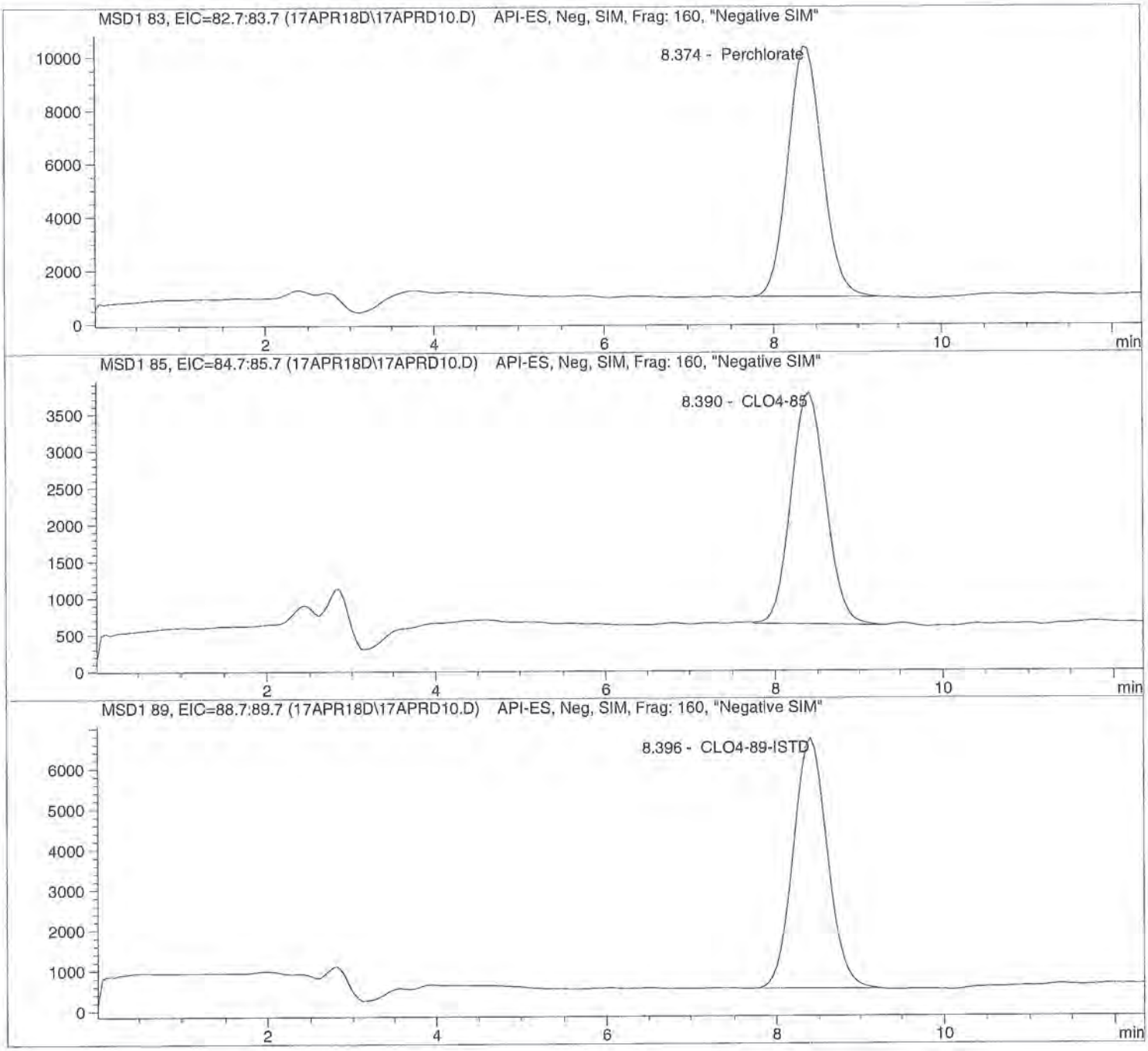
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD10.D Sample Name: 1810427001

Injection Date:	4/17/2018 10:55:12	Seq Line:	10
Sample Name:	1810427001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD10.D Sample Name: 1810427001

Injection Date:	4/17/2018 10:55:12	Seq Line:	10
Sample Name:	1810427001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.374	BBA	263118.8	6.8720	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.390	BBA	89273.7	7.2248	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.396	PBA	173045.3	5.0000	CLO4-89-ISTD

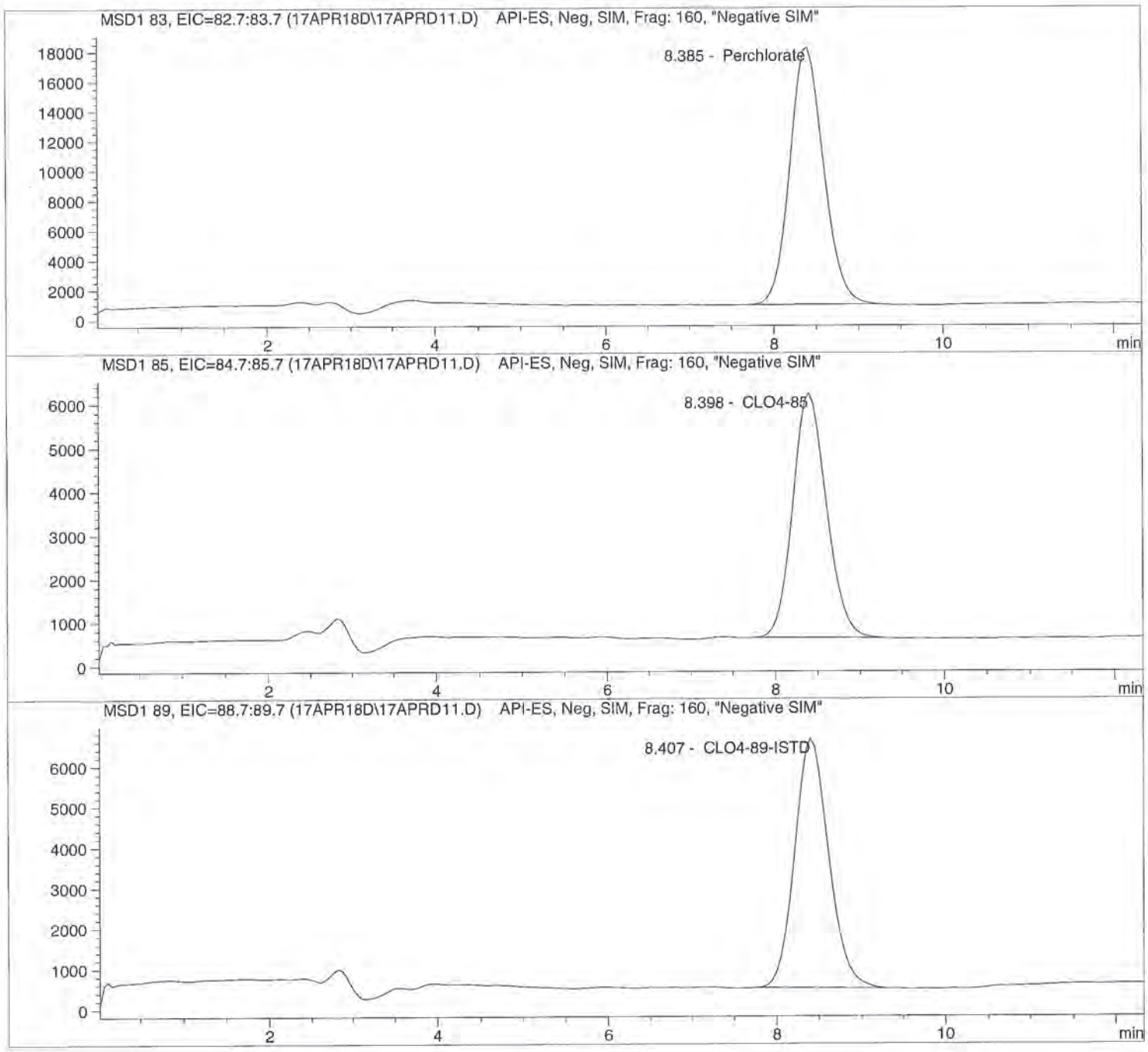
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD11.D Sample Name: 1810428001

Injection Date:	4/17/2018 11:09:17	Seq Line:	11
Sample Name:	1810428001	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD11.D Sample Name: 1810428001

Injection Date:	4/17/2018 11:09:17	Seq Line:	11
Sample Name:	1810428001	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.385	BBA	474912.1	12.1930	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.398	BBA	154421.9	12.4643	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.407	BBA	171054.8	5.0000	CLO4-89-ISTD

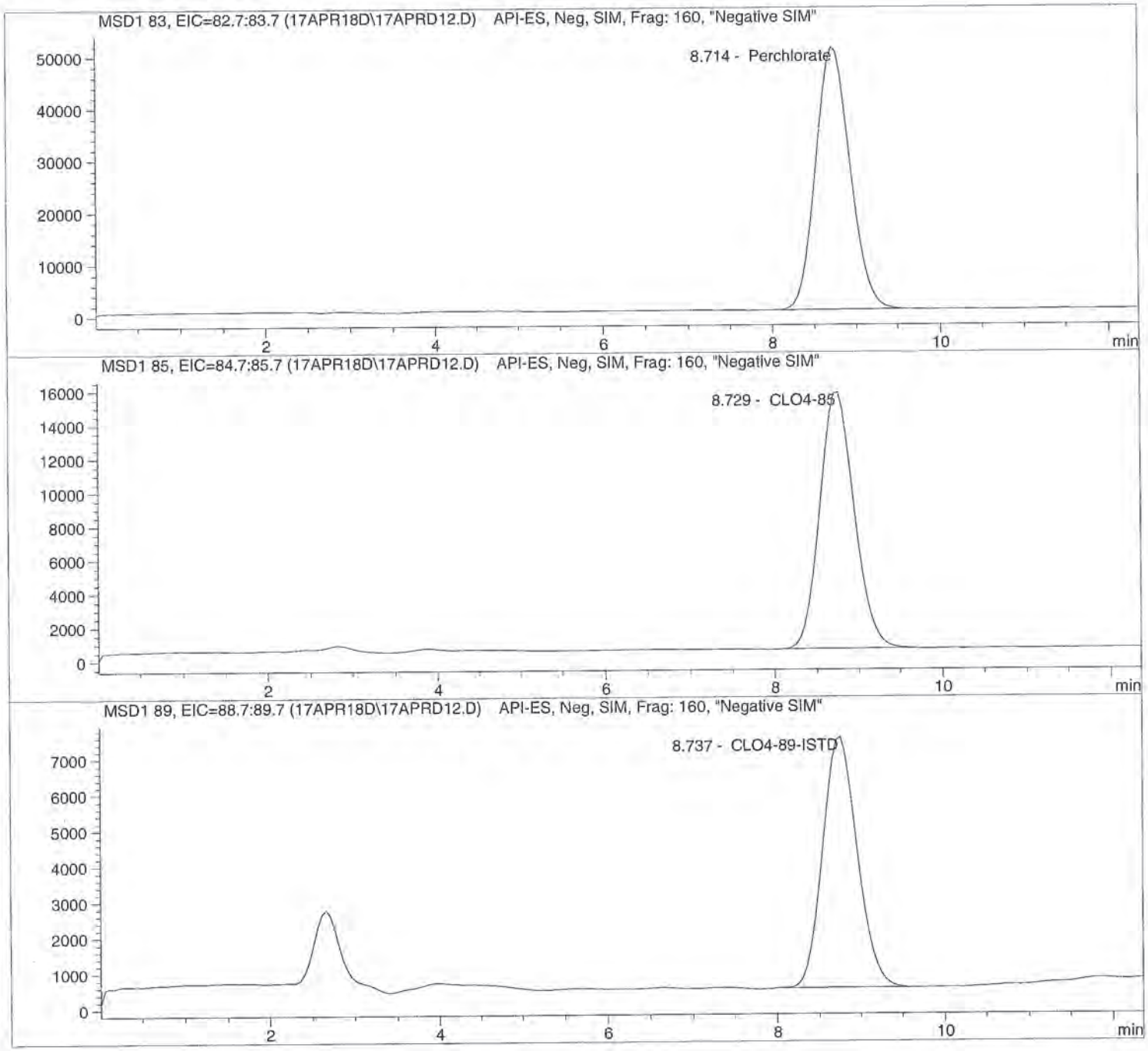
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD12.D Sample Name: 596173 CCV@25

Injection Date:	4/17/2018 11:23:22	Seq Line:	12
Sample Name:	596173 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD12.D Sample Name: 596173 CCV@25

Injection Date:	4/17/2018 11:23:22	Seq Line:	12
Sample Name:	596173 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.714	BBA	1429500.2	28.2957	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.729	PBA	434571.0	27.8213	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.737	BBA	203222.0	5.0000	CLO4-89-ISTD

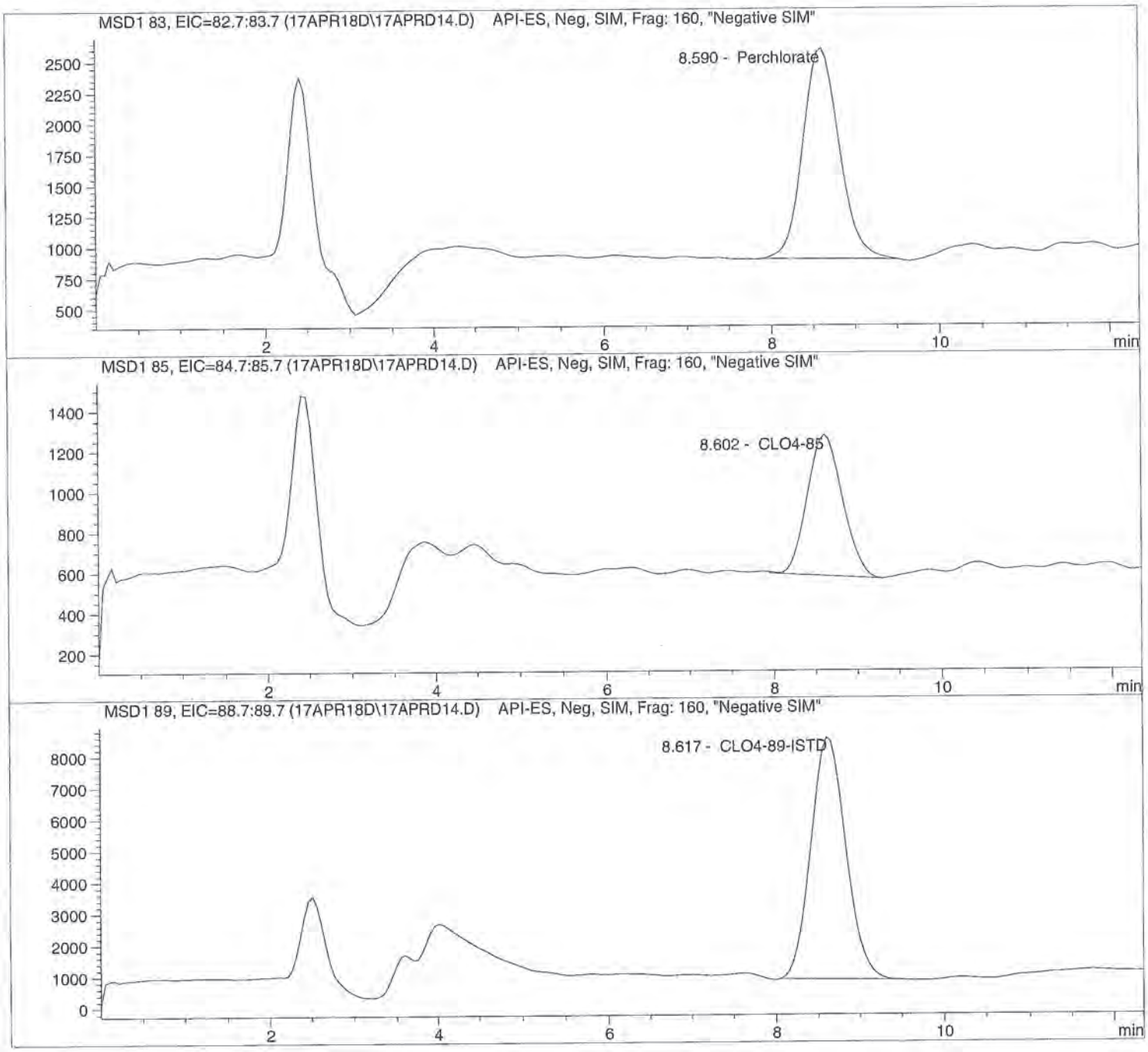
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD14.D Sample Name: 596174 LODV@1.

Injection Date:	4/17/2018 11:53:42	Seq Line:	14
Sample Name:	596174 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\17APR18D\17APRD14.D Sample Name: 596174 LODV@1.

Injection Date:	4/17/2018 11:53:42	Seq Line:	14
Sample Name:	596174 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	20 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.590	BBA	50957.5	1.0366	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.602	BBA	20234.2	1.1748	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.617	PBA	221977.6	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Batch Report: C:\HPCHEM\1\DATA\02APR18D\02APR18I.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DPR.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	ICAL1@ 1.0ug/L	Vial 71	1	Control	1	4.75217e4	8.805	1.04383
*	ICAL2@ 2.0ug/L	Vial 72	1	Control	2	7.57673e4	8.842	1.88584
*	ICAL3@ 5.0ug/L	Vial 73	1	Control	3	1.87507e5	8.869	5.06681
*	ICAL4@ 10.ug/L	Vial 74	1	Control	4	4.00349e5	8.838	9.89695
*	ICAL5@ 25.ug/L	Vial 75	1	Control	5	1.13339e6	8.844	25.44483
*	ICAL6@ 50.ug/L	Vial 76	1	Control	6	2.22347e6	8.787	49.47140
*	ICAL7@ 75.ug/L	Vial 77	1	Control	7	3.56432e6	8.816	75.20096
*	ICAL Verf@10ug/L	Vial 78	1	Control	8	3.99588e5	8.826	10.16984

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	ICAL1@ 1.0ug/L	Vial 71	1	Control	1	1.48071e4	8.787	8.93940e-1
*	ICAL2@ 2.0ug/L	Vial 72	1	Control	2	2.78914e4	8.863	2.05665
*	ICAL3@ 5.0ug/L	Vial 73	1	Control	3	6.40466e4	8.880	5.32040
*	ICAL4@ 10.ug/L	Vial 74	1	Control	4	1.32002e5	8.855	10.20400
*	ICAL5@ 25.ug/L	Vial 75	1	Control	5	3.49808e5	8.856	25.27336
*	ICAL6@ 50.ug/L	Vial 76	1	Control	6	6.58628e5	8.801	48.60374
*	ICAL7@ 75.ug/L	Vial 77	1	Control	7	1.06294e6	8.833	75.70015
*	ICAL Verf@10ug/L	Vial 78	1	Control	8	1.27530e5	8.845	10.16575

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	ICAL1@ 1.0ug/L	Vial 71	1	Control	1	2.05633e5	8.818	5.00000
*	ICAL2@ 2.0ug/L	Vial 72	1	Control	2	1.83981e5	8.862	5.00000
*	ICAL3@ 5.0ug/L	Vial 73	1	Control	3	1.68695e5	8.888	5.00000
*	ICAL4@ 10.ug/L	Vial 74	1	Control	4	1.79911e5	8.861	5.00000
*	ICAL5@ 25.ug/L	Vial 75	1	Control	5	1.81917e5	8.865	5.00000
*	ICAL6@ 50.ug/L	Vial 76	1	Control	6	1.62538e5	8.808	5.00000
*	ICAL7@ 75.ug/L	Vial 77	1	Control	7	1.52621e5	8.841	5.00000
*	ICAL Verf@10ug/L	Vial 78	1	Control	8	1.74490e5	8.846	5.00000

*** End of Report ***

==========
Calibration Table
==========

Perchlorate

Calib. Data Modified : 4/2/2018 11:32:41 AM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
8.740	1	1	1.00000	4.75217e4	2.10430e-5		1	Perchlorate
		2	2.00000	7.57673e4	2.63966e-5			
		3	5.00000	1.87507e5	2.66656e-5			
		4	10.00000	4.00349e5	2.49782e-5			
		5	25.00000	1.13339e6	2.20577e-5			
		6	50.00000	2.22347e6	2.24874e-5			
		7	75.00000	3.56432e6	2.10419e-5			
8.787	2	1	1.00000	1.48071e4	6.75351e-5		1	CLO4-85
		2	2.00000	2.78914e4	7.17068e-5			
		3	5.00000	6.40466e4	7.80681e-5			
		4	10.00000	1.32002e5	7.57564e-5			
		5	25.00000	3.49808e5	7.14678e-5			
		6	50.00000	6.58628e5	7.59154e-5			
		7	75.00000	1.06294e6	7.05587e-5			
8.818	3	1	5.00000	2.05633e5	2.43151e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.83981e5	2.71766e-5			
		3	5.00000	1.68695e5	2.96393e-5			
		4	5.00000	1.79911e5	2.77915e-5			
		5	5.00000	1.81917e5	2.74851e-5			
		6	5.00000	1.62538e5	3.07621e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
	7	5.00000	1.52621e5	3.27608e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 6.650 min To 10.650 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-85
- Time Window : From 6.682 min To 10.682 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 6.711 min To 10.711 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

==========

Peak Sum Table

==========

No Entries in table

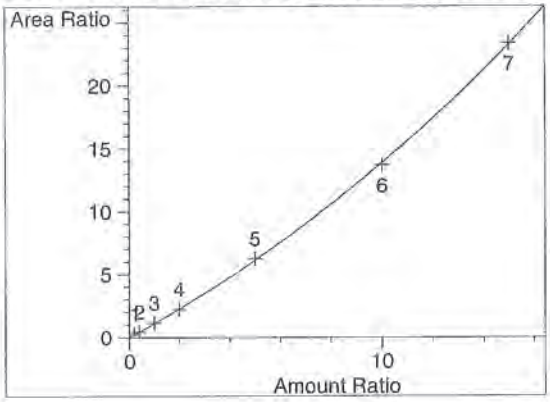
==========

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

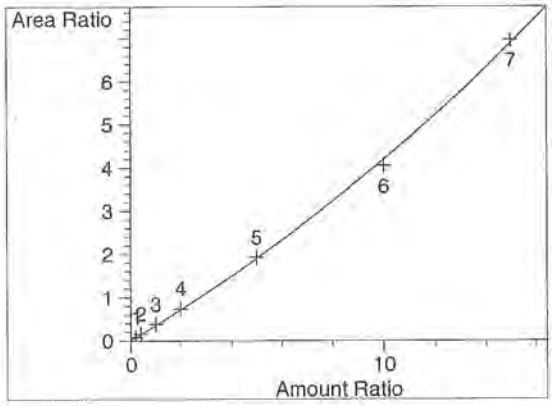
==========

Calibration Curves

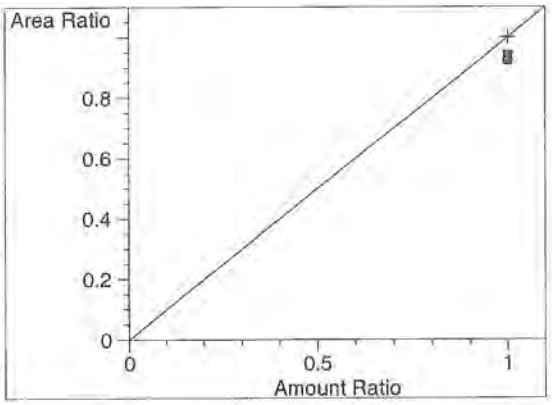
==========



Perchlorate at exp. RT: 8.740
MSD1 83, EIC=82.7:83.7
Correlation: 0.99992
Residual Std. Dev.: 0.10616
Formula: $y = ax^2 + bx + c$
a: 3.31374e-2
b: 1.05374
c: 9.66975e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-85 at exp. RT: 8.787
MSD1 85, EIC=84.7:85.7
Correlation: 0.99968
Residual Std. Dev.: 0.07365
Formula: $y = ax^2 + bx + c$
a: 8.04074e-3
b: 3.37521e-1
c: 1.14057e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 8.818
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1

==========

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\APR\02APR18D.S

Sequence Table:

Method and Injection Info Part:

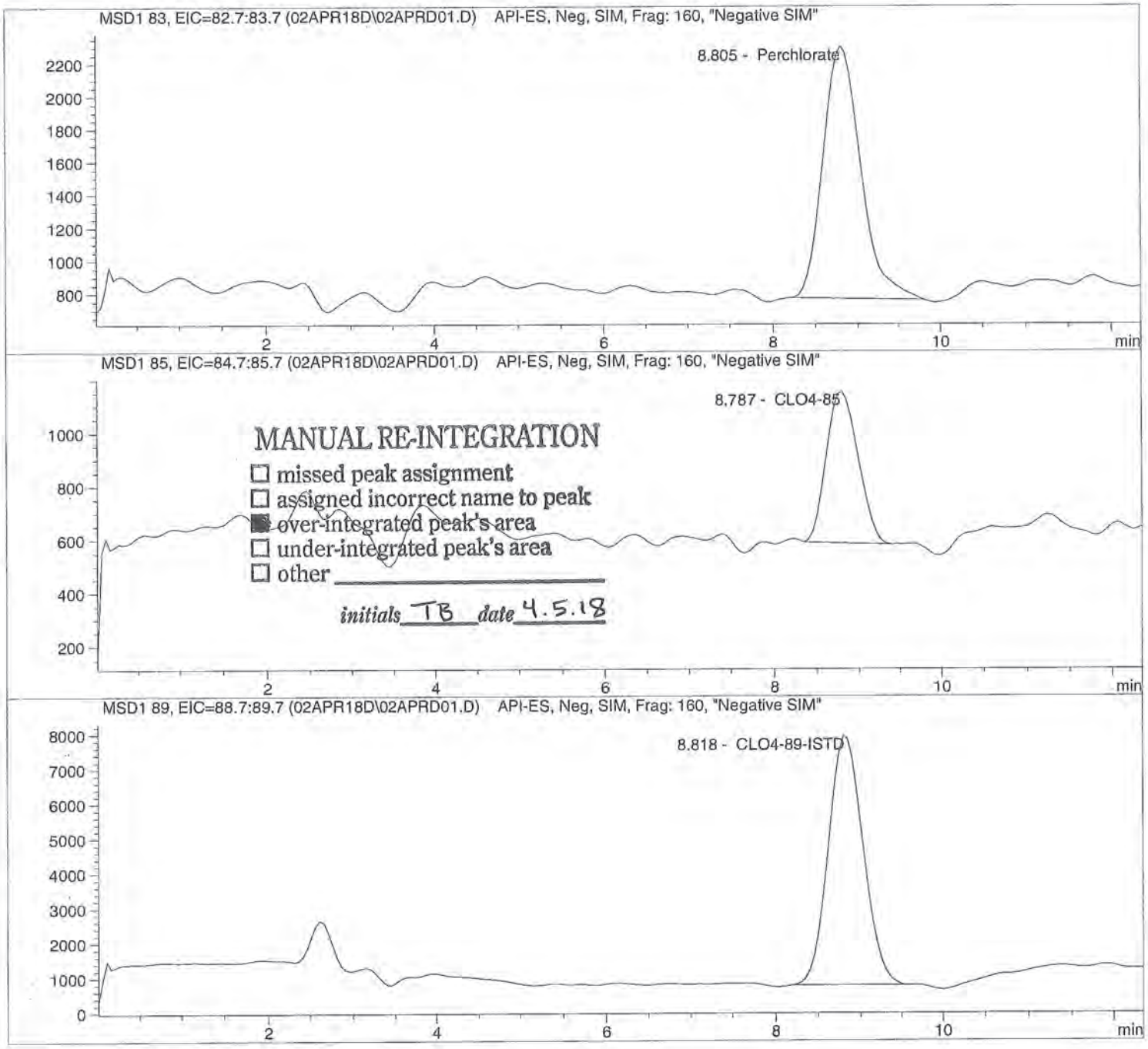
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



MANUAL RE-INTEGRATION
☐ missed peak assignment
☐ assigned incorrect name to peak
☒ over-integrated peak's area
☐ under-integrated peak's area
☐ other _____
initials TB *date* 4.5.18

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.805	PBA	47521.7	1.0438	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.787	MM	14807.1	0.8939	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.818	PBA	205633.2	5.0000	CLO4-89-ISTD

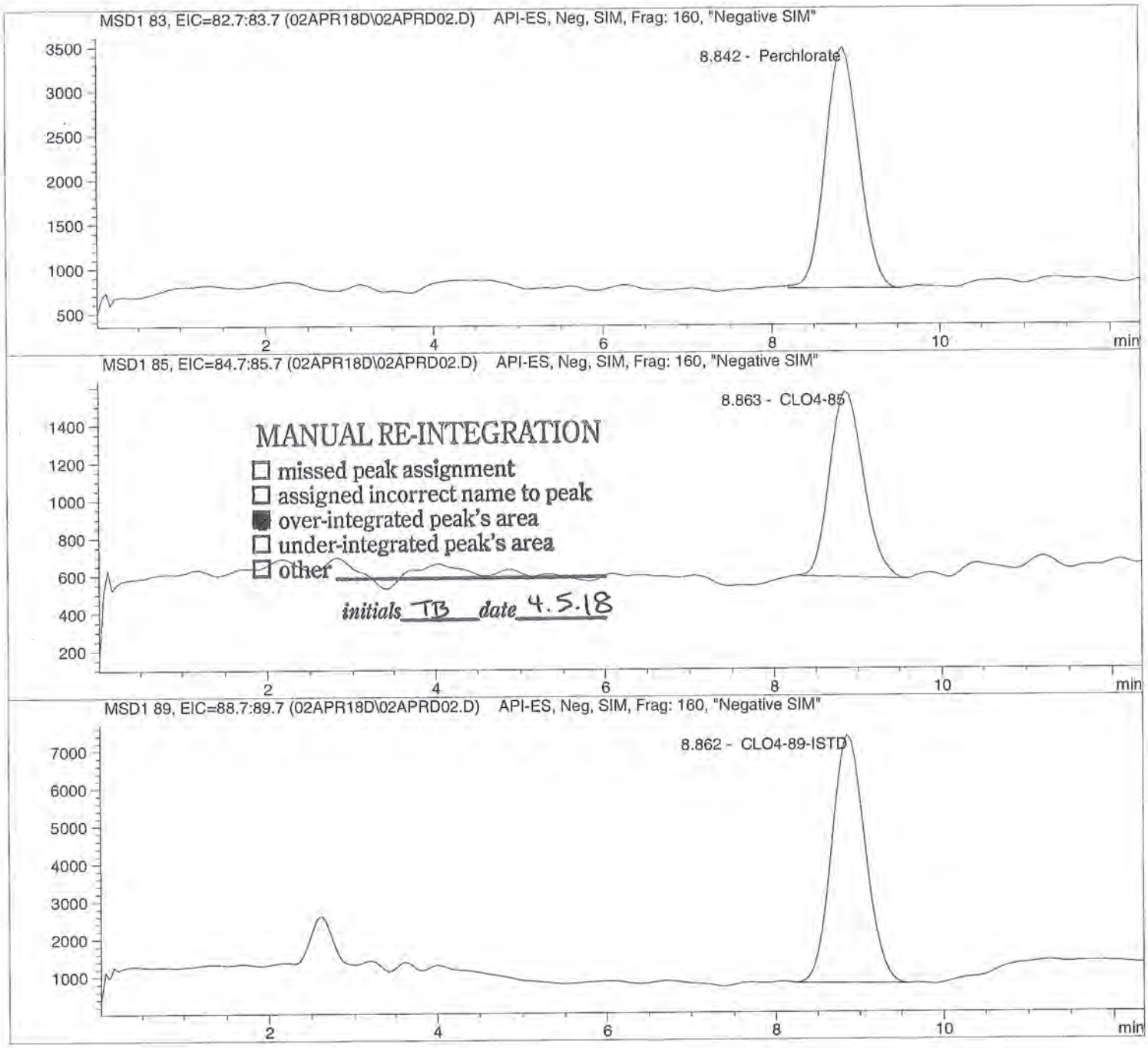
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.842	BBA	75767.3	1.8858	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.863	MM	27891.4	2.0567	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.862	BBA	183981.5	5.0000	CLO4-89-ISTD

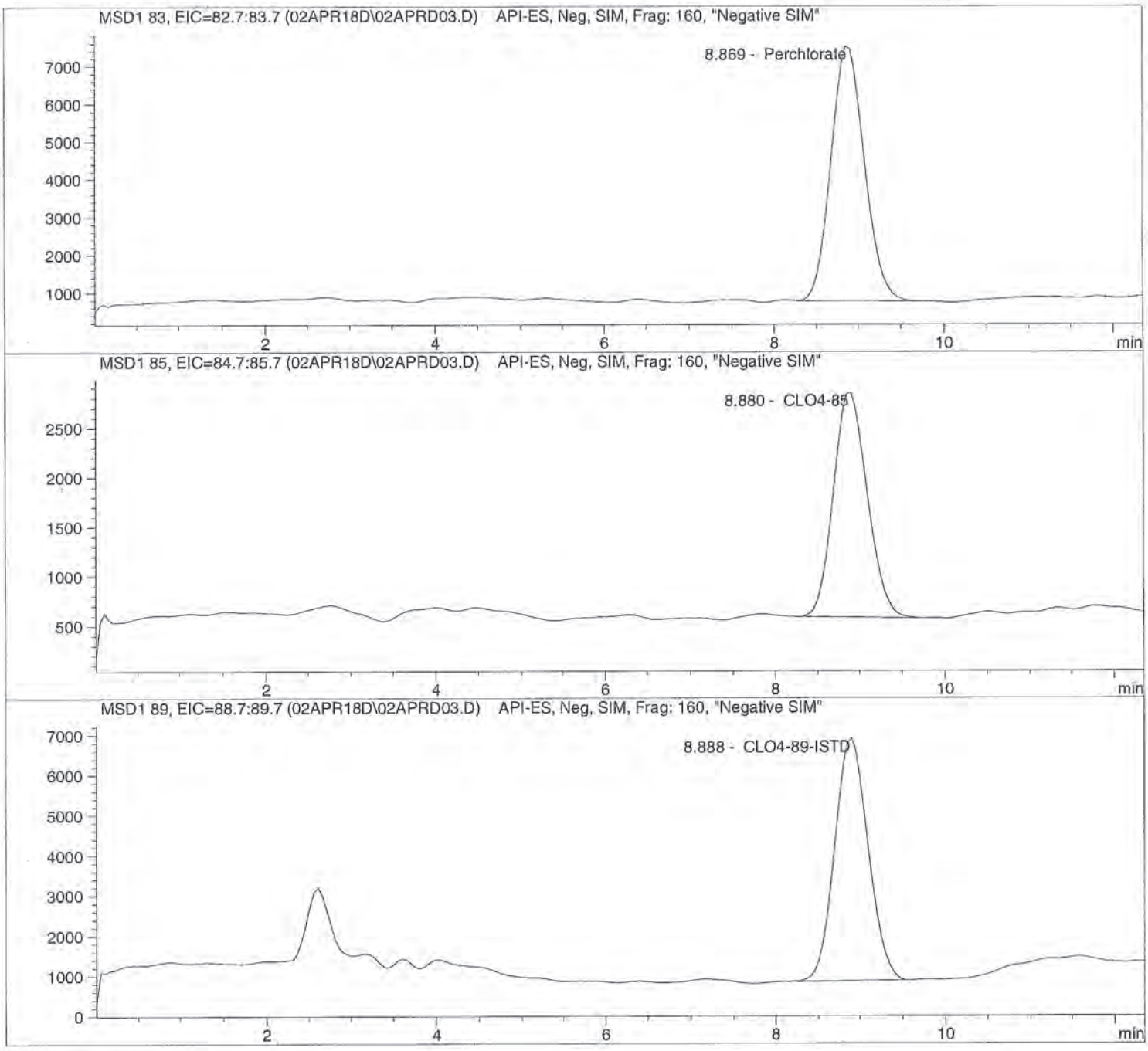
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	4/02/2018 09:36:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	4/02/2018 09:36:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.869	BBA	187507.2	5.0668	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.880	PBA	64046.6	5.3204	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.888	BBA	168695.0	5.0000	CLO4-89-ISTD

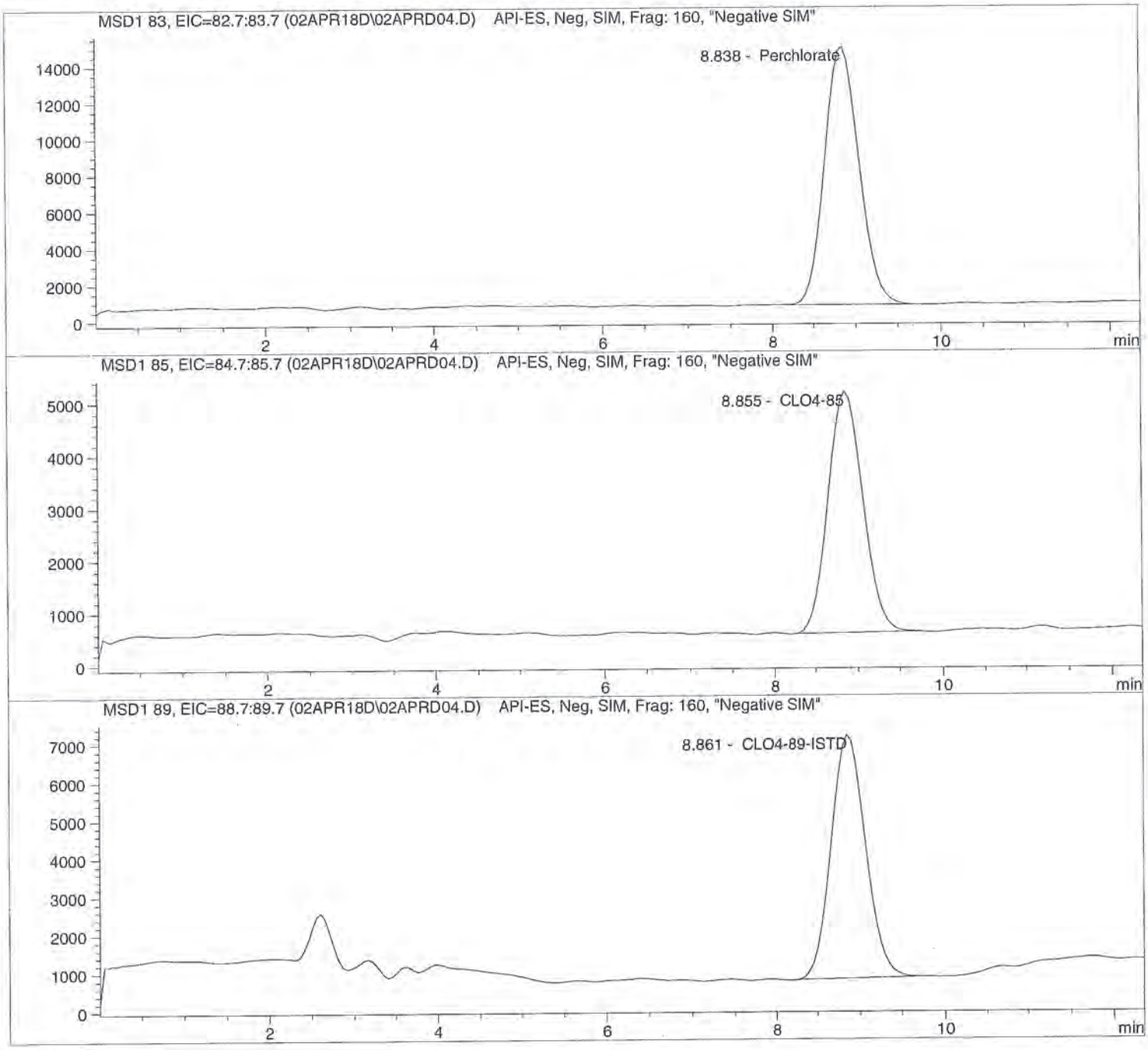
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	4/02/2018 09:50:54	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	4/02/2018 09:50:54	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.838	BBA	400349.0	9.8969	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.855	PBA	132002.1	10.2040	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.861	PBA	179911.2	5.0000	CLO4-89-ISTD

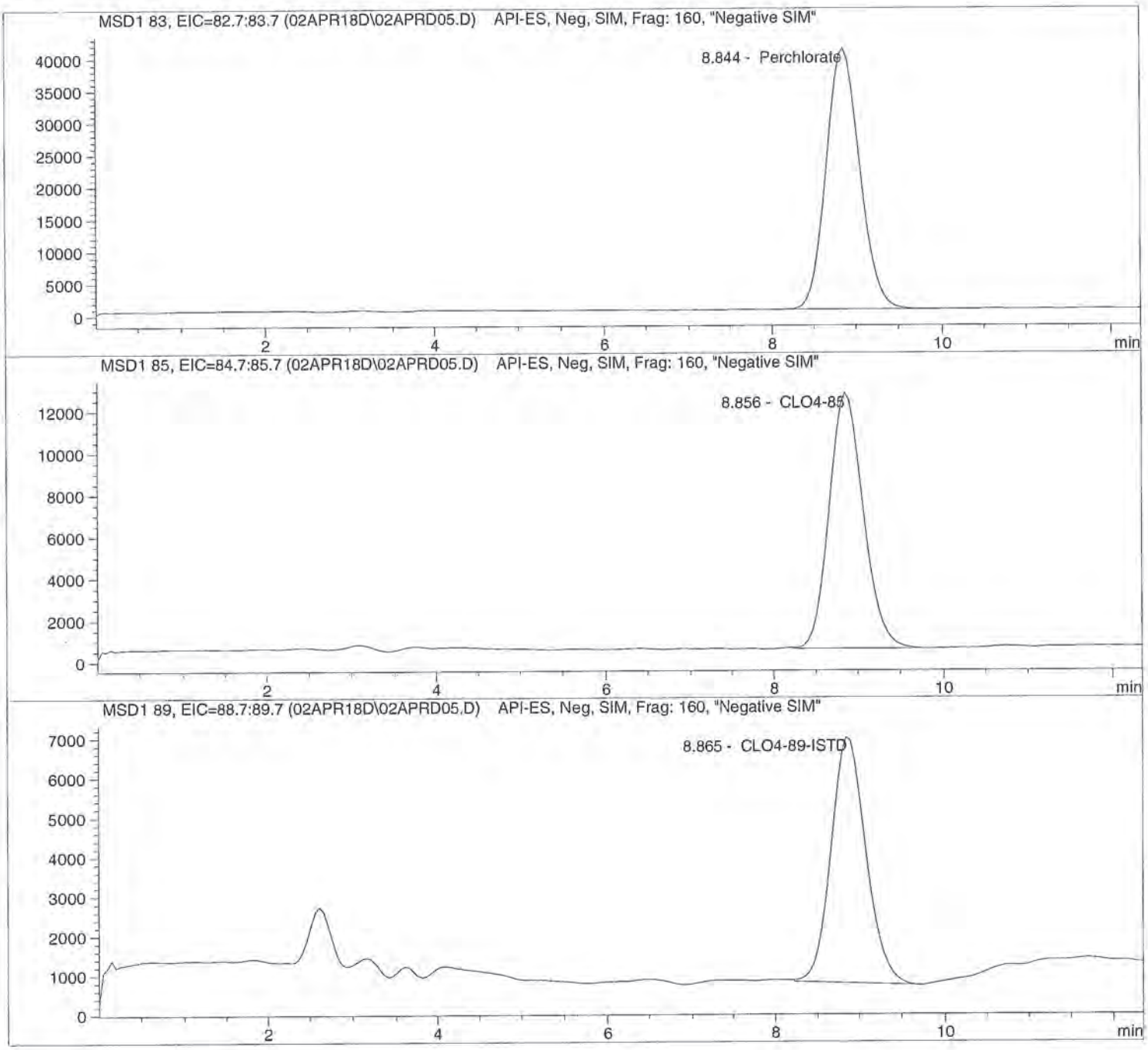
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	4/02/2018 10:05:03	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	4/02/2018 10:05:03	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 2. Apr. 2018, 11:32:41 am
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.844	BBA	1133393.5	25.4448	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.856	BBA	349808.1	25.2734	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.865	BBA	181916.8	5.0000	CLO4-89-ISTD

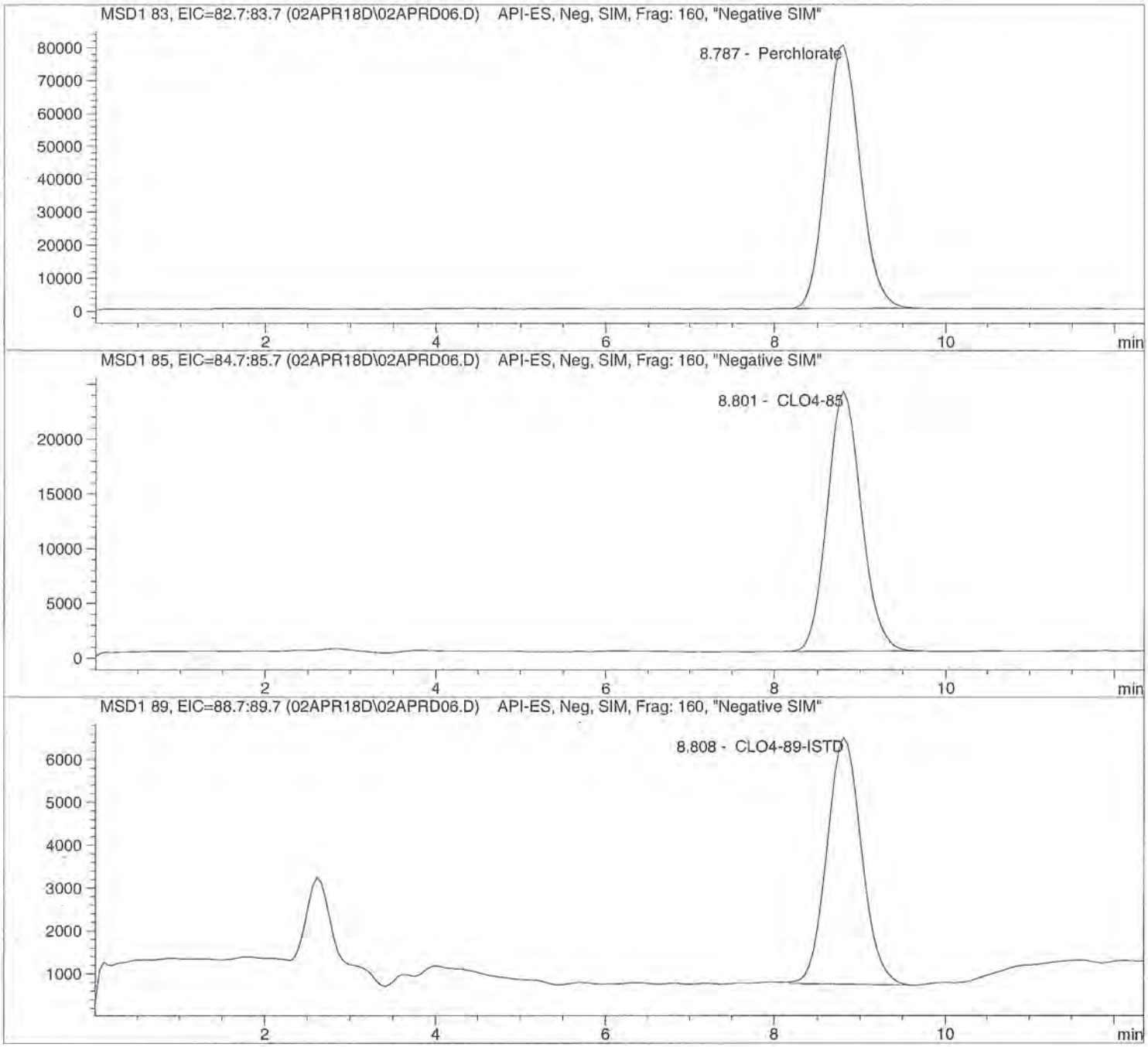
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	4/02/2018 10:19:12	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	4/02/2018 10:19:12	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.787	BBA	2223467.0	49.4714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.801	BBA	658628.2	48.6037	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.808	BBA	162537.8	5.0000	CLO4-89-ISTD

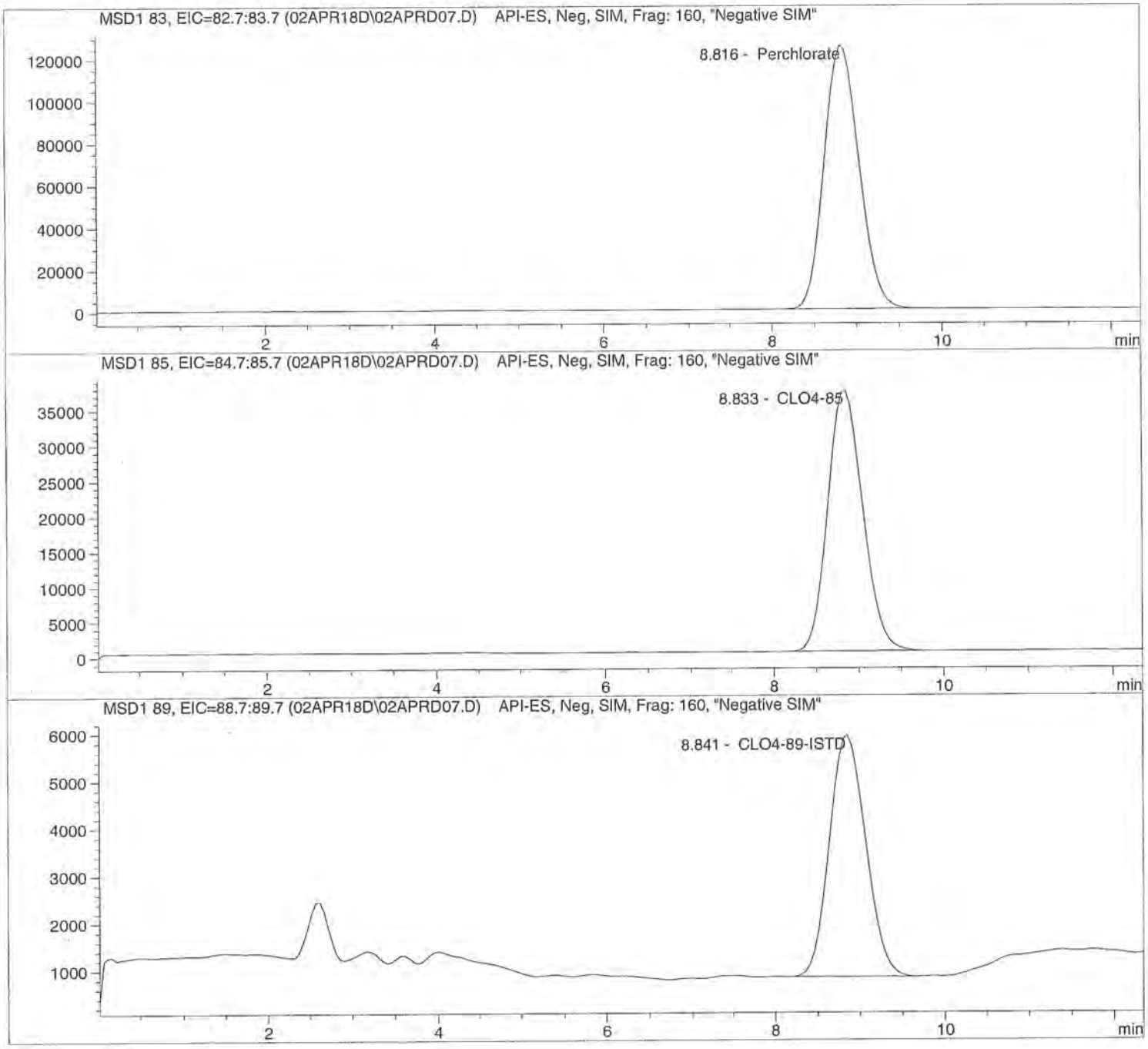
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	4/02/2018 10:33:24	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	4/02/2018 10:33:24	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.816	PBA	3564322.2	75.2010	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.833	BBA	1062944.2	75.7001	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.841	PBA	152621.4	5.0000	CLO4-89-ISTD

*** End of Report ***