

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

April 15, 2021

### **DAIN-ODB-LO**

Ms. Lauren Poulos U.S. Environmental Protection Agency 1201 Elm Street, Suite 500 Dallas, TX 75270-2002

Re: Final Remedial Action Completion Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, April 2021

Dear Ms. Poulos,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records:

(https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The TCEQ comments dated August 18, 2020 were resolved via email on September 1, 2020.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

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.

Roem - Ziler

Longhorn AAP Site Manager

### Copies furnished:

- A. Palmie, TCEQ, Austin, TX (electronic/online)
- P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy/1 CD)
- R. Smith USACE, Tulsa District, OK (electronic/online)
- A. Williams, USACE, Tulsa District, OK (electronic/online)
- A. Maly USAEC, San Antonio, TX (1 CD)
- K. Nemmers, Bhate, Lakewood, CO (electronic/online)
- P. Srivastav, APTIM, Houston, TX (electronic/online)



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

April 15, 2021

### DAIN-ODB-LO

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

Re: Final Remedial Action Completion Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, April 2021

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records:

(https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The TCEQ comments dated August 18, 2020 were resolved via email on September 1, 2020.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

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):

L. Poulos, USEPA Region 6, Dallas, TX

P. Bruckwicki, Caddo Lake NWR, TX

R. Smith, USACE, Tulsa District, OK

A. Williams, USACE, Tulsa District, OK

A. Maly, USAEC, San Antonio, TX

K. Nemmers, Bhate, Lakewood, CO

P. Srivastav, APTIM, Houston, TX



# **Final**

# Remedial Action Completion Report, LHAAP-04 Former Pilot Wastewater Treatment Plant

Longhorn Army Ammunition Plant Karnack, Texas



Prepared for U.S. Army Corps of Engineers, Tulsa District Contracting Division 2488 East 81st Street Tulsa, Oklahoma 74137-4290

Prepared by



1608 13<sup>th</sup> Avenue South, Suite 300 Birmingham, Alabama 35205 1-800-806-4001 • www.bhate.com Prepared by



Aptim Federal Services, LLC 2500 CityWest, Suite 1700 Houston, Texas 77042

Contract No. W9128F-13-D-0012 Task Order No. W9128BV17F0150 Project No. 501032 Rev 0 April 2021

# **Table of Contents**

List	of Ta	bles	ii
		qures	
		pendices	
		s and Abbreviations	
A01 C	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
1.0	Intr	oduction	1-1
	1.1	Organization of Response Action Completion Report	1-1
	1.2	Site Description	
	1.3	Remedial Action Objectives	
	1.4	Selected Remedy	
	1.5	Land Use Control Plan	
	1.6	Performance Monitoring and Follow-up Activities	
2.0	Bas	eline Sampling	
3.0		itu Bioremediation	
0.0	3.1	Notification	
	3.2	Utility Clearance	
	3.3	Site Clearance and Staking Locations	
	3.4	Mobilization	
	3.5	Injections	
	0.0	3.5.1 Overall Sequence of Injections	
		3.5.2 Amendment Preparation	
		3.5.3 Injection Process	
	3.6	Management of Remediation Derived Waste	
	3.7	Demobilization	
4.0	• • • •	ign Effectiveness Monitoring	
7.0		Future Performance Monitoring	
5.0		C Implementation	
J.U	EU(	, iiipieilieiliauoii	

# **List of Tables**

Table 2-1	Baseline and Design Effectiveness Monitoring Network Locations and
	Analyses
Table 2-2	Baseline Sampling Results
Table 3-1	Injection Locations and Amendment Volumes
Table 4-1	Design Effectiveness Sampling Results
Table 4-2	LHAAP-04 Performance Monitoring Plan

# **List of Figures**

# **List of Appendices**

Appendix A

Appendix A	Notice of LUCs and Final LUC Boundary
Appendix B	Field Injection and Sample Collection Logs
Appendix C	Site Photographs
Appendix D	Laboratory Analytical Reports
Appendix E	Quality Control Summary Report

## **Acronyms and Abbreviations**

μg/L micrograms per liter

§ section

AECOM Technical Services
APTIM Aptim Federal Services, LLC
Bhate Bhate Environmental, Inc.

CERCLA Comprehensive Environmental Response, Compensation, and Liability

Act of 1980

COC contaminant of concern DPT direct-push technology

EPA see USEPA

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • April 2021

EVO emulsified vegetable oil
GWTP groundwater treatment plant

ISB in situ bioremediation

LHAAP Longhorn Army Ammunition Plant

LTM long-term monitoring
LUC land use control
mg/L milligrams per liter

MSCs medium-specific concentrations
NCP National Contingency Plan
PCL Protective Concentration Level

psi pounds per square inch

RACR Response Action Completion Report

RA-O Remedial Action Operation RAOs remedial action objectives RAWP Remedial Action Work Plan

RD Remedial Design ROD Record of Decision

Shaw Environmental & Infrastructure, Inc.

TAC Texas Administrative Code

TCEQ Texas Commission on Environmental Quality

TOC total organic carbon

TRRP Texas Risk Reduction Program

U.S. United States

U.S. Army
U.S. Department of the Army
USACE
U.S. Army Corps of Engineers

USEPA U.S. Environmental Protection Agency

This page intentionally left blank.

### 1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted Bhate Environmental, Inc. (Bhate), under the Omaha Multiple Environmental Government Acquisition National Small Business Multiple Award Task Order Contract Environmental Remediation Services with Military Munitions Response Program, Task Order No. W9128BV17F0150 to conduct environmental restoration of site LHAAP-04 at Longhorn Army Ammunition Plant (LHAAP). The Bhate Team is comprised of Bhate and Aptim Federal Services, LLC (APTIM). LHAAP is an inactive, government owned formerly contractor operated and maintained Department of Defense facility located in central east Texas (**Figure 1-1**). This Remedial Action Completion Report (RACR) describes remedial actions taken to address risks associated with contaminated groundwater at LHAAP-04 (Former Pilot Wastewater Treatment Plant). Specifically, this RACR describes activities associated with field implementation of an in situ bioremediation (ISB) remedy in accordance with the Final Remedial Design (RD) and Remedial Action Work Plan (RAWP) for LHAAP-04 (Bhate 2019a).

### 1.1 Organization of Response Action Completion Report

This RACR is composed of the following sections:

- **Section 1.0:** "Introduction" summarizes the site description, remedial action objectives (RAOs), the contaminants of concern (COCs) and their respective cleanup levels, the selected remedy, and the associated land use control (LUC) plan.
- **Section 2.0:** "Baseline Sampling" describes the sampling activities that were conducted during or before the beginning of the ISB injections and presents the associated results.
- **Section 3.0:** "In Situ Bioremediation" describes the injection of amendments to enhance microbial degradation of contaminants.
- **Section 4.0:** "Design Effectiveness Sampling" presents analytical results for samples collected to monitor the local distribution of amendments and changes in geochemical parameters during the first few weeks after the injections.
- **Section 5.0:** "LUC Implementation" identifies activities that were performed to implement the LUCs in accordance with the LUC Plan in the RD/RAWP.
- Section 6.0: "References" provides a list of references cited in the document.

This work plan also includes the following appendices to support the text:

### • **Appendix A** provides:

- The Notice of LUCs recorded at the Harrison County Courthouse and the Survey Plat and Legal Description of the parcel subject to the LUCs.
- The notice of LUCs for Soil and Groundwater Contamination letter provided to the landowners and occupants, federal, state, and local officials, and the Texas Department of Licensing and Registration for notification to water well drillers, as required by the LUC Plan.
- Example LUC Inspection Checklist and Certification Forms.
- Appendix B contains sample collection logs associated with the Pre-Remedy and Design Effectiveness samples.
- Appendix C consists of photographs of the field work.
- **Appendix D** includes the laboratory analytical reports for those samples that were collected during and after implementation of the ISB.
- **Appendix E** is the Data Quality Summary Report for the laboratory analyses.

### 1.2 Site Description

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-04, known as Site 04 or the former pilot wastewater treatment plant, is approximately 0.5 acres and is located in the central portion of LHAAP at the northwest corner of 6th and 60th Streets near the former fire station (**Figure 1-2**). LHAAP-04 is surrounded by light duty roads. Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the former pilot wastewater treatment facility structures, tanks, and piping, and the disposal of the associated wastes were completed in the summer of 1997 as part of the Resource Conservation and Recovery Act closure of the plant. The final remedy for soil was conducted in 2009 as a Non-Time-Critical Removal Action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) program. Soil along the southern edge of the slab that formerly housed storage tanks for the former pilot wastewater treatment facility that was impacted with mercury and perchlorate at the LHAAP-04 site, was removed to meet the soil medium-specific concentrations (MSCs). The soil was removed to the soil/air and

ingestion MSC for industrial use for mercury, and the groundwater protective MSC for industrial use for perchlorate.

The U.S. Department of the Army (U.S. Army) issued the Final Record of Decision (ROD) for LHAAP-04 (AECOM 2016) in October 2016, and was signed by the Army on December 15, 2016, and the U.S. Environmental Protection Agency (USEPA) on March 30, 2017. The Texas Commission on Environmental Quality (TCEQ) issued a letter concurring with the ROD on February 7, 2017. The ROD identified perchlorate as the only COC in groundwater for LHAAP-04. The remedy selected in the ROD included ISB for perchlorate concentrations in groundwater, long-term monitoring (LTM) of groundwater, and LUCs to maintain the remedy and prohibit groundwater use until COC concentrations are reduced to levels supportive of unlimited use and unrestricted exposure.

### 1.3 Remedial Action Objectives

The RAOs developed for LHAAP-04 and outlined in the Final ROD (AECOM 2016) are:

- Protect human health by preventing ingestion of groundwater contaminated with perchlorate.
- Return groundwater to its potential beneficial use, wherever practicable, within a reasonable time period given the particular site circumstances.
- Prevent groundwater contaminated with perchlorate from migrating into nearby surface water.

The above RAOs recognize the USEPA's policy to return all groundwater to beneficial uses, based on the non-binding programmatic expectation in the National Contingency Plan (NCP), and is consistent with the NCP regulations requiring the lead agency, the U.S. Army in this case, to establish RAOs specifying contaminants and media of concern, potential exposure pathways, and remediation goals.

Per the ROD's RAOs, and consistent with the NCP, groundwater will be returned to its beneficial uses as drinking water. The groundwater cleanup level for perchlorate at the Site is the Texas Risk Reduction Program (TRRP) Tier 1 Residential Groundwater Protective Concentration Level (PCL), 17 micrograms per liter ( $\mu$ g/L), and is protective of human health and the environment.

### 1.4 Selected Remedy

The selected remedy was summarized in Section 1.4 of the Final ROD (AECOM 2016) as follows (some of the text has been revised slightly from the text in the ROD to reflect that the tasks have already been completed):

- ISB of perchlorate contaminated groundwater in an area in the vicinity of monitoring
  well 04WW04. Multiple injections of substrate may be needed based on effectiveness
  of the ISB. Bioaugmentation using appropriate microbial culture to facilitate ISB may
  be performed, if necessary. Prior to ISB, two shallow zone monitoring wells and one
  intermediate zone monitoring well were installed to refine the perchlorate plume
  configuration and address the plume migration detected by the wells described in the
  ROD.
- LTM to confirm the protection of human health and the environment by documenting
  the return of groundwater to the cleanup level (maximum contaminant level or TRRP
  Tier 1 Residential Groundwater PCL) through reduction of the contaminant mass, and
  by preventing the perchlorate-contaminated groundwater plume from migrating into
  surface water.
- The LUC objectives include maintaining the integrity of any current or future remedial or monitoring systems and preventing the use of groundwater contaminated above cleanup levels as a potable water source. The groundwater treatment and LTM remedial components include a groundwater monitoring system that will be used to characterize the condition of the groundwater during the period the groundwater remedy is in place until the groundwater remediation goals are achieved, and to demonstrate achievement of the groundwater remediation goals when the groundwater remedy is complete. As a part of this groundwater remedy, the Army will maintain the remedial and monitoring systems associated with the groundwater remedies until these components of the remedy are no longer needed to achieve cleanup levels, and cleanup levels have been achieved. During the period of operation of the groundwater remedy, if any of the elements of the remedial and groundwater monitoring systems are damaged, destroyed, or become ineffective, they will be repaired or replaced with suitable components to assure that the remedial and groundwater monitoring systems are able to provide data of the quality necessary to determine the progress of and eventual completion of this component of the remedy. The actions to be taken to implement these LUC objectives and requirements will be provided through modifying the "Comprehensive Land Use Control Management Plan, Former Longhorn Army Ammunition Plant, Karnack, Texas" and detailed in the LUC RD.
- The LUC for prohibition of groundwater use (except for monitoring and testing) shall be implemented and shall remain in place at the Site until the levels of COCs in surface and subsurface soil and groundwater are reduced below levels that would support unlimited use and unrestricted exposure. A LUC RD was finalized as the land use component of the RD. Within 21 days of the issuance of the ROD, the Army proposed deadlines for completion of the RD Work Plan, RD, and RAWP. The

documents were prepared and submitted to the EPA and the TCEQ pursuant to the Federal Facility Agreement. The LUC RD contained implementation and maintenance actions, including periodic inspections. The LTM groundwater plan was also presented in the RD. The recordation notification for the Site, which was filed with Harrison County, included a description of the LUCs.

The groundwater monitoring network and LUC Plan development included in the ROD were detailed in the RD/RAWP (Bhate 2019a). The LUC Plan was incorporated into the Comprehensive LUC Management Plan (U.S. Army 2019) in the October 2019 revision. The Notice of LUCs and the Survey Plat and Legal Description for the parcel subject to the LUCs are included in **Appendix A**. Letters providing initial notice of LUCs for Soil and Groundwater Contamination were sent to landowners and occupants, federal, state, and local officials and the Texas Department of Licensing and Registration on June 26, 2017 (U.S. Army 2017), within 90 days of signature of the ROD, as required. The notice of LUCs and the Final LUC Boundary Survey Plat and Legal Description were filed with Harrison County on March 22, 2021 (**Appendix A**). A notification letter was also sent to federal, state, and local officials and to the Texas Department of Licensing and Regulation (Water Well Drillers and Pump Installers Section) on February 23, 2021 showing the area covered by the final groundwater use restriction LUC (**Appendix A**). Annual inspections of the LUCs and CERCLA five year reviews of the remedy will continue until levels of COCs in groundwater allow for unlimited use and unrestricted exposure.

### 1.5 Land Use Control Plan

The Final ROD (AECOM 2016) indicated that the U.S. Army or its representative will be responsible for LUC implementation, certification, reporting, and enforcement. The U.S. Army will address any LUC problems within its control that are likely to impact remedy integrity as soon as practicable. The details of LUC components are provided in the RD/RAWP (Bhate 2019a). The continued successful implementation of LUCs will be documented in annual remedial action operation (RA-O) reports.

The Comprehensive LUC Management Plan (U.S. Army 2019) provides a repository for LUC plans for sites throughout the former LHAAP. The LUC Plan for LHAAP-04 can be found within the Comprehensive LUC Management Plan. That document includes blank copies of the Inspection and Maintenance Checklist and the Land Use Control Compliance Inspection Form.

The LUC Plan includes restrictions on both land and groundwater use. **Appendix A** presents the Notice of LUCs and the Survey Plat and Legal Description that were filed with Harrison County. The final LUC boundary is shown on **Figure 1-3**. Implementation of the LUC Plan will include annual inspections which are recorded on the Inspection and Maintenance

Checklist and the Land Use Control Compliance Certification Form. The Checklist and the Certification Form are provided within **Appendix A**.

### 1.6 Performance Monitoring and Follow-up Activities

While this RACR documents the implementation of ISB, the RD/RAWP (Bhate 2019a) describes several activities that are to be conducted following ISB. Those activities are briefly described below. The RD/RAWP should be referenced for detailed information (including reporting requirements) regarding all these activities.

- Performance Monitoring Year 1 and Year 2. Quarterly sampling will be conducted to determine geochemical conditions and perchlorate concentrations. Any recommendations to modify the sampling frequency, analytical parameters, or wells will be made in the Annual RA-O Report. Additionally, results will be used to evaluate the impacts of biodegradation reactions and to determine if reinjections are needed.
- LTM Year 3 through Year 5. Semiannual monitoring will continue following the first two years of performance monitoring.
- LTM Beyond Year 5. LTM will be implemented at an annual frequency from Year 6 until the next Five Year Review. The need for ongoing monitoring and the appropriate frequency will be evaluated in the Five Year Review.

### 2.0 BASELINE SAMPLING

The RD/RAWP (Bhate 2019a) presented a baseline sampling plan for the shallow and intermediate groundwater zones at LHAAP-04 (Table 2-1). The pre-remedy sampling of the groundwater was to be conducted prior to injections to characterize the perchlorate concentrations and geochemical conditions. However, the injections were completed on November 6, 2019, and the baseline samples were collected on November 5–6, 2019 upon identification of the non-compliance with the RD/RAWP. At monitoring wells 04WW01, 04WW07, 04WW09, and 04WW10 within the treatment area (Figure 2-1), the groundwater was a milky white color due to the emulsified vegetable oil (EVO) that had already been injected near the wells. Samples from those four wells were not sent for analysis to avoid laboratory instrument disruption that may have resulted from running samples containing high concentrations of EVO. The primary purpose of the pre-injection sampling was to provide baseline results for comparison against future performance monitoring results. Therefore, for the four wells that were not analyzed in early November 2019 (04WW01, 04WW07, 04WW09, and 04WW10), the samples collected in January 2019 will serve as the baseline for comparison of perchlorate concentrations to subsequent sampling results. The January 2019 samples were not analyzed for anions, alkalinity, or total organic carbon (TOC).

The baseline sampling locations (**Table 2-1**) included 12 shallow zone wells inside and outside of the plume area, one intermediate zone well (04WW08), and the Fire Station Well completed in the deep zone. The baseline samples were collected on November 5–6, 2019 for all the locations on **Table 2-1** except the four wells previously discussed and the results are shown on **Table 2-2**. The baseline samples shown on **Table 2-2** for the four wells that were not sampled due to the presence of EVO were collected on January 22, 2019. Perchlorate was detected above the TCEQ PCL of 17  $\mu$ g/L at three shallow wells (04WW07, 04WW09, and 04WW10), which are all within the treatment zone. The highest concentration detected was 10,000  $\mu$ g/L at 04WW10, located near the center of the treatment zone. Perchlorate was detected below the PCL at a concentration of 13  $\mu$ g/L in 04WW08 in the intermediate zone. Perchlorate was not detected in the sample collected from the Fire Station Well.

This page intentionally left blank.

### 3.0 IN SITU BIOREMEDIATION

ISB was conducted at LHAAP-04 in accordance with the RD/RAWP (Bhate 2019a) to treat the area of perchlorate impacted groundwater exceeding five times the 17  $\mu$ g/L PCL. Injections were performed at 25 direct-push technology (DPT) locations as shown on **Figure 3-1**. The implementation of ISB involved steps prior to and following the injections. The sections below describe the major steps, from notifications through demobilization, in approximate chronological order.

### 3.1 Notification

On August 1, 2019, a Memorandum for Record was provided to TCEQ (Bhate 2019b) to provide information regarding planned injections to comply with the substantive requirements of 30 Texas Administrative Code (TAC) Section (§) 331, Subchapters A, C, and H for Class V Injections Wells. The memorandum described the planned injection of EVO and microbial nutrients at 25 DPT injection locations.

TCEQ and USEPA were notified two weeks in advance of commencement of fieldwork activities.

### 3.2 Utility Clearance

Utility location and clearance for intrusive activities were conducted prior to drilling and in accordance with Section 3.1 of the Installation-Wide Work Plan (Bhate 2018). Utility clearance tasks included the following:

- Contacting the Texas Excavation Safety System, Inc. utility notification service.
- Manually probe all boreholes to at least 5 feet prior to driving the injection rods.
- Holding safety meetings and completing job safety analyses with all personnel who
  were involved in intrusive activities.

### 3.3 Site Clearance and Staking Locations

Prior to the ISB injection, the site was cleared of tall vegetation. The DPT injection point locations were staked out using global positioning system or relative to existing wells. Due to field obstructions associated with a wooded ditch and a culvert within the treatment area, DPT locations 17 and 18 were adjusted approximately 5 to 10 feet from the locations proposed in the RD/RAWP to allow access for the DPT rig.

### 3.4 Mobilization

Personnel were mobilized to LHAAP-04 on October 21, 2019, and injections began on October 22, 2019.

The following major pieces of equipment were mobilized over the course of the injections:

- DPT drill rig
- Injection system trailer
- One mobile 4000-gallon tank

The EVO and nutrients to be injected were delivered directly to site LHAAP-16, instead of LHAAP-04, where two 20,000-gallon tanks were already in place from injections being performed at LHAAP-16. The two tanks were used to mix and store the amendment solution for LHAAP-04. The EVO and nutrient solution were brought to LHAAP-04 using a 2,000-gallon water truck and stored in the mobile 4,000-gallon tank prior to injection. Water for mixing the EVO solution was obtained from the Leigh Water Company from one of their wells located in Karnack, Texas and trucked to the 20,000-gallon tanks using the 2,000-gallon water truck.

### 3.5 Injections

The injection amendments were mixed as shown on **Table 3-1** and injected at the 25 DPT locations in accordance with the RD/RAWP (Bhate 2019a). Details of the injections are described in the following sections.

### 3.5.1 Overall Sequence of Injections

Section 5.1 of the RD/RAWP (Bhate 2019a) called for the ISB injections to begin in the outermost locations of the injection grid and then to proceed inward to minimize dispersion of the perchlorate plume. The locations at the downgradient edge of the grid (04DPT19, 04DPT20, 04DPT24, and 04DPT25) were initially injected beginning on October 22, 2019. As discussed further in **Section 3.5.3**, daylighting became a significant issue due to the shallow depth of injection, the location of several injection locations within a former excavation area where the native soils had been removed and replaced, and the presence of a ditch and culvert within the treatment area. The injection pattern was adjusted to minimize the use of adjacent locations simultaneously, while maintaining the general pattern of injecting from the outer edge and moving inward. The injections were completed on November 6, 2019.

### 3.5.2 Amendment Preparation

The amendment solution was prepared in accordance with the RD/RAWP (Bhate 2019a) as shown on **Table 3-1**. The primary injection components were the EVO carbon source (Electron

Donor Solution – Extended Release™ from Tersus Environmental, LLC) and diammonium phosphate. Approximately 24 hours prior to the start of each injection cycle, the solution of ISB amendments was prepared in a 20,000-gallon mixing tank located at site LHAAP-16. The solution was prepared by adding the required volume of EVO, dilution water, and nutrients into the mixing tank.

### 3.5.3 Injection Process

The amendments were injected into the subsurface at the depths ranges shown on **Table 3-1**, using the system shown schematically in **Figure 3-2**. Four locations were connected to the injection manifold at a time and flow rates and injection pressures were controlled by individual control valves for each injection line. Initial injection pressures were at or below 40 pounds per square inch (psi), and flow rates ranged from 2 to 6 gallons per minute. As injections progressed, it became apparent that injection pressures and flow rates needed to be reduced in most locations to limit daylighting and that multiple adjacent locations could not be injected simultaneously without inducing daylighting around the injection point or through adjacent monitoring wells. The subsequent injection pattern was altered slightly to allow for alternating injection locations to spread out the effect of the simultaneous injections, while generally following the intent of the original injection pattern.

The daylighting was most frequently observed in the former excavation area near 04DPT05 and 04DPT09, and along the edge of the ditch and culvert near 04DPT18, 04DPT13, and 04DPT20. When necessary, injections were shut down and locations were allowed to "rest" before proceeding with the injections to minimize daylighting. Injection pressures were lowered to as low as 5 psi when necessary to limit daylighting. After each injection location was completed, the probe was withdrawn and the DPT point was abandoned by filling with grout. No soil cuttings were generated using DPT.

During the injection activities, Bhate/APTIM personnel performed the following:

- Checking the injection system gauges to monitor pressure, volume, and flow into each injection point.
- Recording injection interval, volume, and time (**Appendix B**).
- Monitoring injection pressures for sudden decreases that might indicate the loss of amendment in the subsurface (possibly due to fracturing induced by the injection or encountering a high-permeability zone).
- Visually monitoring the injection locations for surfacing of injected material.
- TOC monitoring in the performance wells to assess EVO distribution, as indicated in the RAWP, was not performed because white discoloration of the water from EVO

was visible in three of the four performance monitoring wells during the injections. The fourth well was not opened for sampling during injections to avoid creating a potential route for daylighting via the well.

### 3.6 Management of Remediation Derived Waste

During the activities described above, various types of waste were generated. Those wastes are identified in the table provided below. The table also summarizes the storage and disposal for each waste type.

Waste Type	Storage and Disposal <sup>a</sup>
Groundwater from purging of wells prior to sampling	Collected in 5-gallon containers or drums and transported to the GWTP for disposal
Disposable personal protective equipment and disposable supplies	Disposed as municipal solid waste

### Notes:

### 3.7 Demobilization

After completion of the final injections on November 6, 2019, the injection rig and amendment tanks were demobilized from LHAAP-04. Repairs were made, where possible, to smooth out divots or ruts in the grass caused by the drilling rig in the saturated soil conditions.

<sup>&</sup>lt;sup>a</sup> GWTP refers to the Groundwater Treatment Plant at Site LHAAP-18/24.

# Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • April 2021

### 4.0 DESIGN EFFECTIVENESS MONITORING

In accordance with the RD/RAWP (Bhate 2019a), design effectiveness samples were collected seven days after the ISB injections from four wells within the treatment area (04WW05, 04WW07, 04WW09, and 04WW10) and analyzed for TOC to evaluate the distribution of carbon source. The purpose the design effectiveness sampling was to evaluate whether the injections successfully distributed amendments. The determination of successful distribution of amendments was based on increased TOC concentrations relative to baseline or concentrations greater than 20 milligrams per liter (mg/L), which is the concentration considered to be supportive of biological degradation. For 04WW07, 04WW09, and 04WW10, a TOC sample was not collected during the November 5–6, 2019 sampling due to the visible presence of EVO and the January 2019 samples were not analyzed for TOC; therefore, no comparison to baseline TOC values was performed. The EVO observed in the wells during the injections confirmed successful distribution of the carbon source to those wells.

**Table 4-1** shows the results from the post-injection design effectiveness sampling. All four of the wells contained post-injection concentrations of TOC exceeding 20 mg/L. The concentrations ranged from 32.8 mg/L (04WW05) to 680 mg/L (04WW09). At 04WW05, the baseline concentration of 20 mg/L increased to 32.8 mg/L, representing a 64% increase over the baseline concentration. Based on these results, the injections achieved the desired distribution of TOC into the shallow groundwater zone at LHAAP-04.

### 4.1 Future Performance Monitoring

As noted in **Section 1.6**, this RACR documents the implementation of ISB, but activities that follow the ISB are described in the RD/RAWP (Bhate 2019a). **Section 1.6** provides a brief description of those activities, but the RD/RAWP should be referenced for detailed information.

In accordance with Table 6-1 of the RD/RAWP, the need for inclusion of LHSMW02, 04WW02, 04WW03, 04WW08, and the Fire Station Well in the monitoring network was to be evaluated following collection of the baseline samples. In an email exchange between the U.S. Army, TCEQ, and USEPA on January 23–27, 2020, it was decided to drop 04WW03 and the Fire Station well from the performance monitoring network based on the lack of perchlorate detections and their distance from the plume. Monitoring wells 04WW08 and LHSMW02 will be retained in the performance monitoring network due to their value as sentry wells, to monitor the vertical and horizontal extent of the remaining plume. At the request of TCEQ, 04WW02 will be sampled quarterly for the first two rounds of performance sampling, and a decision on whether to retain it in the network will be made once the data has been validated and provided to the regulators. **Table 4-2** and **Figure 2-1** show the Performance

Monitoring Plan for LHAAP-04 based on the changes agreed upon by TCEQ and USEPA. Performance monitoring will be conducted quarterly for Years 1 and 2 at the wells shown on **Table 4-2** and **Figure 2-1**. LTM will be conducted semiannually in Year 3 through Year 5. The monitoring wells shown in blue on **Figure 2-1** will be analyzed for perchlorate and monitored natural attenuation parameters, as shown on **Table 4-2**. The monitoring wells shown in green will only be analyzed for perchlorate. The first quarterly sampling event (Year 1, Quarter 1) was performed in late January 2020, and the validated data was provided to the regulators at the March 2020 monthly managers' meeting call. That data will be included in the Year 1 RA-O Report and evaluated with the other three quarters of data from Year 1.

### 5.0 LUC IMPLEMENTATION

The actions required to implement the LUCs for LHAAP-04 are described below. An initial notice of LUCs for Soil and Groundwater Contamination was completed on June 26, 2017, within 90 days of ROD signature as required (U.S. Army 2017). The Notice of LUCs including the final LUC boundary survey plat and legal description of the LUC boundary, filed with Harrison County on March 22, 2021, is included in **Appendix A**. A second Notice of LUCs for Soil and Groundwater Contamination was sent to federal, state, and local officials, and to the Texas Department of Licensing and Regulation (Water Well Drillers and Pump Installers Section) on February 23, 2021 showing the final area covered by the groundwater use restriction LUC (**Appendix A**).

The following actions were performed to implement LUCs for LHAAP-04:

- Finalize the boundaries of the LUCs as part of the remedial action (See **Figure 1-3** and **Appendix A**).
- Survey the LUC boundary. The final boundary was surveyed by a State of Texas licensed surveyor. A legal description of the surveyed area accompanies the survey plat.
- Record the Notice of LUCs at Harrison County. The LUC plats and legal descriptions and LUC restriction language were recorded at the Harrison County Courthouse in accordance with Title 30 TAC §335.566 (Appendix A).
- Transmit the notice to federal, state, and local governments involved at LHAAP-04, and to owners and occupants of the property whom are subject to restrictions and LUCs. The notice of the final boundary for LUCs was sent to federal, state, and local officials including:
  - State Representatives, the Harrison County Judge, Harrison County Historical Courthouse, the City of Uncertain Mayor, and Caddo Lake and Leigh Water Supply Corporations' Presidents. Notice will also be sent to the Caddo Lake National Wildlife Refuge Manager—as a representative of the U.S. Fish and Wildlife Service (the future transferee of the property), and the Water Well Driller and Pump Installer's Program at the Texas Department of Licensing and Registration.

Following implementation of the LUCs, the administrative maintenance activities required to ensure LUCs remain in place and effective will include:

- Annual field inspections of LHAAP-04 to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included on the Inspection and Maintenance Checklist (see **Appendix A**).
- Annual certifications that no LUC-restricted activities have been authorized and that LHAAP-04 conditions and use are consistent with the LUCs. The Annual LUC Compliance Certification Form is presented in **Appendix A**.
- Periodic transmittal of a LUC Notice to federal, state, and local authorities. The notice will include the land use restrictions referenced in the ROD, a written description of the LUCs, and a figure depicting the LUC boundary. The transmittal will coincide with each Five Year Review and will be documented in the report.
- The Final LUC Boundary and copies of filed notices will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-04. The update to the Comprehensive LUC Management Plan will be completed during the next annual update, which will be in the fourth quarter of 2020.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

### 6.0 REFERENCES

AECOM Technical Services (AECOM). 2016. Final Record of Decision LHAAP-04, Longhorn Army Ammunition Plant, Karnack, Texas.

Bhate Environmental, Inc. (Bhate). 2018. Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas. May.

Bhate. 2019a. Final Remedial Design and Remedial Action Work Plan for LHAAP-04, Longhorn Army Ammunition Plant, Karnack, Texas. April.

Bhate. 2019b. Memorandum for Record, August 2019 Underground Injection Control Substantive Requirements Notification for Remedy at LHAAP-04, Longhorn Army Ammunition Plant, Karnack, Texas. August.

Shaw Environmental & Infrastructure, Inc. (Shaw). 2011. Final Completion Report Non-Time-Critical Removal Action, Longhorn Army Ammunition Plant, Karnack, Texas. Houston, Texas. August.

Texas Commission on Environmental Quality (TCEQ). 2019. *Amendment of Class V Injection Well Inventory, Class V No. 5X2600643, CN600126262/RN101264505, SUP126, Longhorn Army Ammunition Plant, Site LHAAP-35A (58)/LHAAP-35B (37), State Highway 43, Karnack, Texas.* September 12.

U.S. Department of the Army (U.S. Army). 2017. *Preliminary Notice of Land Use Controls*. Longhorn Army Ammunition Plant, Karnack, Texas. June.

U.S. Army. 2019. Comprehensive Land Use Control Management Plan, Former Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. October 2019 Revision.

This page intentionally left blank.

# **Tables**

Table 2-1
Baseline and Design Effectiveness Monitoring Network Locations and Analyses

					Р	ropos	sed Ar	nalyse	eS	
						Design Effectiveness <sup>b</sup> (7 days post-injection)				
Monitoring Location	Primary Rationale for Well Selection	Perchlorate (314.0)	Dissolved Oxygen (field reading)	Oxidation-Reduction Potential (field reading)	pH (field reading)	Ferrous Iron (field reading)	Alkalinity (2320B)	Anions <sup>c</sup> (E300.0)	Total Organic Carbon (SW9060)	Total Organic Carbon (SW9060)
04WW05	Performance data within the treatment zone	<b>✓</b>	✓	✓	✓	✓	✓	✓	✓	✓
04WW07 <sup>a</sup>	Performance data within the treatment zone	<b>✓</b>	<b>✓</b>	✓	✓	✓	<b>✓</b>	✓	<b>√</b>	✓
04WW09 <sup>a</sup>	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓
04WW10 <sup>a</sup>	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓
04WW01 <sup>a</sup>	Downgradient well for measuring plume stability	<b>✓</b>	✓	✓	<b>√</b>					
04WW04	Upgradient well for measuring plume stability	✓	✓	✓	✓					
04WW06	Upgradient well for measuring plume stability	✓	✓	✓	✓					
04WW11	Downgradient well for measuring plume stability	✓	✓	✓	✓					
LHSMW01	Crossgradient well for measuring plume stability	✓	<b>✓</b>	✓	✓					
LHSMW02	Crossgradient well	✓	✓	✓	✓					
04WW02	Upgradient well	✓	✓	✓	✓					
04WW03	Upgradient well	✓	✓	✓	✓					
04WW08	Intermediate Zone well	✓	✓	✓	✓					
Fire Station Well	Downgradient well	✓	✓	✓	✓					

### Notes:

<sup>&</sup>lt;sup>a</sup> The baseline samples were collected near the completion of injections and emulsified vegetable oil was present in monitoring wells 04WW01, 04WW07, 04WW09, and 04WW10 when baseline sampling was attempted. Samples were not collected from these wells during the November 5-6, 2019 sampling event. The January 2019 sample results will be used as the baseline at these locations. Samples were only analyzed for perchlorate during the January 2019 sampling event.

<sup>&</sup>lt;sup>b</sup> To be conducted approximately 7 days after the completion of substrate injection.

<sup>&</sup>lt;sup>c</sup> Anions include nitrate, nitrites, and sulfate.

<sup>✓</sup> Indicates that sample will be collected and analyzed for the listed analyte.

Remedial Action Completion Report, LHAAP-04

Table 2-2

**Baseline Sampling Results** 

	Loca	ition Code	04W'	W01 <sup>a</sup>	04WW02		04W	/W03	04W	/W04	04W	/W05	04W	/W06	04W	W07 <sup>a</sup>
		Sample ID	04WW0	04WW01-190122		04WW02-191105		04WW03-191106		04WW04-191106		5-191106	04WW0	6-191106	04WW0	7-190122
	Sa	mple Date	1/22	1/22/2019		/2019	11/5	/2019	11/6/2019		11/6/2019		11/6/2019		1/22/2019	
Location Description		Shallow Zone, Downgradient of Plume		Shallow Zone, Upgradient of Plume		Shallow Zone, Upgradient of Plume		Shallow Zone, Within Plume Area		Shallow Zone, Within Plume Area		Shallow Zone, Cross- Gradient to Plume Area		Shallow Zone, Within Treatment Zone		
Analyte	Units	PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
General Chemistry				•								•				
Alkalinity	mg/L	NV	NA		NA		NA		NA		438		NA		NA	
Sulfate	mg/L	NV	NA		NA		NA		NA		72.8		NA		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		NA		20		NA		NA	
Perchlorate																
Perchlorate	μg/L	17	< 2	U	< 2	U	<2	U	< 2	U	< 2	U	< 2	U	110	
Field Parameters																
Dissolved Oxygen	mg/L	NV	0.15		1.44		1.26		0.06		0.18		0.10		1.83	
Oxidation-Reduction Potential	mV	NV	327		221		153		-43		-36		2		338	
рН	Std Units	NV	6.17		6.08		6.13		6.3		5.94		6.65		6.22	
Ferrous Iron	mg/L	NV	NM		NM		NM		NM		0.31		NM		NM	

### Notes:

### Blue highlighting indicates concentrations above the PCL.

<sup>a</sup> The baseline samples were collected near the completion of injections and emulsified vegetable oil was present in monitoring wells 04WW01, 04WW07, 04WW09, and 04WW10 when baseline sampling was attempted. Samples were not collected

from these wells during the November 5–6, 2019 sampling event. The January 2019 sample results will be used as the baseline at these locations. Samples were only analyzed for perchlorate

during the January 2019 sampling event.
< The analyte was not detected above the laboratory reporting limit shown.

μg/L - micrograms per liter

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

mg/L - milligrams per liter

mV - millivolts

NA - not analyzed

NM - not measured

NV - No PCL value has been established for the analyte.

PCL - Texas Risk Reduction Program (TRRP) Tier 1

Groundwater Residential Protective Concentration Level.

Std Units - standard units

Val Qual - validation qualifier

Remedial Action Completion Report, LHAAP-04

Table 2-2

**Baseline Sampling Results** 

	Loca	ation Code	04W	/W08	04W	W09 <sup>a</sup>	04W'	W10 <sup>a</sup>	04W	/W11	LHSN	ЛW01	LHSI	MW02	Fire Sta	tion Well	
		Sample ID	04WW0	8-191106	04WW0	04WW09-190122		04WW10-190122		04WW11-191106		LHSMW01-191106		)2-191105	Fire Station	Well-191106	
	Sa	mple Date	11/6	11/6/2019		1/22/2019		1/22/2019		11/6/2019		11/6/2019		11/5/2019		11/6/2019	
Location Description				Shallow Zone, Within Treatment Area		Shallow Zone, Within Treatment Area		Shallow Zone, Downgradient of Plume		Shallow Zone, Cross- Gradient to Plume		Shallow Zone, Downgradient of Plume		Deep Zone, Downgradient of Plume			
Analyte	Units	PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual							
General Chemistry				•	•	•		•	•			•		•	•		
Alkalinity	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		
Sulfate	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		
Total organic carbon	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		
Perchlorate																	
Perchlorate	μg/L	17	13		2,100		10,000		< 2	U	< 2	U	< 2	U	< 2	U	
Field Parameters																	
Dissolved Oxygen	mg/L	NV	0.03		5.78		3.59		3.21		0.48		0.22		NM		
Oxidation-Reduction Potential	mV	NV	-151		326		333		158		127		52		NM		
рН	Std Units	NV	8.65		6.02		5.62		7.13		6.34		5.79		NM		
Ferrous Iron	mg/L	NV	NM		NM		NM		NM		NM		NM		NM		

### Notes:

### Blue highlighting indicates concentrations above the PCL.

<sup>a</sup> The baseline samples were collected near the completion of injections and emulsified vegetable oil was present in monitoring wells 04WW01, 04WW07, 04WW09, and 04WW10 when baseline sampling was attempted. Samples were not collected

from these wells during the November 5–6, 2019 sampling event. The January 2019 sample results will be used as the baseline at these locations. Samples were only analyzed for perchlorate during the January 2019 sampling event.

< The analyte was not detected above the laboratory reporting limit shown.

μg/L - micrograms per liter

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

mg/L - milligrams per liter

mV - millivolts

NA - not analyzed

NM - not measured

NV - No PCL value has been established for the analyte.

PCL - Texas Risk Reduction Program (TRRP) Tier 1

Groundwater Residential Protective Concentration Level.

Std Units - standard units

Val Qual - validation qualifier

Remedial Action Completion Report, LHAAP-04 Aptim Federal Services, LLC

Table 3-1 Injection Locations and Amendment Volumes

	Amendn	nent Volume per l	_ocation		
DPT Location	Gallons of EVO (EDS-ER™ or Equivalent)	Gallons of Nutrients (DAP)	Gallons of Water	Nearest Monitoring Well	DPT Injection Depths (ft bgs)
04DPT03, -06, and -07	15	6	1,463	04WW05	12 - 20
04DPT01, -02, -04, and -05	15	6	1,463	04WW09	6 - 14
04DPT08, -09, -10, -11, -12, -13, -14, -17, -18, -19, -20, -24, and -25	15	6	1,463	04WW10	7 - 15
04DPT15, -16, -21, -22, and -23	15	6	1,463	04WW07	7 - 15

### Notes:

DAP - Diammonium phosphate

DPT - direct-push technology

EDS-ER™ - Electron Donor Solution-Extended Release

EVO - emulsified vegetable oil

ft bgs - feet below ground surface

Remedial Action Completion Report, LHAAP-04

Aptim Federal Services, LLC

Table 4-1
Design Effectiveness Sampling Results

	Locatio	on Code		04W	W05		04W	/W07	04W	W09	04WW10		
	Sa	mple ID	04WW05	5-191106	04WW05-191113- POST-INJ		04WW07	7-191113-	04WW09	)-191113-	04WW01	0-191113-	
	Sa	ттріе то					POS	T-INJ	POS <sup>-</sup>	T-INJ	POST-INJ		
	Sample Date				11/13	/2019	11/13	3/2019	11/13	/2019	11/13/2019		
Location Description			Shallow Zone, Within Plume Area - Baseline		Shallow Zone, Within Plume Area - Post Injection		Shallow Zone, Within Plume Area		Shallow Zone, Within Treatment Area		one, Within ent Area		
Analyte	Units	PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	
Field Measurements													
Dissolved Oxygen	mg/L	NV	0.18		0.46		0.08		0.33		0.08		
Oxidation-Reduction Potential	mV	NV	-36		-135.1		-333.1		-27.5		-291.8		
рН	Std Units	NV	5.94		5.68		5.96		4.36		5.61		
General Chemistry													
Total organic carbon	mg/L	NV	20		32.8		35.3		680		65		

### Notes:

ID - identification

INJ - injection

mg/L - milligrams per liter

mV - millivolts

NV - No PCL value has been established for the analyte.

PCL - Texas Risk Reduction Program (TRRP) Tier 1

Groundwater Residential Protective Concentration Level.

Std Units - standard units

Val Qual - validation qualifier

Table 4-2 LHAAP-04 Performance Monitoring Plan

				ormano (C	ce – Quart			and	2	L		- <b>Years</b> emiann		ru 5
Monitoring Location	Primary Rationale for Well Selection	Perchlorate (314.0)	Dissolved Oxygen (field)	Oxidation-Reduction Potential (field)	pH (field)	Ferrous Iron (field reading)	Alkalinity (2320B)	Anions <sup>a</sup> (E300.0)	Total Organic Carbon (SW9060)	Perchlorate (314.0)	Dissolved Oxygen (field)	Oxidation-Reduction Potential (field)	pH (field reading)	Total Organic Carbon (SW9060)
04WW05	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
04WW07	Performance data within the treatment zone	✓	✓	✓	<b>√</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓
04WW09	Performance data within the treatment zone	✓	✓	✓	✓	✓	<b>✓</b>	<b>√</b>	✓	✓	✓	✓	✓	<b>✓</b>
04WW10	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
04WW01	Downgradient well for measuring plume stability	✓	✓	✓	✓					✓	✓	✓	✓	
04WW04	Upgradient well for measuring plume stability	✓	✓	✓	✓					✓	✓	✓	✓	
04WW06	Upgradient well for measuring plume stability	✓	✓	✓	✓					✓	✓	✓	<b>✓</b>	
04WW11	Downgradient well for measuring plume stability	✓	✓	✓	✓					✓	✓	✓	~	
LHSMW01	Crossgradient well for measuring plume stability	✓	✓	✓	<b>√</b>					✓	✓	<b>√</b>	<b>✓</b>	
LHSMW02	Crossgradient well	✓	✓	✓	✓					✓	✓	✓	✓	
04WW08	Intermediate Zone well	✓	✓	✓	✓					✓	✓	✓	✓	
04WW02	Upgradient well	✓	✓	<b>√</b>	✓		quarte	rs of	Year 1	and th	ne res	sampled f sults will b ther samp	e use	

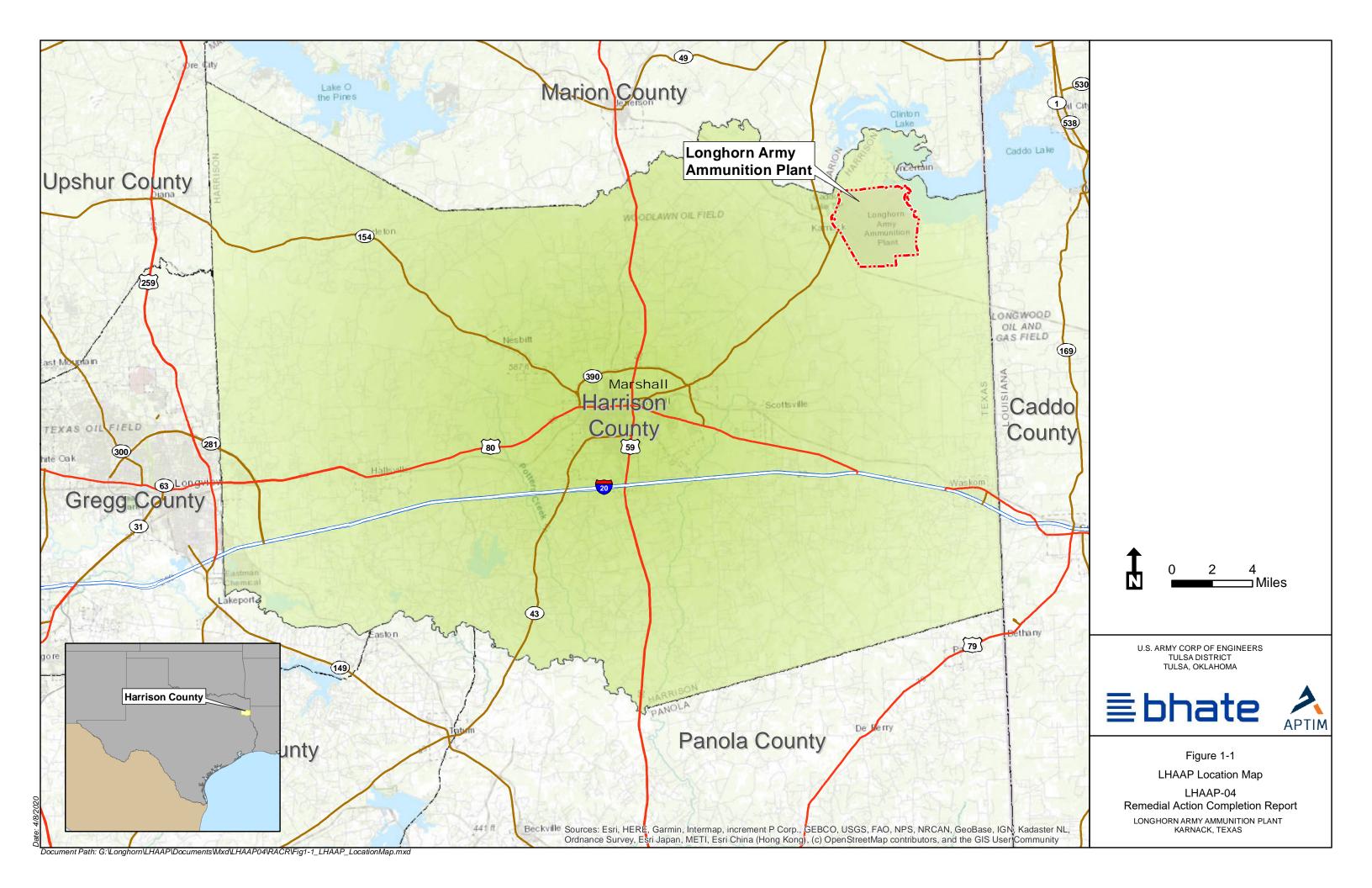
### Notes:

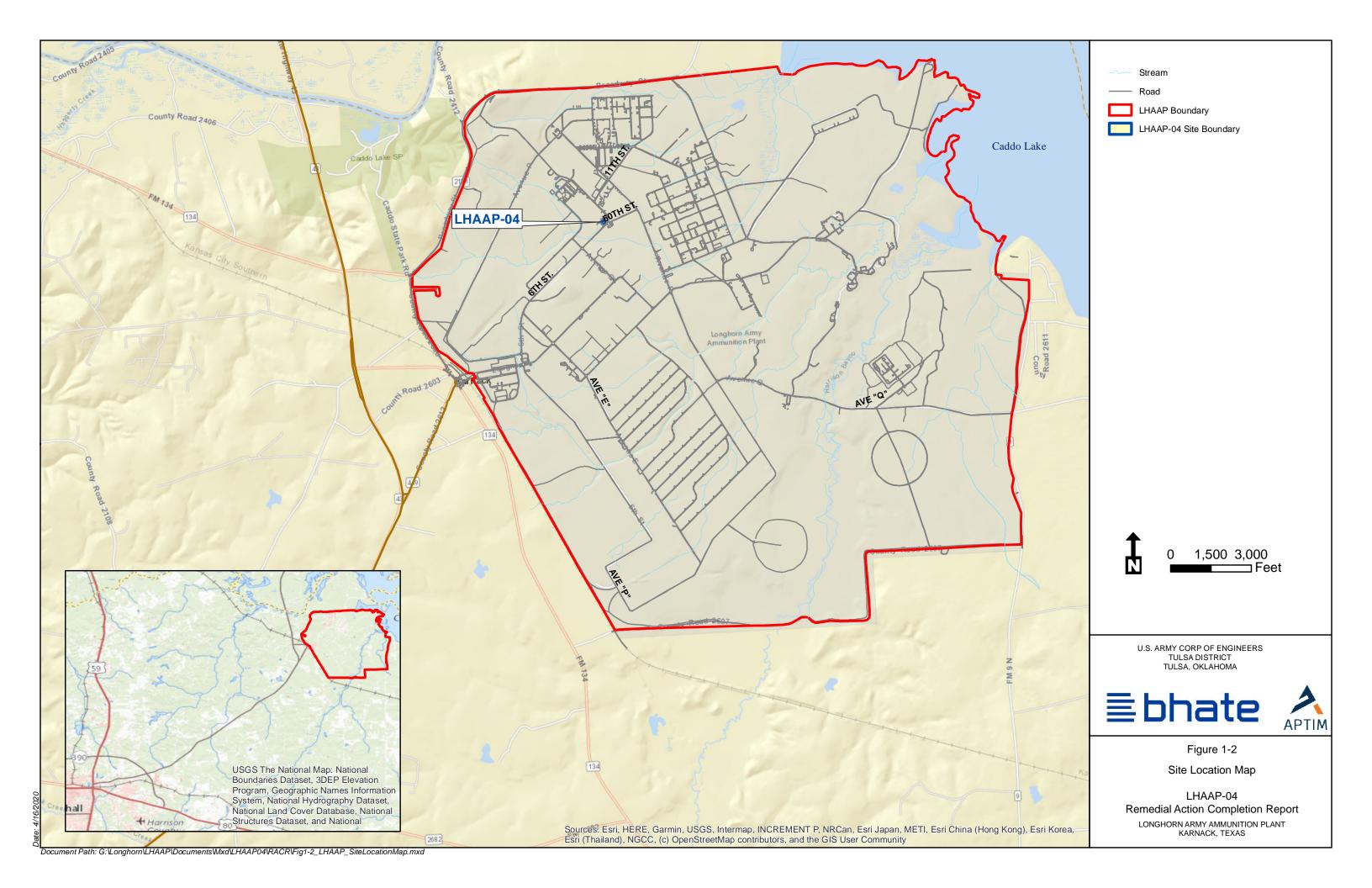
The wells where MNA parameters are included in the analyte list above are shown in blue on Figure 2-1. The remaining wells that are only being analyzed for perchlorate are shown on Figure 2-1 in green. 04WW02 is shown in black on Figure 2-1 since it will not be determined if it is included in the performance or LTM monitoring network until after the 2nd quarterly sampling event is complete.

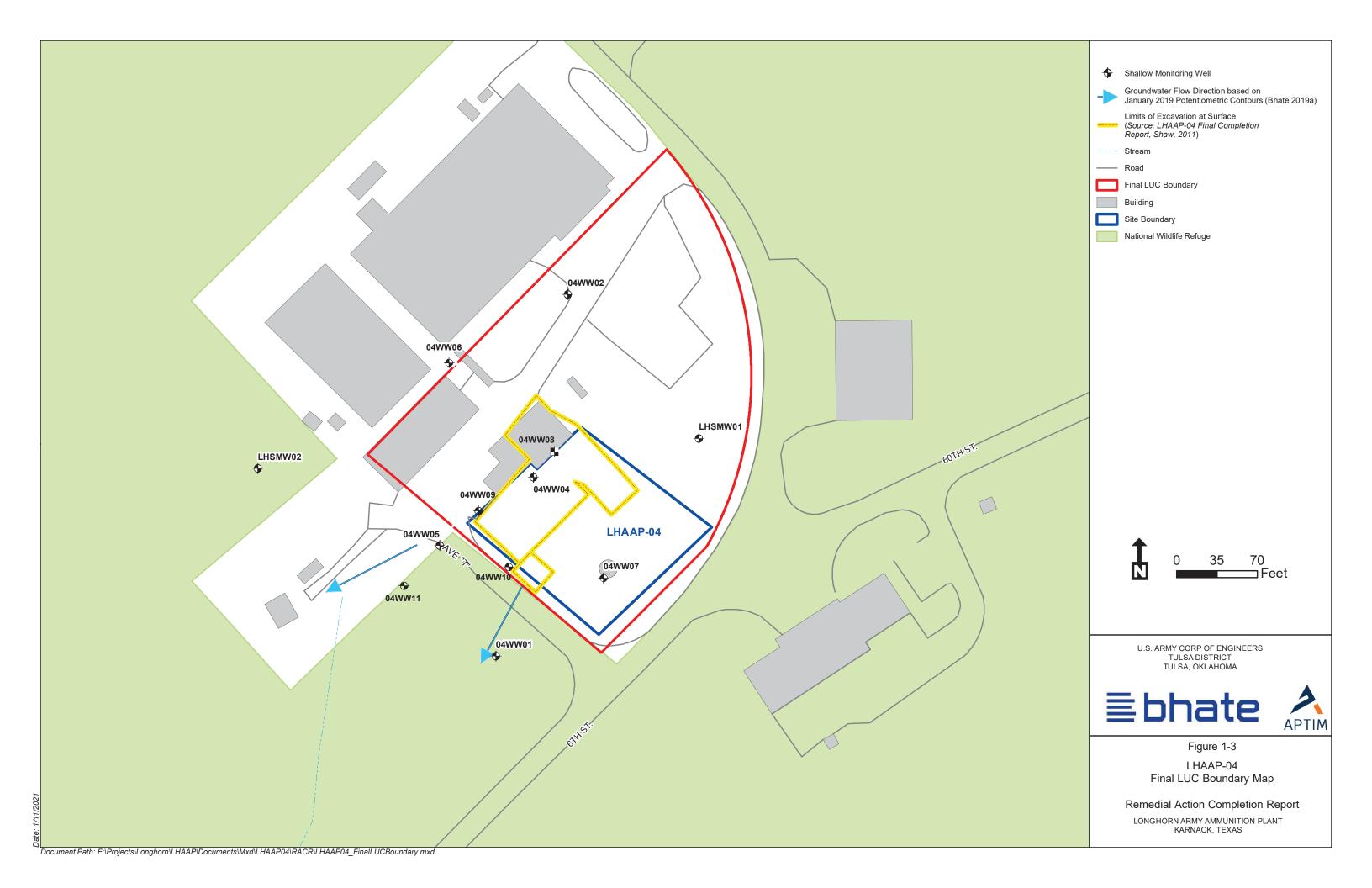
<sup>&</sup>lt;sup>a</sup> Anions include nitrate, nitrites, and sulfate.

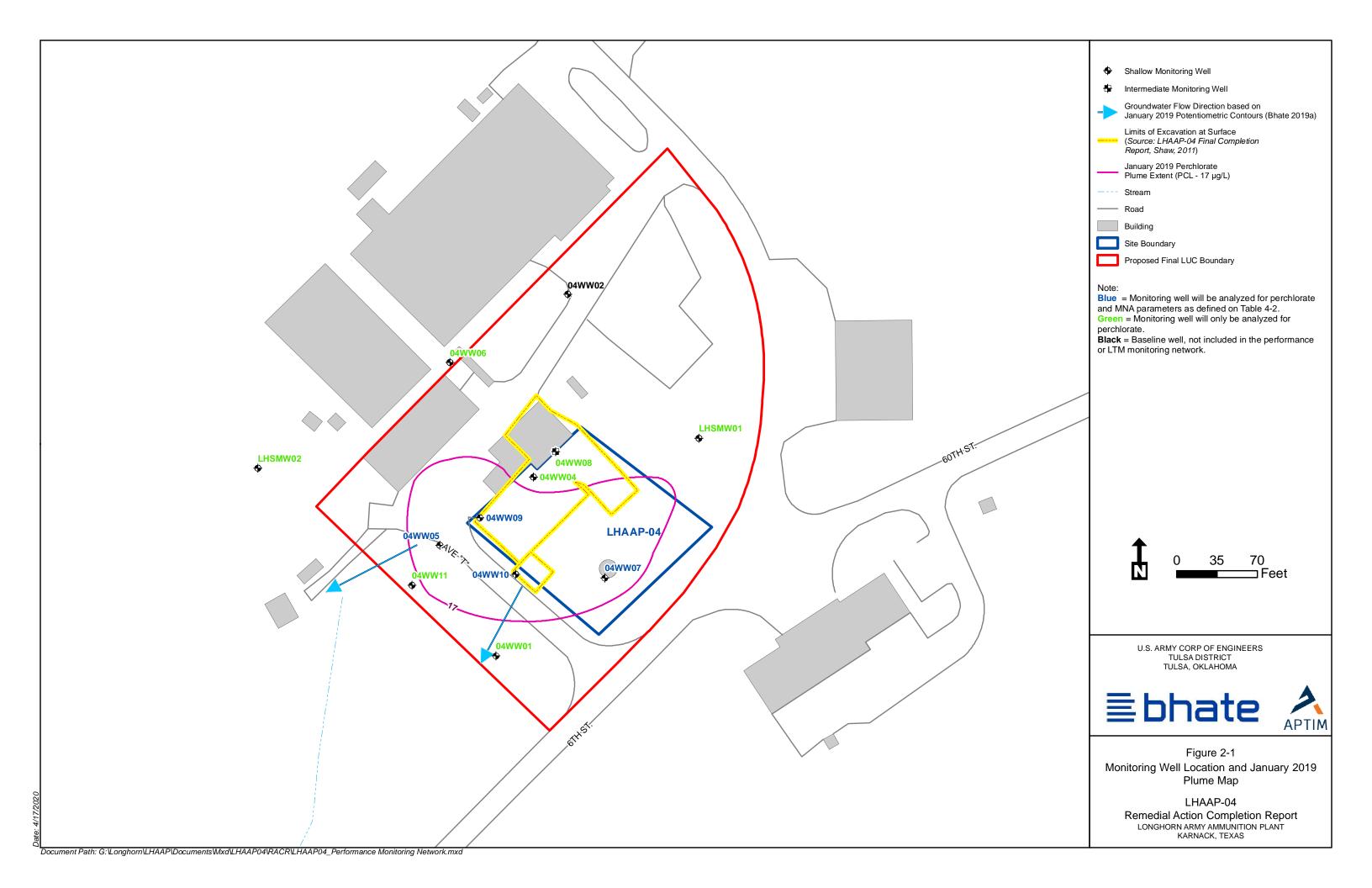
 $<sup>\</sup>checkmark$  Indicates that sample will be collected and analyzed for the listed analyte.

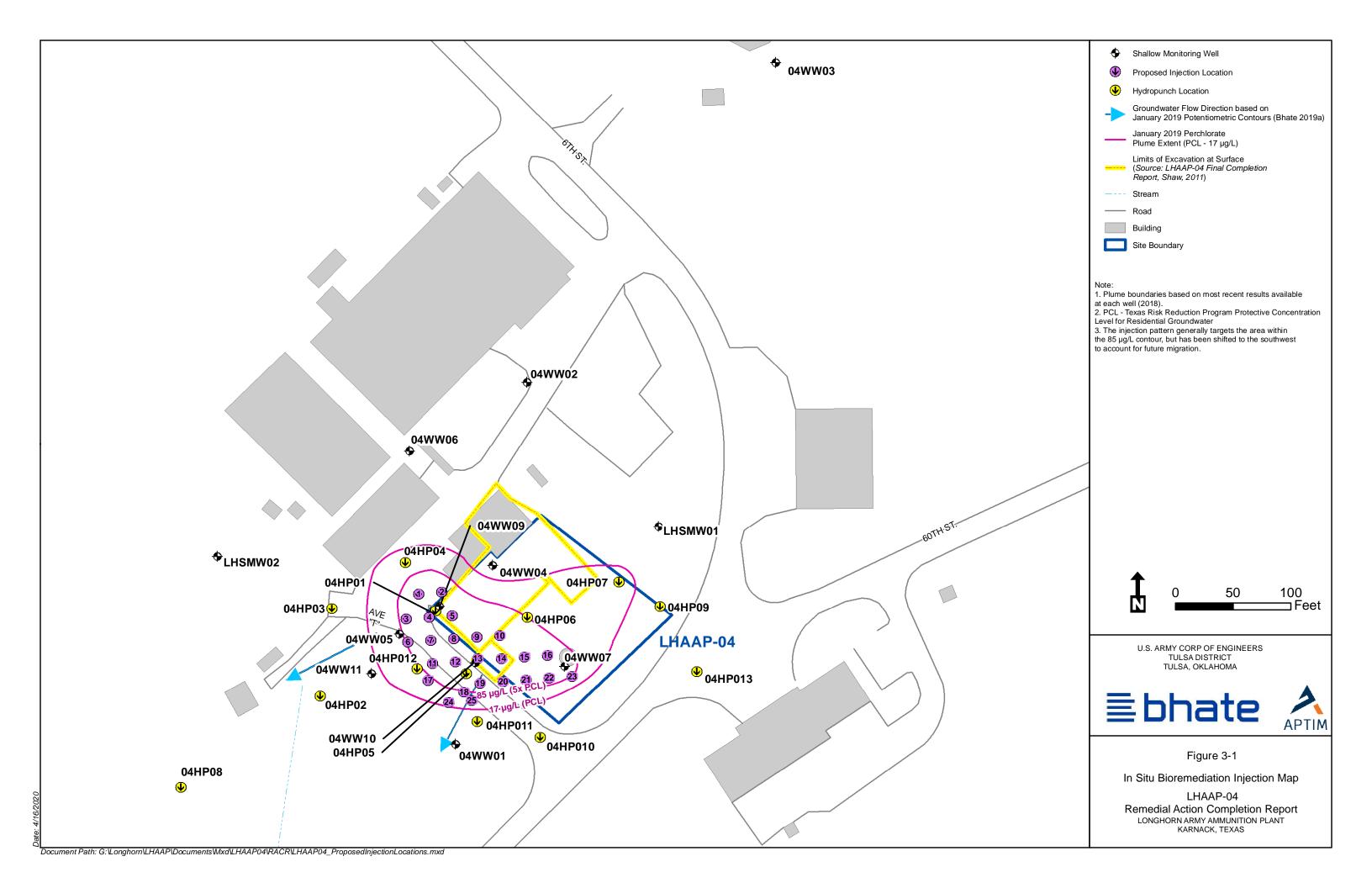
# **Figures**

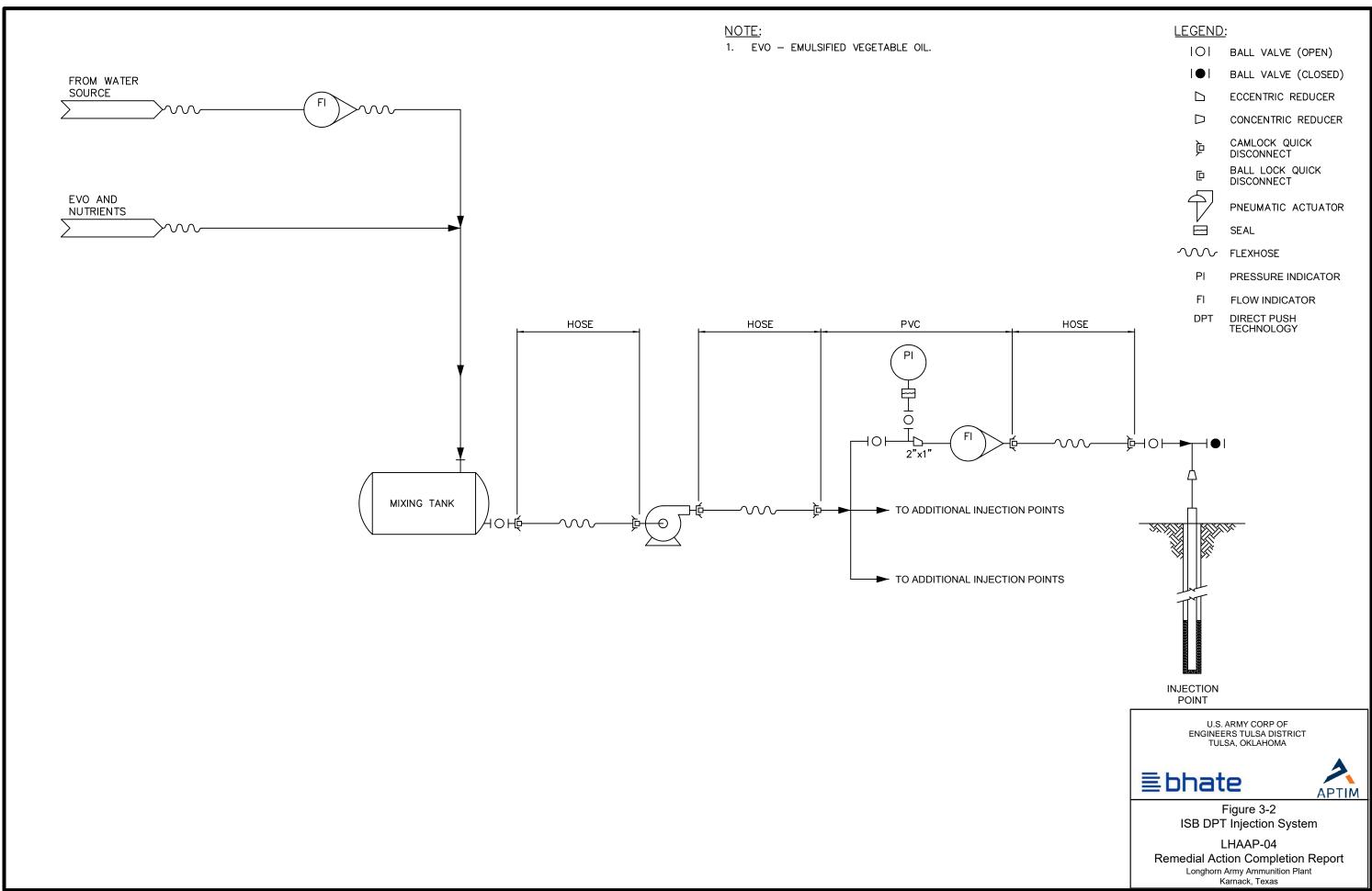












# Appendix A Notice of LUCs and Final LUC Boundary

## \*\*\* DO NOT REMOVE THIS PAGE — IT IS A PART OF THIS INSTRUMENT\*\*\* NOTICE

8 Pages

FILED AND RECORDED-OPR	CLERKS NOTES
On: 03/22/2021 03:29 PM	
Document Number: <u>2021-000003203</u>	
Receipt No: 2103298	
Amount: \$ 50.00	
By: Emily Najera, Deputy	
Elizabeth James, County Clerk Harrison County, Texas	



#### STATE OF TEXAS

#### **COUNTY OF HARRISON**

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Elizabeth James, Harrison County Clerk

Record and Return To:

WILLIAM FOSS 2500 CITY WEST BLVD., SUITE 1700

HOUSTON, TX 77042

## STATE OF TEXAS HARRISON COUNTY

## INDUSTRIAL SOLID WASTE NOTICE OF LAND USE CONTROLS AT LHAAP-04

#### KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

1

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is a former pilot wastewater treatment plant, located in the central portion of the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-04. LHAAP was placed on the National Priorities List (NPL) in August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA) and the TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-04 were performed in accordance with the FFA requirements.

Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the former pilot wastewater treatment facility structures, tanks, and piping, and the disposal of the associated wastes were completed in the summer of 1997 as part of the Resource Conservation and Recovery Act closure of the plant. The final remedy for soil was conducted in 2009 as a Non-Time-Critical Removal Action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) program. The soil was removed to non-residential levels. The Site was not remediated to levels suitable for unrestricted use. The U.S. Department of the Army issued the Final Record of Decision (ROD) for LHAAP-04 in October 2016, and the ROD was signed by the Army on December 15, 2016, and the U.S. Environmental Protection Agency on March 30, 2017. The Texas Commission on Environmental Quality (TCEQ) issued a letter concurring with the ROD on February 7, 2017. The final remedy selected in the ROD included in-situ bioremediation for perchlorate concentrations in groundwater, long-term monitoring of groundwater, and Land Use Controls (LUCs). The LUCs at LHAAP-04 will ensure protection of human health by restricting groundwater use to environmental monitoring and testing only, requiring only non-residential

use of the site, and maintaining groundwater monitoring systems until levels of contaminants of concern (COCs) allow for unlimited use and unrestricted exposure.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E (Room 103. first floor) 12100 Park 35 Circle, Austin, Texas 78753, (512) 239-2900, Monday through Friday 8:00 am to 5:00 pm, or the Administrative Record available at the Marshall Public Library, 300 South Alamo Boulevard, Marshall, Texas 75670, (930) 935-4465, Monday through Friday 9:30AM – 5:30PM.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public on the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

11

The LHAAP-04 site covers an area of approximately 0.44 acres, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A**. The LUC boundary, which includes the LHAAP-04 site, encompasses a 1.885 acre tract, more or less, as described in **Exhibit A**. The LUC Boundary is also presented in the attached **Figure 1**.

Future use of the parcel is intended as a national wildlife refuge, consistent with non-residential use. For the purposes of this certification, residential land use includes, but is not limited to, single family to multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of education purpose for children/young adults in grades kindergarten through 12. The U.S. Department of the Army has undertaken careful environmental study of the LHAAP-04 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment:

- Groundwater Use Restriction. The groundwater use restriction boundary consists of the 1.885-acre tract, more or less. Groundwater underlying this land is contaminated with perchlorate. A prohibition of groundwater use (except for monitoring and testing) as a potable source will remain in place until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- Non-Residential Use Restriction. The non-residential use restriction boundary is
  coincident with the boundary for Groundwater Use Restriction and consists of the
  1.885-acre tract, more or less. The site is restricted to nonresidential use until it is
  demonstrated that surface and subsurface soil and groundwater COCs are at levels that
  allow for unlimited use and unrestricted exposure.

 Maintain Integrity of Monitoring Systems. The integrity of any current or future remedial or monitoring systems will remain in place until the cleanup levels of COCs in groundwater are met.

Ш

The owner of this site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIN-ISE-LO (H. Procter)
Program Manager/Analyst
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Or

Mr. Thomas A. Lineer Chief Office of the Deputy Chief of Staff, (DAIN-ISE) Environmental Division, BRAC Field Branch 600 Army Pentagon Washington, D.C. 22310-0600

Rose M. Zeiler

Longhorn AP Site Manager

EXECUTED this the 35 day of Tel., 2021.

BEFORE ME, on this 25<sup>th</sup> day of personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of February 2021.

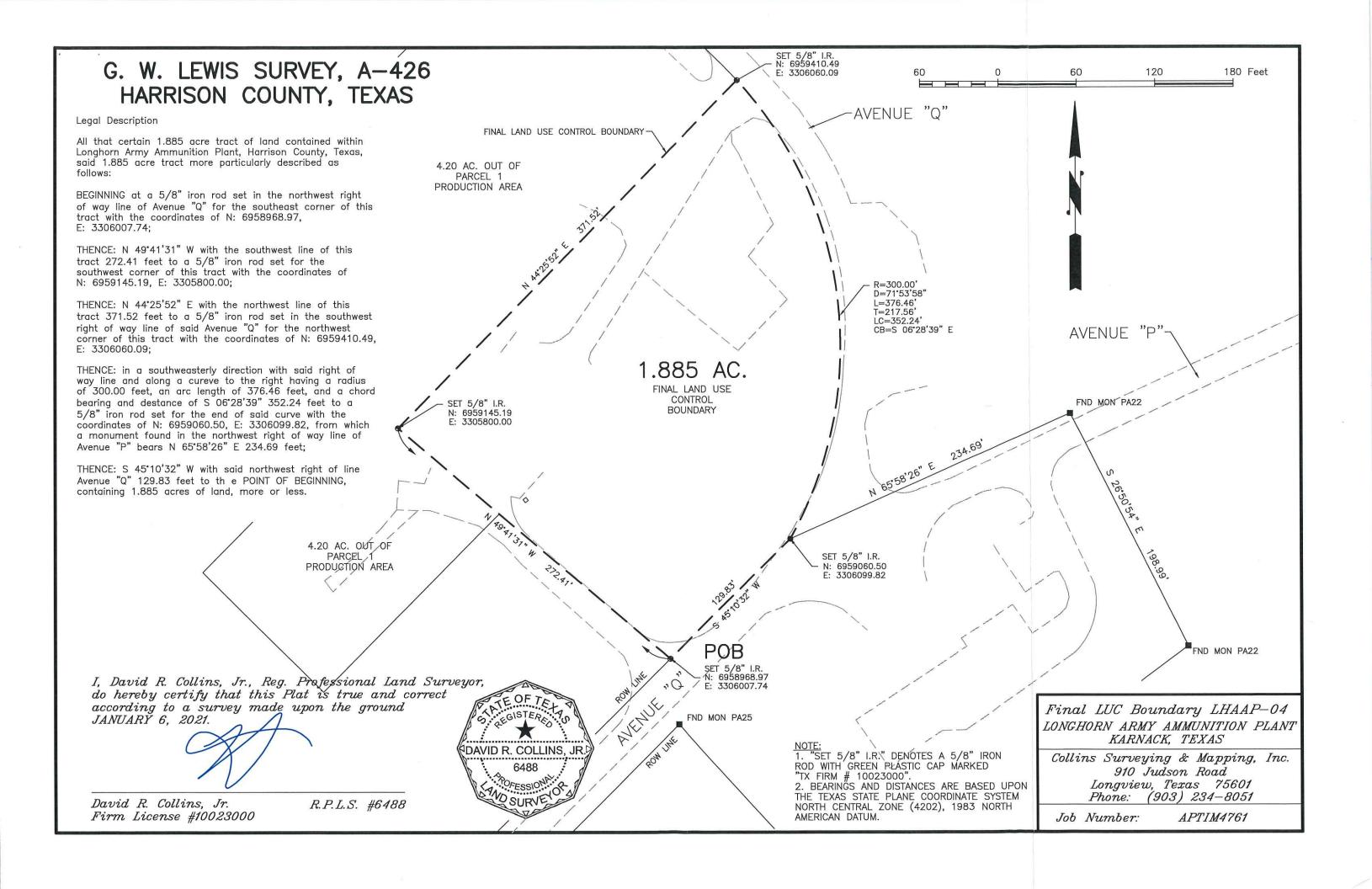
KAREN DAVIS
MY COMMISSION # 12382216
EXPIRES: May 20, 2021
Logan County

Notary Public in and for the State of Arkansas,

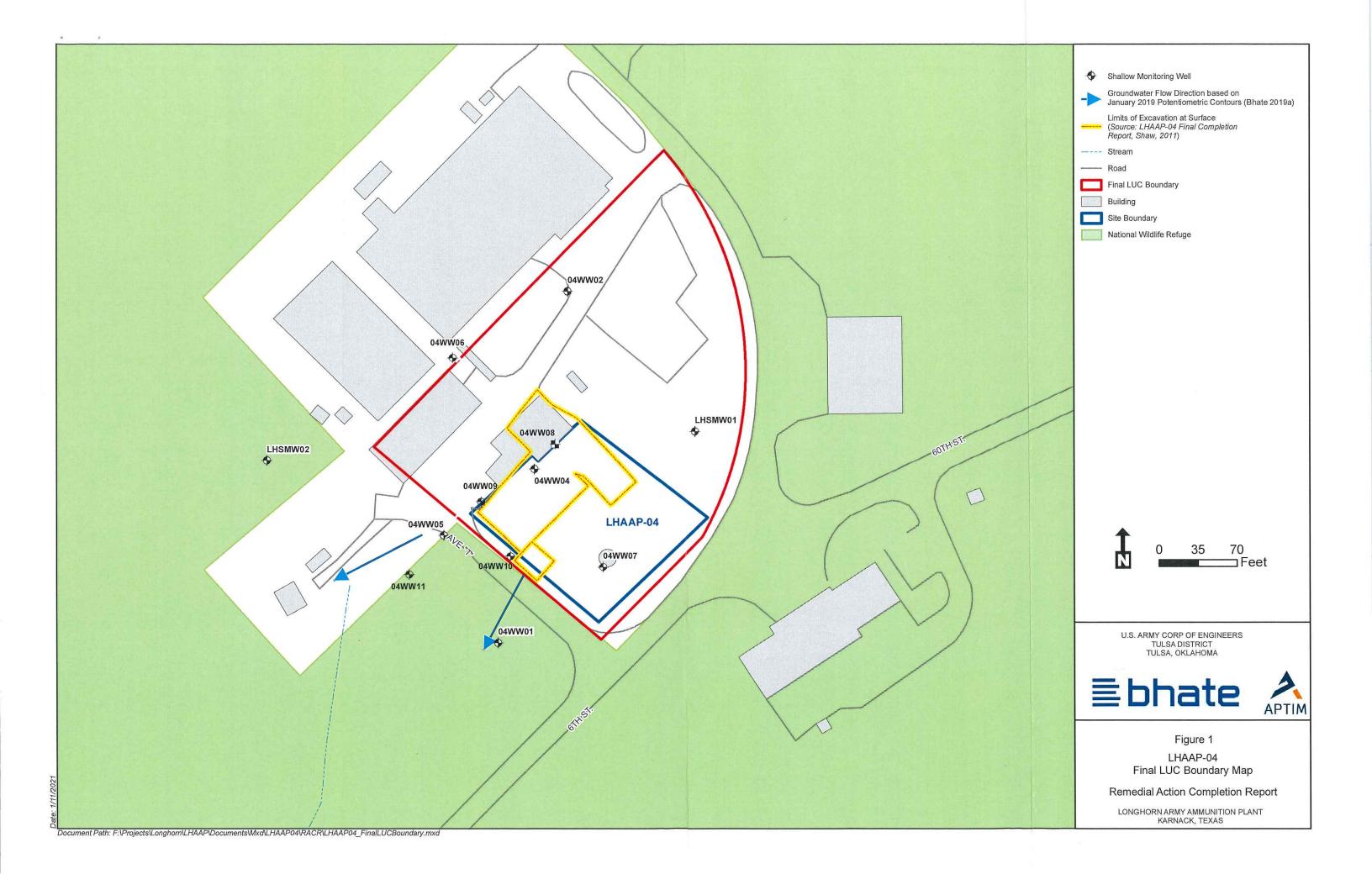
County of \_\_\_

#### Exhibit A

## Survey and Legal Plat



## Figure 1 Final LUC Boundary



## **LUC Inspection and Maintenance Checklist**

		General Information										
Projec	ct Name	LUC Inspection and Maintenance, LHAAP-04 Longhorn Army Ammunition Plant, Karnack, TX										
Contra	actor											
Inspe	ctor's Name											
Inspe	ctor's Title											
Inspe	ctor's Signature											
Inspe	ctor's Contact Number											
Inspe	ction Date											
Туре	of Inspection	Quarterly     Semiannual     Annual       Prior to forecast rain     After a rain event     Other										
Α. (	Groundwater Monitoring Wells											
D.1	Are the installed groundwater monitoring wells in poor condition?											
D.2	Is the well cleared of vegetation and accessible?											
D.3	Any other relevant observations?											
D.4	Are there any significant cracks present?											
D.5	Are there any damaged areas?											

#### **Annual Land Use Control Compliance Certification Form**

In accordance with the Remedial Design dated	for LHAAP-04 an			
inspection of the site was conducted by	[indicate transferee] on			
The land use control mechanisms are:				
<ul> <li>Groundwater restrictions - The groundwater under boundary shall not be accessed or used for any purpor monitoring and testing) without the prior written apprehent TCEQ. The LUC to prohibiting groundwater use remain in place at the site until the levels of contaming groundwater allow for unlimited use and unrestricted</li> <li>Land use restrictions - restrict land use within the</li> <li>Integrity of remedial and monitoring systems - management</li> </ul>	se (except for environmental roval of U.S. Army, the USEPA and shall be implemented and shall nants of concern (COCs) in soil and exposure.;  LUC boundary to nonresidential; aintain the integrity of any current or			
No unauthorized activities or uses have occurred. Complinestrictions is as follows:	iance with land use controls and			
<ul> <li>No use of groundwater (other than environmental new groundwater wells, or tampering with existing</li> </ul>	C			
<ul> <li>No land use other than nonresidential; and</li> <li>No activities that would compromise the integrity</li> </ul>	of the remedial or monitoring systems			
I, the undersigned, do document that the inspection was of the above information is true and correct to the best of my				
Date:				
Name/Title:				
G:				
Signature:				

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.



February 23, 2021

**DAIN-ODB-LO** 

Hon. Chad L. Sims Harrison County Judge #1 Peter Whetstone Square, Room 314 Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Judge Sims,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Ziler

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Mr. Thomas Speir Chairman, Harrison County Historical Commission 200 West Houston Street Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Speir,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Ziler

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Mr. William D. Hatfield Harrison County Commissioner, Precinct 1 Waskom Sub-Courthouse 165 West Texas Avenue Waskom, Texas 75692

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Commissioner Hatfield,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Zilu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Hon. Judye Patterson Mayor, City of Uncertain, Texas P.O. Box 277 Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mayor Patterson,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Talu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Mr. Eric Duerkop Manager, Caddo Lake National Wildlife Refuge 15600 Highway 134 Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Duerkop,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Talu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Mr. Terry Britt President, Caddo Lake Water Supply Corporation P.O. Box 136 Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Britt,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Talu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Mr. Carl Shelton President, Leigh Water Supply Corporation 342 Byrd Circle Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Shelton,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Talu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Rep. Chris Paddie Texas House of Representatives, District 9 102 West Houston Street Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Paddie,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Zilu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Sen. Bryan Hughes Texas State Senate, District 1 201 West Houston Street, Suite 106 Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Hughes,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Zilu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Texas Department of Licensing and Regulation Water Well Drillers and Pump Installers Program P.O. Box 12157 Austin, Texas 78711

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Zilu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Rep. Louis Gohmert
United States House of Representatives
Texas 1<sup>st</sup> Congressional District
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Gohmert,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Zalu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Sen. John Cornyn United States Senate Regions Bank Building 100 East Ferguson Street, Suite 1004 Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cornyn,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Zilu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX



February 23, 2021

**DAIN-ODB-LO** 

Sen. Ted Cruz United States Senate 305 South Broadway, Suite 501 Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cruz,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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.

Roem - Talu

Longhorn AAP Site Manager

#### Attachments:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

#### Copies furnished:

A. Palmie, TCEQ, Austin, TX

L. Poulos, USEPA, Dallas, TX

#### Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Former Pilot Wastewater Treatment Plant Longhorn Army Ammunition Plant, Karnack, Texas

The Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The installation occupies approximately 1,100 of its former 8,416 acres between State Highway 43 at Karnack, Texas and the southwestern shore of Caddo Lake. The installation can be accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission of Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (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 site addressed in this Final Notice of Land Use Controls is LHAAP-04, which is shown on the attached figures (Figures 1-2 and 1-3 from the Response Action Completion Report) and discussed below. Land Use Controls (LUCs) are applied at LHAAP-04 as part of the remedy in accordance with the LHAAP-04 Record of Decision (ROD) finalized March 30, 2017. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure. The Final LUC boundary shown is the same as the preliminary boundary that was provided in the Initial Notice of LUCs provided on June 26, 2017.

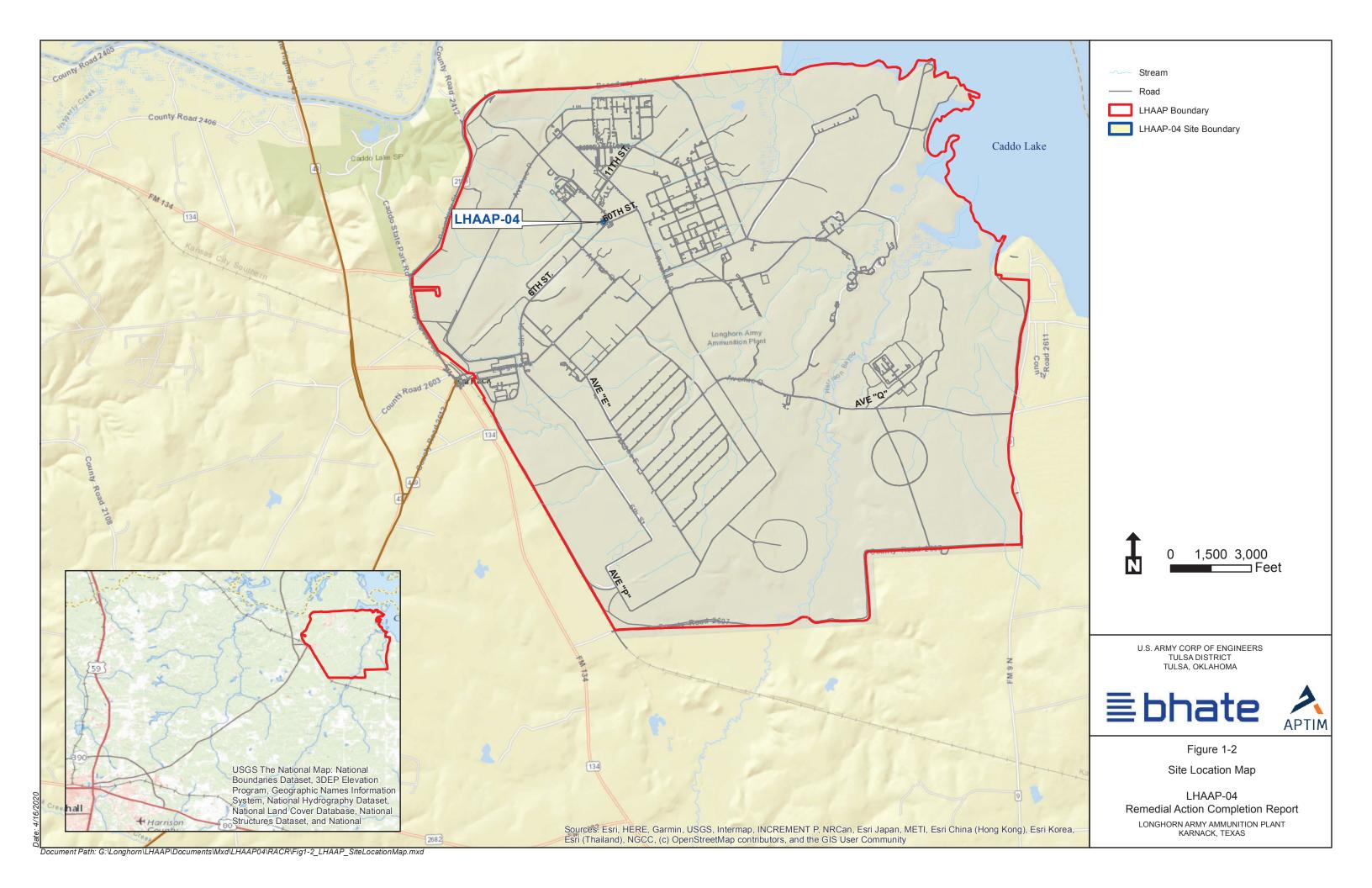
#### **Contaminants of Concern (COCs)**

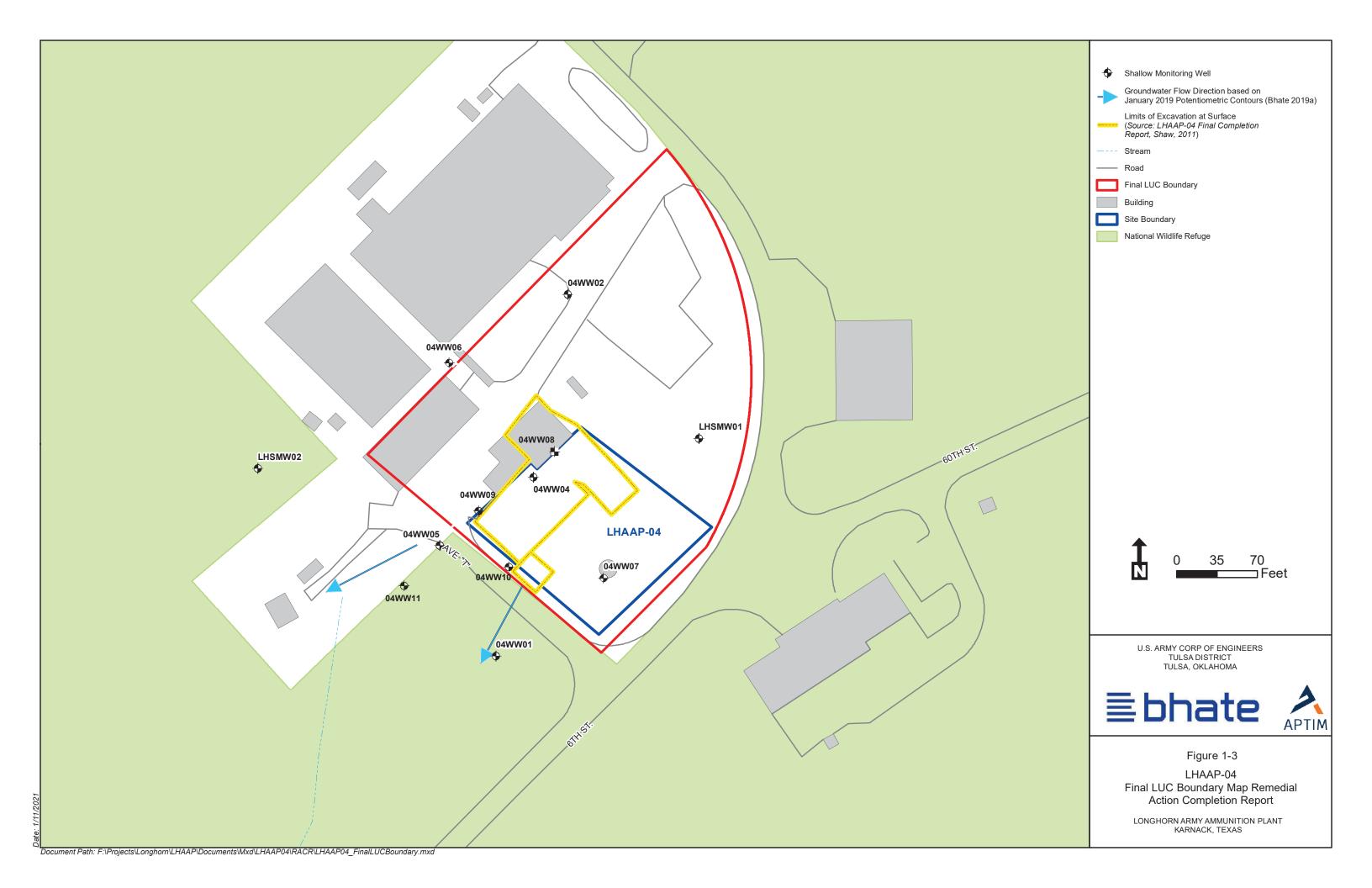
The only COC identified in the ROD for groundwater at LHAAP-04 was perchlorate, which was found at concentrations exceeding the TCEQ Protective Concentration Levels in the shallow zone.

#### **Land Use Controls**

- A LUC prohibiting groundwater use (except for environmental monitoring and testing) shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- A LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- A LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).





#### Land Use Controls for Soil and Groundwater Contamination

Landfill 16 (LHAAP-16) Longhorn Army Ammunition Plant, Karnack, Texas

The former Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The former U.S. Army installation occupied nearly 8,416 acres between State Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake and is accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission on Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (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.

Land Use Controls (LUCs) are applied at LHAAP-16 as part of the remedy in accordance with the LHAAP-16 Record of Decision signed September 13, 2016. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure and landfill waste remains at the site under the existing landfill cap.

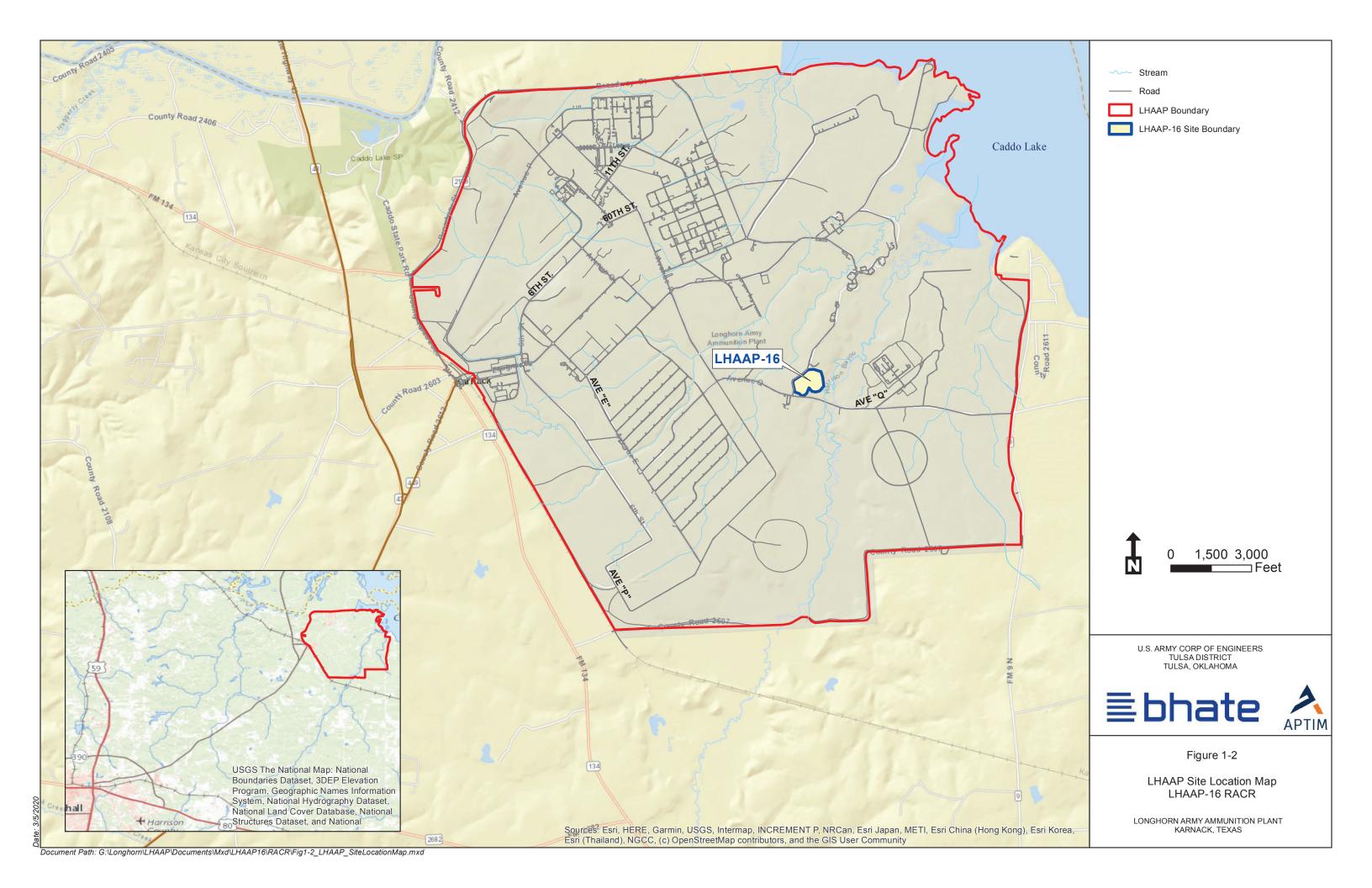
#### **Contaminants of Concern (COCs)**

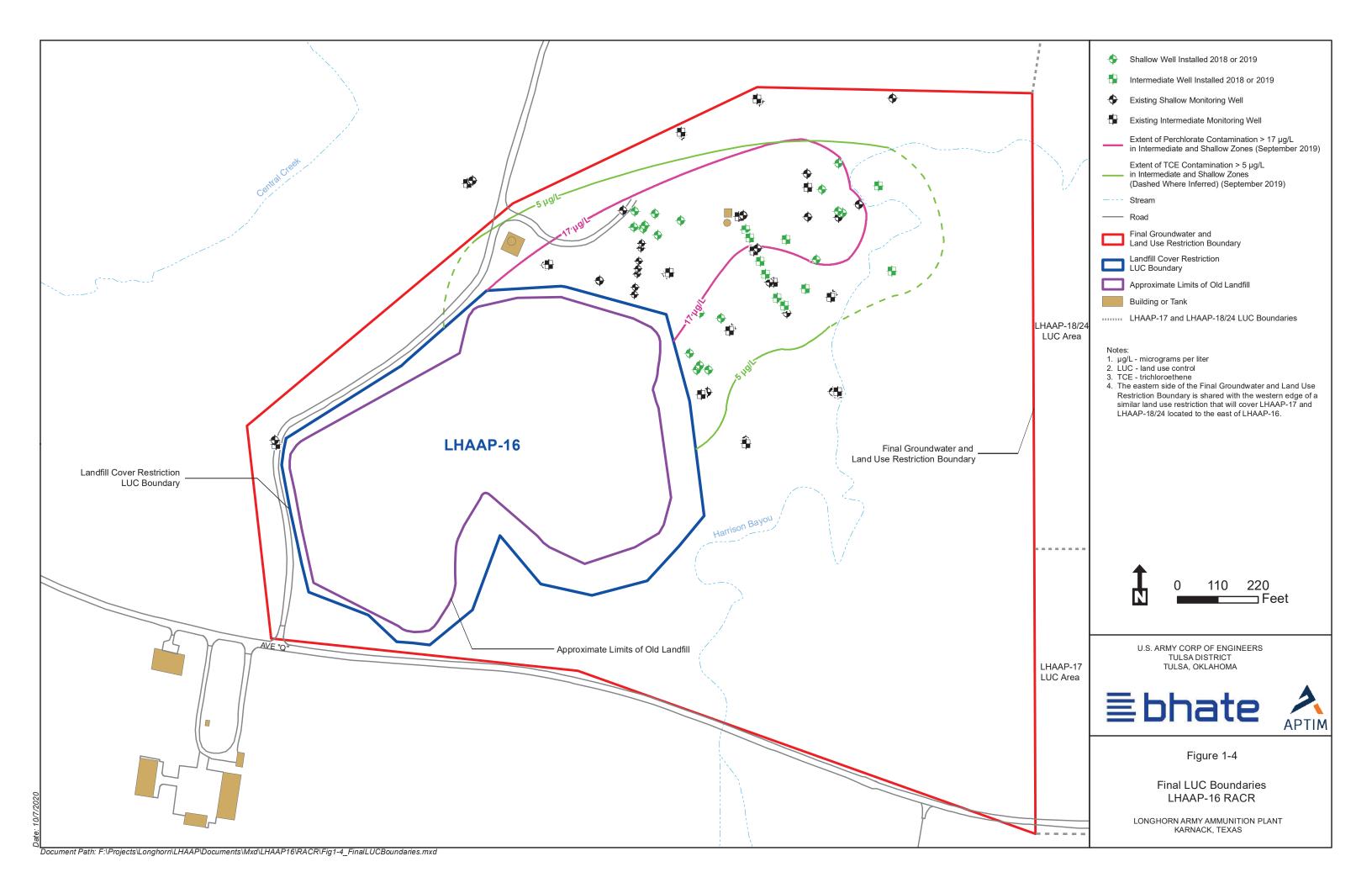
In the shallow and intermediate groundwater zones, the COCs are volatile organic compounds (VOCs) (trichloroethene [TCE], cis-1,2-dichloroethene [DCE], 1,1-DCE, 1,2-dichloroethane, 1,1,2-trichloroethane, methylene chloride, and vinyl chloride [VC]), perchlorate, and five metals (arsenic, chromium, manganese, nickel, and thallium).

#### **Land Use Controls**

- The LUC to preserve the integrity of the landfill cap and restrict intrusive activities (e.g., digging) that would degrade or alter the cap shall remain in place as long as the landfill waste remains at the site or until the levels of COCs allow for unlimited use and unrestricted exposure.
- The LUC prohibiting groundwater use (except for environmental monitoring and testing) as a potable source shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).





## **Appendix B**

## Field Injection and Sample Collection Logs

(Note: The sample collection logs from the November 2019 baseline sampling event have been revised to correct inaccurate screened interval information recorded on the forms in the field. The original monitoring well logs and the surveyed ground surface and top of casing elevations were used to correct the screened interval values, where necessary.)

			V	_	-	LHAAP.	-04 Injection L	og	= 2	
Injection Location	Treatment Interval (ft)	Injection Thickness (ft)	Injection Interval (ft)	Volume per Interval (gallons)	Volume on Flow meter (gallons)	Flow Rate (gpm)	Pressure (psi)	Total Volume Expected (gallons	Volume Injected (gallons)	Comments
J04DPT-01	6-14	4	10-14	739	739	7.02	20	1	739 10/2019	16-24-19 1455 STGET
0.011.01	0-14	4	6-10	739	1478	3.36	15	1,478 20eul	478	Time Completed: 1405 Finish 10/28/
J <sub>04DPT-02</sub>	6-14	4	10-14	739	739	3,46	30	1	W/28/19746 1095	ichalia 1420 start
+	V-2-9	4	6-10	739	1478	2.00	15	1,478	Total 19 739 1730	Time Completed: 19/29/19 1730 Finish
04DPT-03	12-20	4	16-20	739	739	2.7	20	1,478	740 16/30/19	Start 10/29/19 1540
0.511-03	12 20	4	12-16	739	1478	6,6	15	1490		Time Completed: Finish 10/30/19 1400
04DPT-04	6-14	4	10-14	739	739	3.5	15	1,478	740 Nilja	iolsolia isoo shart
	,	4	6-10	739	1478	1.5	7	Jul 147	8.74	Time Completed: 11-4-19 1601 Finisher
04DPT-05	6-14	4	10-14	739	739	6.86	5	1,478	717.9 107814	1024-19 1500 STANT
		4	6-10	739	1478	1.75	5	1,410	756,555/08	Time Completed: 11-4-19 / 18
04DPT-06	12-20	4	16-20	739	739	て、フレ	35		739 10/29/19	10/28/19 1435 Start
<u> </u>	12.20	4	12-16	739	1478	6:00	10	1,478	739 10/24/19 1435	Time Completed: 10/29/19 1430
04DPT-07	12-20	4	16-20	739	739	1.5	15	1 470	779 111115	colsula 1215 Stead
	/ = 20	4	12-16	739	1478	2.6	5	1418	Bog ins	Time Completed: PLNGU
04DPT-08	7-15	4	11-15	739	739	0,90	10	1,478		11-4-19 1135
	/	4	7-11	739	1478	1.80	15	V1,476	1478,25	Time Completed: //- 5-19 1730
04DPT-09	7-15	4	11-15	739	739	3.38	20	1,478	10/31/19 1215 682 stop	10/20/9 0845 shart
		4	7-11	739	1478	0.94	5	in .	The state of the s	Time Completed: //- 5-19 /735
64DPT-10	7-15	4	11-15	739	<b>7</b> 39	8.75	10	1,478		10/23/19-1855-1630
		4	7-11	739	1478	4.98	26		14 19,0	Time Completed: 1403 10-24-19
04DPT-11	7-15	4	11-15	739	739	4.90	20	1,478	1418.18	10/22/19 1524-1700
		4	7-11	739	1478	3.79	20	V1,470		Time Completed: /0-24-/9 /230
04DPT-12	7-15	4	11-15	739	739	1.2	30	1,478	739 10/20/19	10/28/19 - 1525 Start
		4	7-11	739	1478	2,05	25	1,478	739 10/29/19	Time Completed: 10 29 19 1440

04 PPT 10 - Inaction to Cretisary Clay) Pay lighting at Borettole mount 5xt N 04 PPT 05 - Daylighting got progressively wase. Pulled out ester 717.9. Moved 5's for 6-10' push St. 11 daylighting Pull off to one

7

				3			LHAAP-	04 Injection L	og		· ·
4.00	Injection Location	Treatment Interval (ft)	Injection Thickness (ft)	Injection Interval (ft)	Volume per Interval (gallons)	Volume on Flow meter (gallons)	Flow Rate (gpm)	Pressure (psi)	Total Volume Expected (gallons	Volume Injected (gallons)	Comments
6	04DPT-13	7-15	4	11-15	739	739	0.86	5	1,478	234.48 11-444	11-4-19 / 1300
V			4	7-11	739	1478	1.17	5	1,478	1478	Time Completed: //- (c- 19 /
6	04DPT-14	7-15	4	11-15	739	739	1.51	5	1,478	906.26	11-4-19 0930
•	U4DF1-14	1-12	4	7-11	739	1478	1.27	5	1,476	147.8	Time Completed: //-5-19 / /505
	OADDT 45	7-15	4	11-15	739	739	3.12	32	/1.470	10/29/19 739 124	fiologia inso start
	04DPT-15	7-15	4	7-11	739	1478	1.4	20	1,478	10/50/15 779	Time Completed: 10/26/19 0930
-	04DPT-16	7.45	4	11-15	739	739	8.75	40	1,478		10/23/19 1133 -
	04DP1-16	7-15	4	7-11	739	1478	7.65	7.0	1,478	14 790	Time Completed: 0/23/19 1505
1	/ OADDT 47	7.45	4	11-15	739	739	6.20	30	1,478	739 10/ce/19	16-24-18 1239 STORT
٧	04DPT-17	7-15	4	7-11	739	1478	2.45	20	1,4/8	78	Time Completed: 10/28/19 15/0 Finsh
	1		4	11-15	739	739	4,8	15	1,478	743 的激	Start 10/29/19 1550
L	04DPT-18	7-15	4	7-11	739	1478	1.9	15		00	Time Completed: 11-4-19 / 1/30
	V04DPT-19	7,12	4	11-15	739	739	7.41	30	1,478	1478.48	10/22/19 09.44
,	04DP1-19	7-15	4	7-11	739	1478	20	8-76			Time Completed: 10-172-49 05
	Laurer no		4	11-15	739	739	2.74	20	<b>1,478</b>	th. tiel 582.42	10/22/19 0955 - 1505 Ayl
V	/04DPT-20	7-15	4	7-11	739	1478	5-90	20			Time Completed: 10-24-19 1355
1	Towns and	7-15	4	11-15	739	739	1,98	10	1,478		Start 10/20/19 00140
	04DPT-21		4	7-11	739	1478	15	20			Time Completed: 11 - 84-19/1248
	August 22	7.45	4	11-15	739	739	3.83	20	<b>1</b> ,478	739 16/284	10-24-19 14/le STEAT
	√04DPT-22	7-15	4	7-11	739	1478	3.24	25		4478 10/28/19	
1	Jan 22	7.45	4	11-15	739	739	9.70	40	1,478		10/22/19 1455 -1700
	04DPT-23	7-15	4	7-11	739	1478	5,20	20	1,4/8	147805	Time Completed: (0/23/19 415-111)
V	04DPT-24	7-15	4	11-15	739	739	5.62	40	V1,478	1478.0	
			4	7-11	739	1478	0.97		1,478	1 70.	Time Completed: 10/23/14 16/0 = 3
	04DPT-25		4	11-15	739	739	4-98	20	. 6	Intial 220ga	10/22/14 0915 -1425 day 15 4
V		7-15	4	7-11	739	1478	5-87	20	1,478	178-25	Time Completed: 16 - 74 - 19 1408)

OUPPT-10 - Paylight 4ft sot Bore hole.

OUPPT-20 - Paylight in some one as ppt-19

OUDPT-06 - Doyloghling or upper 1.ft.

Job No.: SO   0.32   Inspection Date:   1   5   1   5   1   Site Name: OV   Inspection Date:   1   5   1   Site Name: OV   Inspection Depth Measured Depth: 26.68   Inspector: Scott Beesing:   S	Job Name: LHAAP	Well ID.
Client: Alwy   Well Completion Depth/Measured Depth: 26.68  Site Name: O		0 4 0000 0
Site Name:  OY  Inspector:  Scott Besylve and  Sycs   No.  Protective casing?  Material  METAL  Condition:  Good   Broken   Cracked   Need Paint   Lid Condition:  Good   Broken   Cracked   Need Paint   Lid Condition:  Good   Broken   Cracked   Need Paint   Well cover present?  Well cover present?  Condition:   Good   Broken   Cracked   Condition of Sump:   Clean   Dry   Standing Water  CONCRETE PAD: Sloped away from casing?  Pad Area Cleared of Vegetation?  Check any of the following features that apply:   Meny Cracks   Gap Around Casing   Few Cracks   Ponded Water   WELL CONDITION: Inner Diameter (inches)   41  Condition:   Good   Broken   Cracked   Other (describe)  Well lock present?  Lock functioning properly?  Are bollards present and stable?  Well lock present?  Well lock present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)   Yes   No   Silt present in well? (complete when gauging)   Yes   Sho   Is silt greater than 10% of well screen length? (complete when gauging)   Yes   Sho   Is silt greater than 10% of well screen length? (complete when gauging)   Yes   Sho		
Well Accessible?  Well Accessible?  Material  METAL  Condition:  Good   Broken   Cracked   Need Paint   Lid Condition:  Good   Broken   Cracked   More than 50% rusted   Well Cover present?  Condition:   Good   Broken   Cracked   More than 50% rusted   Well cover present?  Condition:   Good   Broken   Cracked   Condition:   Good   Broken   Cracked   Condition of Sump:   Clean   Dry   Standing Water    CONCRETE PAD: Sloped away from casing?  Pad Area Cleared of Vegetation?  Check any of the following features that apply: Inner Diameter (inches)   Uller Condition:   Good   Broken   Cracked   Description:   Condition:   Good   Broken   Cracked   Description:   Check any of the following features that apply: Inner Diameter (inches)   Uller Condition:   Good   Broken   Cracked   Other (describe)   WELL CONDITION: Inner Diameter (inches)   Uller Condition:   Good   Broken   Cracked   Other (describe)   Well lock present?   Qyes   No Are bollards present and stable?   Qyes   No Are bollards present and stable?   Qyes   No Well ID visible?   Qyes   No Well ID visible?   Qyes   No Is silt present in well? (complete when gauging)   Qyes   Qyes   No Is silt present in well? (complete when gauging)   Qyes	City N.	
Well Accessible? Protective casing? Material  MCTA-L  Condition:  Good   Broken   Cracked   Need Paint   Lid Condition:  FLUSH MOUNTED   NA   Well cover present?  Condition:   Good   Broken   Cracked   More than 50% rusted   Well cover present?  Condition:   Good   Broken   Cracked   Condition:   Good   Broken   Cracked   Condition:   Good   Broken   Cracked   Condition:   Good   Broken   Cracked   Condition of Sump:   Clean   Dry   Standing Water    CONCRETE PAD: Sloped away from casing?  Pad Area Cleared of Vegetation?  Check any of the following features that apply:   Many Cracks   Gap Around Casing   Few Cracks   Ponded Water   MELL CONDITION:   Inner Diameter (Inches)   II   Condition:   Good   Broken   Cracked   Other (describe)    WELL CONDITION:   Vest   No Pad Present   Well lock present?   Vest   No Pad Present   Well Invisible?   Vest   N		Inspector: Scott Bersine in
Well Accessible? Protective casing? Material  MCTA-L  Condition:  Good   Broken   Cracked   Need Paint   Lid Condition:  FLUSH MOUNTED   NA   Well cover present?  Condition:   Good   Broken   Cracked   More than 50% rusted   Well cover present?  Condition:   Good   Broken   Cracked   Condition of Sump:   Clean   Dry   Standing Water    CONCRETE PAD: Sloped away from casing? Pad Area Cleared of Vegetation? Check any of the following features that apply:   Many Cracks   Gap Around Casing   Few Cracks   Ponded Water   No Pad Present    WELL CONDITION: Inner Diameter (Inches)   4   Condition:   Good   Broken   Cracked   Other (describe)   Cap present?  Well lock present?  Well lock present?  Lock functioning properly?  Are bollards present and stable?  Well ID visible?  Well ID visible?  Well Dostruction?  Is well open to completed depth? (complete when gauging)   Yes   No   Is silt present in well? (complete when gauging)   Yes   No   Is silt present in well? (complete when gauging)   Yes   Jano	ABOVE GROUND	
Protective casing?  Material  Condition:  Good   Broken   Cracked   Need Paint   Lid Condition:  Good   Broken   Cracked   More than 50% rusted   FLUSH MOUNTED   NA   Well cover present?  Condition:   Good   Broken   Cracked   Condition:   Good   Broken   Cracked   Condition:   Good   Broken   Cracked   Condition:   Good   Broken   Cracked   Condition of Sump:   Clean   Dry   Standing Water    CONCRETE PAD: Sloped away from casing? Pad Area Cleared of Vegetation? Check any of the following features that apply:   Many Cracks   Gap Around Casing   Few Cracks   Ponded Water   No Pad Present   Many Cracks   Gap Around Casing   Few Cracks   Ponded Water   No Pad Present   WELL CONDITION:   Inner Diameter (inches)   III Condition:   Good   Broken   Cracked   Other (describe)    Cap present? Well lock present?   Yes   No Are bollards present and stable?   Yes   No No Pad Present   Well ID visible?   Yes   No Well Love the Complete when gauging)   Yes   No No Pad Present   Well Obstruction?   Yes   No No Pad Present   Well Integrativ:   Yes   No No Pad Present   Well Integrative   Yes   No No		
Material	1	, , , , , , , , , , , , , , , , , , , ,
Condition: Good   Broken   Cracked   Need Paint   Lid Condition: Good   Broken   Cracked   More than 50% rusted   FLUSH MOUNTED   NA   Well cover present?   Yes   No   Condition: Good   Broken   Cracked   Cracked   Condition of Sump: Good   Broken   Cracked   Condition of Sump: Glean   Dry   Standing Water   St		✓ Yes □ No
Lid Condition:	Conditions	Control Carlo
Hinge Condition:	Tid Condition	
FLUSH MOUNTED   Well cover present?	Llings Cantill	
Well cover present?  Condition:	THE HELL MONTHE	a 30% fusion L1 More than 50% rusted
Condition:		□ Von □ N
Condition of Sump:	Count's	
CONCRETE PAD:  Sloped away from casing?  Pad Area Cleared of Vegetation?  Check any of the following features that apply:  Many Cracks	Condition of Sump:   Clean   Dry	
Pad Area Cleared of Vegetation?  Check any of the following features that apply:  Many Cracks	CONCRETE PAD:	C Sanding Water
Pad Area Cleared of Vegetation?  Check any of the following features that apply:  Many Cracks Gap Around Casing Few Cracks Ponded Water No Pad Present  WELL CONDITION: Inner Diameter (inches)  Condition: Good Broken Cracked Other (describe)  Cap present?  Well lock present?  Lock functioning properly?  Are bollards present and stable?  Well ID visible?  WELL INTEGRITY:  Bailer present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)  Tyes No		Yes No
Many Cracks	Pad Area Cleared of Vegetation?	
WELL CONDITION: Inner Diameter (inches) 4"  Condition: SGood Broken Cracked Other (describe)  Cap present? Yes No  Well lock present? Yes No  Lock functioning properly? Yes No  Are bollards present and stable? Yes No  Well ID visible? Yes No  WELL INTEGRITY:  Bailer present? Yes No  Visual obstruction? Yes No  Visual obstruction? Yes No  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)	Check any of the following features that apply:	
Inner Diameter (inches) 4   Condition: Good Broken Cracked Other (describe)  Cap present? Yes No Well lock present? Yes No Lock functioning properly? Yes No Are bollards present and stable? Yes No Well ID visible? Yes No WELL INTEGRITY: Bailer present? Yes No Visual obstruction? Yes No Is well open to completed depth? (complete when gauging) Yes No Is silt present in well? (complete when gauging) Yes No Is silt greater than 10% of well screen length? (complete when gauging)	The state of the s	☐ Few Cracks ☐ Ponded Water ☐ No Pad Present
Condition: Good Broken Cracked Other (describe)  Cap present? Yes No Well lock present? Yes No Lock functioning properly? Yes No Are bollards present and stable? Yes No Well ID visible? Yes No WELL INTEGRITY: Bailer present? Yes No Visual obstruction? Yes No Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)		× .
Cap present?  Well lock present?  Lock functioning properly?  Are bollards present and stable?  Well ID visible?  WELL INTEGRITY:  Bailer present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)	0 11.4	· ·
Well lock present?  Lock functioning properly?  Are bollards present and stable?  Well ID visible?  WELL INTEGRITY:  Bailer present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)	Accord II Dioifett	
Lock functioning properly?  Are bollards present and stable?  Well ID visible?  WELL INTEGRITY:  Bailer present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)		
Are bollards present and stable?  Well ID visible?  WELL INTEGRITY:  Bailer present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)	_	
Well ID visible?  WELL INTEGRITY:  Bailer present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)  I Yes  No		/ -
WELL INTEGRITY:  Bailer present?  Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)  I Yes  No		
Bailer present?  Visual obstruction? Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)  I Yes  No  Yes  No  Yes  No  Yes  No  Yes  No		Tres UNO
Visual obstruction?  Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)  I Yes  No		Tives MiNo
Is well open to completed depth? (complete when gauging)  Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)	_	
Is silt present in well? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)  Is silt greater than 10% of well screen length? (complete when gauging)		en gauging)
Is silt greater than 10% of well screen length? (complete when gauging)	1	G G
to the greater thing 1070 of west screen lengths (compress when garging)	The state of the s	The second secon
		rompress mitor ganging)
		the second secon

Job Name:	11100	0.0	177	-11 775	por old is		
Job No.:	50103	TP	-	ell ID:	LHSma	200	
Client:				spection ]		119	
Site Name:	ARmy		We	ell Comp	letion Depth/ Mea	sured Depth:	9.00
-	04'		Ins	spector:	Scott B	425 INGUR	
ABOVE GROUP	TID.				31.1.	1.0	
Well Accessible?	VIII			W.		842 (5)	
Protective casing?				^		X Yes	. □ No
Material				*		Yes	□ No
Condition:	Ma	THE RESERVE AND ADDRESS OF THE PARTY OF THE				ill and	
Lid Condition:	Good Good	☐ Broken	☐ Cra		☐ Need Pair	nt	*
Hinge Condition:		Broken	Cra Cra		i.	er.	
☐ FLUSH MOUNT	Good	☐ Less than	50% ruste	d 🗆 l	More than 50% rus	sted .	
Well cover present?	HID	NA			* 2		
Condition:						☐ Yes	□ No
Condition of Sump:	□ Good	□ Broken	□ Ста	cked			
CONCRETE PAD:	☐ Clean	□ Dry	☐ Star	nding Wa	ater		
Sloped away from car	cino?				29	74 72	25
Pad Area Cleared of						Yes.	□ No
Check any of the fall	v egetation?	¥:				Yes	□ No
Check any of the folk							
☐ Many Cracks	☐ Gap Aro		☐ Few C	racks	☐ Ponded Water	ar 🗆 No Pad	Present
WELL CONDITION	☐ Gap Aro N:	und Casing	☐ Few C	racks	☐ Ponded Water	er 🗆 No Pad	Present
☐ Many Cracks	☐ Gap Aro N: es)	und Casing		*		- R	Present
WELL CONDITION Inner Diameter (inches Condition:	☐ Gap Aro N:	und Casing		racks	☐ Ponded Wate	ne)	
WELL CONDITION Inner Diameter (inches Condition: Cap present?	☐ Gap Aro N: es)	und Casing		*		pe)	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	Gap Aro	und Casing		*		pe) Ø(Yes	□ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present?  Well lock present?  Lock functioning pro	Gap Aro N: es) Good perly?	und Casing		*		OP Yes	□ No □ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?  Lock functioning pro Are bollards present:	Gap Aro N: es) Good perly?	und Casing		*		De)	□ No □ No □ No □ No
Many Cracks WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?	Gap Aro  N: es) Good  perly? and stable?	und Casing		*		OP Yes	□ No □ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?  Lock functioning pro Are bollards present:	Gap Aro  N: es) Good  perly? and stable?	und Casing		*		De)	□ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning profound Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction?	Gap Aro N: es) Good perly? and stable?	und Casing  411  □ Broken	□ Cra	acked		Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning profunctioning	Gap Aro N: es) Good perly? and stable?	und Casing  411  □ Broken	□ Cra	acked		De)	□ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Gap Aro N: es) Good perly? and stable? V:	und Casing  4 11  Broken  (complete whe	□ Cra	acked		Yes Yes Yes Yes Yes Yes Yes Yes	□ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning profound Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Gap Aro N: es) Good perly? and stable? V: eleted depth?	und Casing  4 11  Broken  (complete when when gauging)	□ Cra	acked	□ Other (describ	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Gap Aro N: es) Good perly? and stable? V: eleted depth?	und Casing  4 11  Broken  (complete when when gauging)	□ Cra	acked	□ Other (describ	Yes  XYes  Yes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
Many Cracks WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning produce the bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Gap Aro N: es) Good perly? and stable? V: eleted depth?	und Casing  4 11  Broken  (complete when when gauging)	□ Cra	acked	□ Other (describ	Yes  XYes  Yes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
Many Cracks WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning produce the bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Gap Aro N: es) Good perly? and stable? V: eleted depth?	und Casing  4 11  Broken  (complete when when gauging)	□ Cra	acked	□ Other (describ	Yes  XYes  Yes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
Many Cracks WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning produce the bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Gap Aro N: es) Good perly? and stable? V: eleted depth?	und Casing  4 11  Broken  (complete when when gauging)	□ Cra	acked	□ Other (describ	Yes  XYes  Yes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No

Job Name:	LHAA	0	Well ID:	77 P		
Job No.:	501032			04 wwo3		
Client:	ARmy		Inspection			
Site Name:	1011			pletion Depth/ Measure	d Depth: 26	.90
	04		Inspector:	Swtt Bus	INGUR	
ABOVE GROUN	ID			* .		
Well Accessible?			2 9			
Protective casing?					Yes	□ No
Material	h	GTAL	14		Yes	□ No
Condition:	Good	☐ Broken	☐ Cracked	Mar. int.	_ ";	
Lid Condition:	Good	☐ Broken	☐ Cracked	☐ Need Paint		
Hinge Condition:	Good-Good	☐ Less than		None than 5000 mate i		· # 1
☐ FLUSH MOUNT	ED		130% fusien []	More than 50% rusted		
Well cover present?	75	AN		¥ ~	C7 */	
Condition:	☐ Good	☐ Broken	☐ Cracked		☐ Yes	□ No
Condition of Sump:	□ Clean	□ Dry	☐ Standing W	Intau		- 1
CONCRETE PAD:	-		□ Statiding w	/ater		
Sloped away from cas	sing?			₹	Yes.	□ No
Pad Area Cleared of	Vegetation?				Yes	□ No
Check any of the folk	owing featur	es that apply:			7	_ 140
☐ Many Cracks	☐ Gap Aro	und Casing	☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent
WELL CONDITION	N:		☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent
WELL CONDITION Inner Diameter (inches	N:	und Casing	☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent
WELL CONDITION Inner Diameter (inches Condition:	N:		☐ Few Cracks	☐ Ponded Water ☐ Other (describe)	□ No Pad P	resent
WELL CONDITION Inner Diameter (inches Condition: Cap present?	N: es)	411			□ No Pad P	resent No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: es) Good	411				11
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro	N: es) Good perly?	411			Va Yes Va Yes Va Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: es) Good perly?	411			V Yes V Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro	N: es) Good perly?	411			Va Yes Va Yes Va Yes	□ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present:	Ses)  Good  perly?  and stable?	411				□ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?	Ses)  Good  perly?  and stable?	411			✓ Yes	□ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	Figord Good  perly?  and stable?	Y <sup>11</sup> □ Broken	☐ Cracked		Yes  XYes  XYes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Signal Stable?  Good  perly?  and stable?  Y:  letted depth?	y '' ☐ Broken  (complete when	☐ Cracked		✓ Yes	□ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	Signal Stable?  Good  perly?  and stable?  Y:  letted depth?	y '' ☐ Broken  (complete when	☐ Cracked		Yes  XYes  XYes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Figord  Good  perly?  and stable?  V:  letted depth?  ? (complete	(complete when when gauging)	□ Cracked	☐ Other (describe)	Yes  Ves  Ves  Ves  Yes  Yes  Yes  Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well	Figord  Good  perly?  and stable?  V:  letted depth?  ? (complete	(complete when when gauging)	□ Cracked	☐ Other (describe)	Yes  XYes  XYes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Figord  Figord	(complete when when gauging)	□ Cracked	☐ Other (describe)	Yes  XYes  XYes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Figord  Figord	(complete when when gauging)	□ Cracked	☐ Other (describe)	Yes  XYes  XYes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Figord  Figord	(complete when when gauging)	□ Cracked	☐ Other (describe)	Yes  XYes  XYes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No

Job Name:	LHAAP		337-11	т.	50.00 Ex		
Job No.:	01032		Well	-	OYWWOL		
	ARmy			ction Da			
Site Name:	2		¥		tion Depth/Measu	red Depth: 2	8.08
	04		Inspe	ctor:	Scott Bee		
ABOVE GROUN	ID				3.		
Well Accessible?	-			, 15	. 114	A	
Protective casing?						X Yes	□ No.
Material	MET	nl a	8			Yes	□ No
Condition:	Good	☐ Broken	☐ Crack	- 3		* 1	
Lid Condition:	Good	☐ Broken	☐ Crack		☐ Need Paint		
Hinge Condition:	Good Good	☐ Less than			the 500/		2 and 1
☐ FLUSH MOUNT	ED	NA	2010 Insten		ore than 50% ruste	0	
Well cover present?		NIL			£ ~		
Condition:	☐ Good	☐ Broken	☐ Crack	o.đ		☐ Yes	□ No
Condition of Sump:	☐ Clean	☐ Dry	☐ Stand				
CONCRETE PAD:			- Statio	ng wate	71°		
Sloped away from car	sing?				To.	X Yes	□ No
Pad Area Cleared of	Vegetation?					Yes	□ No
Check any of the follo	owing feature	s that apply:					
☐ Many Cracks	☐ Gap Arou	and Casing	☐ Few Crae	eks	☐ Ponded Water	□ No Pad P	resent
WELL CONDITION							
Inner Diameter (inch		111			31	-	
Condition:	<b>      Good</b>	☐ Broken	☐ Crack	ed [	Other (describe)	AND DESCRIPTION OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUM	
Cap present?						Yes	□ No
Well lock present?					K	Yes	□ No
Lock functioning pro					#	Yes	□ No
Are bollards present	and stable?					X Yes	□ No
Well ID visible?						Yes Yes	□ No
WELL INTEGRIT	Y:					H 1200	
Bailer present?						☐ Yes	No
Visual obstruction? Is well open to comp	leted denth?	complete whe	ແລະເຄດ			Ves	□ No
Is silt present in well			n RankmR)			☐ Yes	ĭ No
				% 2005-0-07€	es.	☐ Yes	No
Is silt greater than 10 COMMENTS:	1% Of Well Sc	reen length? (c	omplete when	gauging	g)	140	22110
COMMENTS:					is:		7.0
				7.4		8.5	
	· s						
					20 30 14 14		

Job Name:	LHAAP		Well II		1 -	1000	
Job No.:	501032			-	104ww		
Client:	ARmy			ion Date:	11/6/11		
Site Name:	04			ompletion De			3.50
	04		Inspect	or: Sc	tt Beesi	NGER	
ABOVE GROUN	ID				14 14		
Well Accessible?	0.000001		3		. 18		
Protective casing?						X Yes	□ No.
Material	META	+L				Yes Yes	□ No
Condition:	Good	☐ Broken	☐ Cracked	[7] h	In al Daine	***	
Lid Condition:	Good	☐ Broken	☐ Cracked		Need Paint		
Hinge Condition:	☑ Good		50% rusted	□ More than	F00/		* 18°
☐ FLUSH MOUNT	ED	NA	30701115160	Li More man	30% rusied	83	
Well cover present?		Νr			£ .	☐ Yes	C137
Condition:	☐ Good	☐ Broken	☐ Cracked			□ 162	□ No
Condition of Sump:	□ Clean	□ Dry	☐ Standing				į,
CONCRETE PAD:		Contract of the second	_ outding	Water	***************************************		
Sloped away from cas					*	Yes	□ No
Pad Area Cleared of	Vegetation?					Yes	□ No
Check any of the follo	owing featur	es that apply:					
☐ Many Cracks	☐ Gap Aro	und Casing	☐ Few Crack	s 🗆 Pone	ied Water	□ No Pad P	resent
	A						
WELL CONDITION	N:		2		1 ,		
Inner Diameter (inche	N: es)	411	a				11
Inner Diameter (inche Condition:	N:		☐ Cracked		r (describe)		
Inner Diameter (inche Condition: Cap present?	N: es)	411	☐ Cracked		, v	Q Yes	□ No
Inner Diameter (inche Condition; Cap present? Well lock present?	N: es) Good	411	☐ Cracked		, v	Ø Yes	□ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro	N: SS) Good perly?	411	☐ Cracked		, v	Yes X Yes X Yes	□ No
Inner Diameter (inche Condition; Cap present? Well lock present? Lock functioning pro Are bollards present:	N: SS) Good perly?	411	☐ Cracked		, v	Yes XYes XYes XYes	□ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?	N: Standard Stable?	411	☐ Cracked		, v	Yes X Yes X Yes	□ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?	N: Standard Stable?	411	☐ Cracked		, v	Yes Yes Yes Yes Yes Yes	□ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present?	N: Standard Stable?	411	☐ Cracked		, v	Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	N: Es) Good  perly? and stable?	411   □ Broken	15. F.		, v	Yes Yes Yes Yes Yes Yes	No No No No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: (25) (26) (27) (27) (27) (27) (27) (27) (27) (27	UII Broken  Complete whe	n gauging)		, v	Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: (S)	(complete when when gauging)	n gauging)	Othe	, v	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	N: (S)	(complete when when gauging)	n gauging)	Othe	, v	Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: (S)	(complete when when gauging)	n gauging)	Othe	, v	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	N: (S)	(complete when when gauging)	n gauging)	Othe	, v	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	N: es) Good  perly? and stable?  Y: eleted depth? ? (complete	(complete when when gauging)	n gauging)	Othe	, v	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	N: es) Good  perly? and stable?  Y: eleted depth? ? (complete	(complete when when gauging)	n gauging)	Othe	, v	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No

Job Name: L F	MAAP	a a	Well ID:	- 4		
T-1- 3T.	01032		-	DY WWOS		
Client:	ARmy		Inspection	11/4/17		
Site Name:				pletion Depth/Measure	ed Depth:	
	04		Inspector:	Scott Bu	SINGER	
ABOVE GROUN	ID			**		
Well Accessible?			6 V		1	
Protective casing?					Yes	□ No
Material	METI	14-1	*		Yes	□ No
Condition:	Good	☐ Broken	☐ Cracked	Thi. 17.14	_ **.	
Lid Condition:	Good	☐ Broken	☐ Cracked	☐ Need Paint		
Hinge Condition:	Good			Manual Cont		· 87 - 1
☐ FLUSH MOUNT	ED		130% rusied 📋	More than 50% rusted	N. S	
Well cover present?		NA			C7 **	
Condition:	☐ Good	☐ Broken	T 0 1		☐ Yes	□ No
Condition of Sump:	□ Clean	☐ Dry	☐ Cracked			
CONCRETE PAD:			☐ Standing V	vater	Dispersion of the same	
Sloped away from car	sing?			8	Yes.	□ No
Pad Area Cleared of					Yes	
Check any of the follo	owing featur	es that apply:			<b>V</b> 3-103	□ 140
		.~ 4 #				
☐ Many Cracks	☐ Gap Arc	und Casing	☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent
☐ Many Cracks  WELL CONDITION	N:	ound Casing	☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent -
WELL CONDITION Inner Diameter (inche	N:	ound Casing	☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent
☐ Many Cracks  WELL CONDITION	N:		☐ Few Cracks	☐ Ponded Water ☐ Other (describe)	□ No Pad P	resent
WELL CONDITION Inner Diameter (inches Condition: Cap present?	N: es)	411			□ No Pad P	resent .
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: es) Good	411				
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro	N: es) Good perly?	411			∑ Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: es) Good perly?	411			X Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro	N: es) Good perly?	411			X Yes X Yes X Yes	□ No □ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present?  Well lock present?  Lock functioning pro Are bollards present:	N: es) Good perly? and stable?	411			X Yes X Yes X Yes X Yes	□ No □ No □ No
Many Cracks  WELL CONDITION  Inner Diameter (incher  Condition:  Cap present?  Well lock present?  Lock functioning pro  Are bollards present:  Well ID visible?	N: es) Good perly? and stable?	411			Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	N: es) Good  perly? and stable?	July   □ Broken	☐ Cracked		Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: es) Good  perly? and stable?  V:	Broken  (complete whe	□ Cracked		Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning produce bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction?	N: es) Good  perly? and stable?  V:	Broken  (complete whe	□ Cracked	)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Perly? and stable?  Y:  bleted depth?	Grown Broken  (complete when gauging)	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well	Perly? and stable?  Y:  bleted depth?	Grown Broken  (complete when gauging)	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Perly? and stable?  Y:  bleted depth?	Grown Broken  (complete when gauging)	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Perly? and stable?  Y:  bleted depth?	Grown Broken  (complete when gauging)	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Perly? and stable?  Y:  bleted depth?	Grown Broken  (complete when gauging)	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No

Job Name:	LHAA	0		Well ID:				
Job No.:	50/032					4 ww05		
Client:	Almy			Inspection		11/6/19		
Site Name:	04					epth/Measured	No. of Concession, Name of Street, or other Persons, Name of Street, or ot	.62
	04			Inspector:	Su	ott Bresi	NEER	
ABOVE GROUN	ID							
Well Accessible?				a II,			lage.	
Protective casing?							Yes	· UNo.
Material	A. (	Ta I		8			Yes	□ No
Condition:	12CGood	774 L  ☐ Broken				- 1		ਗ ਲੀ।
Lid Condition:	Good	□ Broken		Cracked		Need Paint		
Hinge Condition:	Good Good			Cracked		, e	*	* 1200 I
☐ FLUSH MOUNT	FD	☐ Less than	1 50% m	usted [	More tha	n 50% rusted	7 × ×	
Well cover present?	ELES.	NA						
Condition:	☐ Good		_	_	12		☐ Yes	□ No
Condition of Sump:	☐ Clean	☐ Broken		Cracked				
CONCRETE PAD:	Ciean	□ Dry		Standing W	ater			
Sloped away from cas	sing?					7.0	KTM-r	
Pad Area Cleared of							Yes.	□ No
Check any of the follo	owing feature	es that apply:					Yes	□ No
1205	O warment							
☐ Many Cracks	Gap Aro	und Casino	T Fe	a Cracke	□ Dor	ded Water	T No Pad Pr	ecent
Application of the Control of the Co	Gap Aro	ound Casing	☐ Fe	w Cracks	□ Por	nded Water	□ No Pad Pa	resent
WELL CONDITION	N:	ound Casing	☐ Fe	w Cracks	□ Por	nded Water	□ No Pad Pa	resent
Application of the Control of the Co	N: es)	511					□ No Pad Pi	resent
WELL CONDITION Inner Diameter (inches	N:			W Cracks Cracked		nded Water er (describe)		
WELL CONDITION Inner Diameter (inches Condition:	N: es)	511					No Pad Pr	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: es) Good	511					Y Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro	N: SS) Good perly?	511					Yes X Yes	□ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: SS) Good perly?	511					Yes Yes Yes XYes	□ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?	Figord  Good  perly?  and stable?	511					Yes X Yes	□ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present?	Figord  Good  perly?  and stable?	511					Yes Yes Yes XYes	□ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	Figord  perly?  and stable?	≥ 11  ☐ Broken		Cracked			Yes Ves Ves Ves Ves Ves Ves Ves	□ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: es) Good  perly? and stable?  Y: letted depth?	≥ 11  ☐ Broken  (complete whe	n gaugi	Cracked			Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: es) Good  perly? and stable?  Y: letted depth?	≥ 11  ☐ Broken  (complete whe	n gaugi	Cracked			Yes Ves Ves Ves Ves Ves Ves Ves	□ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well	Factorial Section 1985 (Complete 1985)  Section 1985 (Complete 1985)	≥ 11  ☐ Broken  (complete when when gauging)	n gaugi	Cracked	□ Oth		Yes Yes Yes Yes Yes Yes	No   No   No   No   No   No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Factorial Section 1985 (Complete 1985)  Section 1985 (Complete 1985)	≥ 11  ☐ Broken  (complete when when gauging)	n gaugi	Cracked	□ Oth		Yes Yes Yes Yes Yes Yes Yes Yes	No No No No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Factorial Section 1985 (Complete 1985)  Section 1985 (Complete 1985)	≥ 11  ☐ Broken  (complete when when gauging)	n gaugi	Cracked	□ Oth		Yes Yes Yes Yes Yes Yes Yes Yes	No No No No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Factorial Section 1985 (Complete 1985)  Section 1985 (Complete 1985)	≥ 11  ☐ Broken  (complete when when gauging)	n gaugi	Cracked	□ Oth		Yes Yes Yes Yes Yes Yes Yes Yes	No No No No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Factorial Section 1985 (Complete 1985)  Section 1985 (Complete 1985)	≥ 11  ☐ Broken  (complete when when gauging)	n gaugi	Cracked	□ Oth		Yes Yes Yes Yes Yes Yes Yes Yes	No No No No

Job Name:	LHAAP		Well ID:	n.l.		
Job No.:	501037		Inspection		wol	
Client:	ARmy				119	
Site Name:	04					3.68
	04		Inspector:	Soft B	kes in 642	
ABOVE GROUN	(ID)					
Well Accessible?			s ×	8		
Protective casing?					Yes	No.
Material	MET	1.00	),5		Yes	□ No
Condition:	Good	□ Broken			7 9	
Lid Condition:	Good	□ Broken	☐ Cracked	☐ Need I	Paint	
Hinge Condition:	Good Good		Cracked			a 907 i J
☐ FLUSH MOUNT	A GOOD	Less than	.50% rusted $\Box$	More than 50%	rusted	
Well cover present?	עשמע	AU		* *		
Condition:	□ Good				☐ Yes	□ No
Condition of Sump:	☐ Clean	☐ Broken	☐ Cracked			
CONCRETE PAD:	LI CIERI	□ Dry	☐ Standing W	ater		
Sloped away from cas	เริ่ทธ?					
Pad Area Cleared of					Yes.	□ No
Check any of the folk	wing feature	er that apple			Yes	□ Nº
						- 1
☐ Many Cracks			T Fam Cracks	□ Donded W	oter No Pad I	Present
☐ Many Cracks	Gap Aro	und Casing	☐ Few Cracks	□ Ponded W	ater 🗆 No Pad I	resent
☐ Many Cracks WELL CONDITION	Gap Aro		☐ Few Cracks	□ Ponded W	ater No Pad I	resent
☐ Many Cracks	☐ Gap Aron N: es)	und Casing	*			Present
WELL CONDITION Inner Diameter (inches	Gap Aro	und Casing	☐ Few Cracks ☐ Cracked	☐ Ponded W		
Many Cracks WELL CONDITION Inner Diameter (inches Condition:	☐ Gap Aron N: es)	und Casing	*		aribe)	Present  No
Many Cracks WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	Gap Aro	und Casing	*		aribe)	□ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present?  Well lock present?  Lock functioning pro	Gap Aro	und Casing	*		oribe)  VYes  Yes  Yes	□ No □ No
Many Cracks WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	Gap Aro	und Casing	*		aribe)	□ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning property Are bollards present a Well ID visible?	Gap Aro	und Casing	*		Yes  Yes  Yes  Yes	□ No □ No □ No □ No
Many Cracks  WELL CONDITION  Inner Diameter (inches  Condition:  Cap present?  Well lock present?  Lock functioning property  Are bollards present a	Gap Aro	und Casing	*		Yes  Yes  Yes  Yes	□ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction?	Gap Aro	und Casing  411  Broken	☐ Cracked		Yes  Yes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present?	Gap Aro	und Casing  411  Broken	☐ Cracked		Yes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Gap Aro	und Casing  4 ()  Broken	☐ Cracked		Yes  Yes  Yes  Yes  Yes  Yes  Yes	□ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well	Gap Aro	und Casing  4 ()  Broken  (complete when when gauging)	□ Cracked	□ Other (des	Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No □ No □ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	Gap Aro	und Casing  4 ()  Broken  (complete when when gauging)	□ Cracked	□ Other (des	Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes	□ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Gap Aro	und Casing  4 ()  Broken  (complete when when gauging)	□ Cracked	□ Other (des	Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes	□ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Gap Aro	und Casing  4 ()  Broken  (complete when when gauging)	□ Cracked	□ Other (des	Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes	□ No
Many Cracks  WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?  WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	Gap Aro	und Casing  4 ()  Broken  (complete when when gauging)	□ Cracked	□ Other (des	Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes	□ No

Job Name:	LHAAP	ο.	Well ID:	0.1. 1		
Job No.:	501032		Inspection	Dywno 4		
Client:	ARmy			11/9/17	10 4	
Site Name:	04			pletion Depth/ Measure	-	.55
	UT		Inspector:	Scott Bres	INGAR	
ABOVE GROUN	ID					
Well Accessible?			W 113	. " 4. 1		
Protective casing?					X Yes	□ No
Material	META	i.	38		Y-Yes	□ No
Condition:	Good	☐ Broken	☐ Cracked		* * .	2 8
Lid Condition:	Good	☐ Broken		☐ Need Paint		
Hinge Condition:	Good		☐ Cracked a 50% rusted ☐	No. of a contact		× 180
☐ FLUSH MOUNT		NA	130% fusien []	More than 50% rusted	94	
Well cover present?		Nη			□ *r	
Condition:	☐ Good	☐ Broken	☐ Cracked		☐ Yes	□ No
Condition of Sump:	□ Clean	☐ Dry	- 1 to 0.1	7-t		
CONCRETE PAD:	- 0.000	Li Diy	☐ Standing V	vater		
Sloped away from car	sing?			<u>š</u>	Yes.	□ No
Pad Area Cleared of					Yes	□ No
Check any of the follo	owing feature	es that apply:			4-103	₩ 140
Many Constant						
☐ Many Cracks	☐ Gap Aro	und Casing	☐ Few Cracks	☐ Ponded Water	☐ No Pad P	resent
WELL CONDITION	N:	und Casing	☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent
WELL CONDITION Inner Diameter (inches	N:		☐ Few Cracks	☐ Ponded Water	□ No Pad P	resent
WELL CONDITION	N:		☐ Few Cracks	☐ Ponded Water ☐ Other (describe)	□ No Pad P	resent
WELL CONDITION Inner Diameter (inches Condition: Cap present?	N: es) _ Z'	1	*		□ No Pad P	resent No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: es) Z' Good	1	*			4
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro	N: es) 2' Good perly?	1	*		 ☐ Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present?	N: es) 2' Good perly?	1	*		X Yes	□ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro	N: es) 2' Good perly?	1	*		Yes Yes Yes	□ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present	N: es) 2 ' Good perly? and stable?	1	*		Yes Yes Yes Yes	□ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible?	N: es) 2 ' Good perly? and stable?	1	*		Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning produce the bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	N: es) 2' Good perly? and stable?	☐ Broken	☐ Cracked		Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: es) 2' Good perly? and stable? V:	☐ Broken	□ Cracked		Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning produce the bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	N: es) 2' Good perly? and stable? V:	☐ Broken	□ Cracked		Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (inches Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: es) 2' Good perly? and stable?  V: bleted depth?	Complete when	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	N: es) 2' Good perly? and stable?  V: bleted depth?	Complete when	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	N: es) 2' Good perly? and stable?  V: bleted depth?	Complete when	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	N: es) 2' Good perly? and stable?  V: bleted depth?	Complete when	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
WELL CONDITION Inner Diameter (incher Condition: Cap present? Well lock present? Lock functioning produce the bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	N: es) 2' Good perly? and stable?  V: bleted depth?	Complete when	□ Cracked	☐ Other (describe)	Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No

Job Name:	LITAK	10		Well ID:		1.1.	20	
Job No.:	501032				D .	LHSmwo		
Client:	ARmy			Inspection		11/6/19		
Site Name:						Depth/Measure		.95
-	04			Inspector:		Scott Bury	SINGER	
ABOVE GROUN	ID							
Well Accessible?				¥ =				
Protective casing?							X Yes	· UNo
Material	Λ	ETAL		*			Yes	□ No
Condition:	Good	□ Broken		<u> </u>		30		8 8
Lid Condition:	Good	□ Broken		Cracked		Need Paint		
Hinge Condition:	☐ Good			Cracked	1	2 2		× 20
☐ FLUSH MOUNT	ED	☐ Less than		isted	More th	an 50% rusted	11	
Well cover present?		NA	+			F 6		
Condition:	☐ Good	☐ Broken		O11			☐ Yes	□ No
Condition of Sump:	□ Clean	☐ Dry		Cracked	T-4			
CONCRETE PAD:		- Diy		Standing W	ater			
Sloped away from car	sing?						Yes.	□ No
Pad Area Cleared of							Yes	□ No
Check any of the follo	owing featun	es that apply:					4 100	□ 140
☐ Many Cracks	☐ Gap Aro	und Casing	☐ Fer	v Cracks	□Po	nded Water	□ No Pad P	resent
THITTEN W								
WELL CONDITION					-	1		
Inner Diameter (inche		4"		Yi .				
Inner Diameter (inche Condition:		√" □ Broken		Cracked	□ Otl	ner (describe)		
Inner Diameter (inche Condition: Cap present?	es)			Cracked	□ Otl	ner (describe)		□No
Inner Diameter (inche Condition; Cap present? Well lock present?	Good			Cracked	□ Otl	ner (describe)	Yes	□ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro	Good perly?			Cracked	□ Otl	ner (describe)	Yes Yes	
Inner Diameter (inche Condition; Cap present? Well lock present? Lock functioning pro	Good perly?			Cracked	□ Otl	ner (describe)	Yes	□No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible?	Good  Good  perly?  and stable?			Cracked	□ Oti	ner (describe)	Yes Yes	□ No
Inner Diameter (inche Condition; Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT	Good  Good  perly?  and stable?			Cracked	□ Oti	ner (describe)	✓ Yes  ✓ Yes  ✓ Yes  ✓ Yes	□ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present?	Good  Good  perly?  and stable?			Cracked	□ Oti	ner (describe)	Yes  Yes  Yes  Yes  Yes	□ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present a Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction?	Good  Good  perly?  and stable?	☐ Broken		<b>X</b>	□ Oti	ner (describe)	Yes Yes Yes Yes Yes	No No
Inner Diameter (inche Condition; Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	perly? and stable?  Y:	☐ Broken	n gaugi	<b>X</b>	□ Oti	ner (describe)	Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No
Inner Diameter (inche Condition; Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	perly? and stable?  Y: leted depth? ? (complete	☐ Broken  (complete when gauging)	n gaugi	ng)	· · · · · · · · · · · · · · · · · · ·	ner (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	perly? and stable?  Y: leted depth? ? (complete	☐ Broken  (complete when gauging)	n gaugi	ng)	· · · · · · · · · · · · · · · · · · ·	ner (describe)	Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No
Inner Diameter (inche Condition; Cap present? Well lock present? Lock functioning pro Are bollards present; Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp	perly? and stable?  Y: leted depth? ? (complete	☐ Broken  (complete when gauging)	n gaugi	ng)	· · · · · · · · · · · · · · · · · · ·	ner (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	perly? and stable?  Y: leted depth? ? (complete	☐ Broken  (complete when gauging)	n gaugi	ng)	· · · · · · · · · · · · · · · · · · ·	ner (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	perly? and stable?  Y: leted depth? ? (complete	☐ Broken  (complete when gauging)	n gaugi	ng)	· · · · · · · · · · · · · · · · · · ·	ner (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No
Inner Diameter (inche Condition: Cap present? Well lock present? Lock functioning pro Are bollards present: Well ID visible? WELL INTEGRIT Bailer present? Visual obstruction? Is well open to comp Is silt present in well Is silt greater than 10	perly? and stable?  Y: leted depth? ? (complete	☐ Broken  (complete when gauging)	n gaugi	ng)	· · · · · · · · · · · · · · · · · · ·	ner (describe)	Yes Yes Yes Yes Yes Yes Yes Yes	□ No □ No □ No □ No □ No □ No

EQUIPMENT CALIBRATION DAILY LOG							
Date: 11/5/19	Project Name:	CHAAP-OY					
Project Number: 50/032	Recorded By:	SLOTT BERSINGER					

	Model:		Buib: 10.6 meV		Morning	Evening Check	Additional Calib/Check (If	
PID	Equipment ID #:				Calibration	Evening Check	necessary)	
	Parameter	Standard	Exp. Date	Lot#	Time:	Time:	Time:	
			Lip. Galo	COLIF	Initials:	initials:	initials:	
First Point Calibration	Vapor conc. (ppm)	0.0 (amblent air)	NA	NA	Value:	Value:	Value:	
Second Point Calibration	Vapor conc. (ppm)	(isobulylene)			Value:	Value:	Value:	

	Model:			Morning	Evening Check	Additional Callb.JCheck (if necessary)	
COMB. GAS/O₂ METER	Equipment ID #:			Calibration	Evening Greek		
	Desembles		5.5.		Time:	Time:	Time:
	Parameter	Standard	Exp. Date	Lot#	initials:	Initials:	initials:
oint	02(%)				Value:	Value:	Value:
First Point Calibration	% LEL Pentane				Value:	Value:	Value:

WATER		- ItORIBA		Morning Calibration/Check	Evening Check (one point only)	Additional Calib/Check (if necessary)	
QUALITY METER	Equipment ID #:	Standard	Exp. Date	Lot#	Time: 0725	Time:	Time:
	Parameter	21310310	Exp. Date		initials: SB	initials:	Initials;
Og	На	4.00			Value: 4,00	Value:	Value:
First Point ibration (Au	Conductivity (mS/cm)	4.49	04/20	GCJ 695	Value: 4.49	Value:	Value:
			UT 20		Value: 0.0	Value:	Value:
	Turbidity (NTU)	0 8.9-9.1 (ambient air)	NA	NA	Value: 9.02	Value:	Value;
	DO (mg/L)			1	Value:	Value:	Value:
Pio Filo Filo Filo Filo Filo Filo Filo Fi	Н	6.86		1	Value:	Value:	Value:
econd Pio n Calibratio m	Conductivity (mS/cm)	53.7		1		Velue:	Value:
Second Piont Calibration	Turbidity (NTU)	100			Value:		Value:
		9.18			Value:	Value:	
Third Piont Calibration	pH		1	1	Value:	Value:	Value:
	Conductivity (mS/cm)	53.7	1	1	Value:	Value:	Value:
= 3	Turbidity (NTU)	100					

Additional Remarks:	

EQUIPI	MENT CALIBRATION DAILY LOG
Date: 11 6/19	Project Name: LHAAP - 04
Project Number: 50/032	Recorded By: Scott Bass. NGal

	Model:		Bulb: 10.6 meV		Morning	Freeing Cheek	Additional
	Equipment ID #:				Calibration	Evening Check	Calib./Check (if necessary)
	Parameter	Standard	Exp. Date	Lot#	Time:	Time:	Time:
	GILD.			COLIF	Initials:	Initials:	Initials:
First Point Calibration	Vapor conc. (ppm)	0.0 (amblent air)	NA	NA	Value:	Value;	Value:
Second Point Calibration	Vapor conc. (ppm)	(isabutylene)		***************************************	Value:	Value:	Value:

COMB. GAS/O <sub>2</sub> METER	Model:			Morning Calibration	Evening Check	Additional Calib.JCheck (if necessary)	
	Equipment ID #:						
	Parameter	Standard	Fire Date	Lot#	Time:	Time:	Time:
	1 drainotoi	Stantialo	Exp. Date	initials:	Initials:	Initials:	
Point ration	02(%)				Value:	Value;	Value:
First Point Calibration	% LEL Pentane				Value:	Value:	Value:

WATER		HORIBA		Morning Calibration/Check	Evening Check (one point only)	Additional Calib./Check (if necessary)	
QUALITY METER	Parameter   Standam   Exp. Date   Lot# 1=				rime: 0720	Time: Initials:	Time:
(ca)	рН	4.00			value: 4,00	Value: Value:	Value:
First Point Calibration (Auto)	Conductivity (mS/cm)	4.49	04/20	6CJ 645	value: 4,49	Value:	Value:
	Turbidity (NTU)	0			Value: O. O	Value:	Value:
- <b>3</b>	DO (mg/L)	8.9-9.1 (ambient air)	NA NA		1.01		W
Second Piont Calibration	рН	6.86			Value:	Value:	Value:
econd Pion Calibration					Value:	Value:	Value:
	Conductivity (mS/cm)	53.7			Value:	Value:	Value:
Se S	Turbidity (NTU)	100				Value:	Value:
# =	pH	9.18			Value:		Section 2
Fhird Piont Calibration				1	Value:	Value:	Value:
ird	Conductivity (mS/cm)	53.7	1		Value:	Value:	Value:
€ 3	Turbidity (NTU)	100	1				

th.	
The state of the second	W. 1
	The state of the s



Project Name: Longhorn AAP

Project No: **501032** 

Location ID: LHSMW02

Sampler(s): Sut Bessingen

FIELD CONDITIONS		Clou	Dy					
SAMPLING INFORMATION	<u>ON</u>		,					
Sample No: LHSMW02-1911 05 DATE/TIME: 11/5/19 0849 Pump Inlet Depth: 16.00								
Sampling Method: San			urpose: REG	Sample Matri	x: GW			
Appearance of Sample			Assoc. QC Samples D	Decontamination Proce	dures			
			7 2					
3			——————————————————————————————————————					
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv			
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C			
WELL AND PURGING II	NFORMATI	ON						
Measuring Point : Top of Cas	sing	Purgi	ng Method/Equipment:	Bladder Pump				
Casing ID (in.):		Purge	Start Date/Time: W5/19	0925				
Depth to Water - Initial (DTWi	(ft) 15.3	2_ Purge	End Date/Time: 115/19	0955				
Depth to Well Bottom (ft)  W Foss 04/10/2020  7	.18 - 17.1	0	arge Tube Length:NA		_			
Screen Interval (ft): 2.50			arge Tube Diameter:	Immersible Layer: Y / 6	V			
Approximate depth of pump in		00_	Pump Start Time:					
Ferrous Iron (Required Y or N		mg/L						

ZND DaptH TO WATER- 15,32



Location ID: LHSMW02 Sample No: LHSMW02-1911 05										
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria	1	H	Drawdow n limit 0.3 ft	<u>+</u> 10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/5/19	0930	100	.5	15.40	1.09	20.34	6.05	37.3	55	0.99
	0935	100	1,0	15.46	1.10	20.22	5.94	34.0	46	0.39
	0940	(00	1.5	1550	1.10	20.21	5.81	34.9	50	0.24
A Nu	0945	(00)	2.0	15,53	1.10	20,20	5.80	35.4	51	0.23
	0950	100	2.5	15.55	1.[0	20.19	5.79	36.0	51	0.22
<b>→</b>	6955	100	3.0	15.57	1:10	20.18	5.79	36.5	52	0.22

Logged by:	Date:
QC'd by:	 Date:

#### **Sample Collection Log**

Project Name: Longhorn AAP

Location ID: 04WW03

Project No: **501032** 

Sampler(s): Swith Bassinger

FIELD CONDITIONS CLUAR COOL									
SAMPLING INFORMATION									
Sample No: 04WW03-1911 06 DATE/TIME: 11/6/19 0739 Pump Inlet Depth: 21.00									
Sampling Method: Sample Purpose: REG Sample Matrix: GW									
Appearance of Sample			Assoc. QC Samples De	econtamination Proce	edures				
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv				
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C				
WELL AND PURGING IN	NFORMATION								
Measuring Point : Top of Cas	ing	Purgi	ng Method/Equipment: Lowflo	w Bladbar Pung	>				
Casing ID (in.): 411		Purge	e Start Date/Time: 11 6 19	0750					
Depth to Water - Initial (DTWi)	(ft)   .DC	Purge	e End Date/Time:	0880					
Depth to Well Bottom (ft)	6.90	Disch	arge Tube Length: <b>NA</b>	PID Reading:	_				
Screen Interval (ft): $\frac{10.00 - 20.00}{W Foss 04/10/2020}$ Discharge Tube Diameter: $\frac{1/11}{100}$ Immersible Layer: Y/ $0$ Approximate depth of pump inlet*(ft): $\frac{10.00 - 20.00}{20.00}$									
Ferrous Iron (Required Y or	)	mg/L							

2ND DeptH TO WATUR- 11.00

		Loc	ation ID: 0	4WW03	Sample N	No: 04WW0	3-1911 <u>0</u>	6		
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria	å	-	Drawdow n limit 0.3 ft	<u>+</u> 10%		<u>+</u> 0.1 units	No criteria		± 10% or 0.2 mg/L
11/6/19	0755	[00	7.	11.08	0.967	18.74	5.87	12.4	183	1.79
	0800	100	1.0	11.14	0.854	19.43	6.17	7.8	136	1.38
	2080	(00	1.5	11.19	0.841	19.47	6.14	7.6	150	1.32
	0800	(00	2,0	11.21	0.840	19.53	6.13	7.7	15/	1.30
	2180	100	2.5	11.23	0.839	19.58	6,13	7.6	152	1.28
V	0880	100	3.0	11.24	0.839	19.61	6.13	7.5	153	1.26

Logged by:	Date:
QC'd by:	Date:

### **Sample Collection Log**

Project Name: Longhorn AAP

Project No: **501032** 

Location ID: 04WW06

Sampler(s): Scott Breginger

FIELD CONDITIONS		CleA	R Cool		
SAMPLING INFORMATION	ON		5		
Sample No: 04WW06-19	1106	DATE	TIME: 4/6/19 0829	Pump Inlet Depth:	23.00
Sampling Method: Sampl			urpose: REG	Sample Matri	x: GW
Appearance of Sample			Assoc. QC Samples	econtamination Proce	edures
9					
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
WELL AND PURGING II	NFORMATI				
Measuring Point : Top of Cas	ing	Purgi	ing Method/Equipment: Low flor	w/Bladdar Pump	
Casing ID (in.):		Purge	e Start Date/Time: 116/19	0840	
Depth to Water - Initial (DTWi	(ft) 1.05	Purge	e End Date/Time: 11/6/19	0910	
Depth to Well Bottom (ft)	8.03	Disch	arge Tube Length:	PID Reading:	_
Screen Interval (ft): 18,00 =		Disch	narge Tube Diameter:	Immersible Layer: Y	
W Foss 04/10/2020 Approximate depth of pump in	18.11 - 28.1 let*(ft): 23	1 .00	Pump Start Time:	340	
Ferrous Iron (Required Y or		mg/L			

2ND DuptH TO WATER- 7.05

		Loc	ation ID: 0	4WW06	Sample No: 04WW06-1911_06					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria		LES.	Drawdow n limit 0.3 ft	±10%		±0.1 units	No criteria	. –	± 10% or 0.2 mg/L
116/19	6845	100	.5	7.12	1.56	20.92	6.48	26.2		1.01
	0280	100	1.0	7.17	1.65	21.22	6.59	19.8	12	0.27
	0855	100	1.5	7.21	1.60	21.51	6.63	20.3	3	0.11
1	0900	100	2.0	7.23	1.59	21.58	6.64	20.7	3	0.11
	0905	100	2.5	7.25	1.59	21.65	6.65	24.0	2	0.10
$\checkmark$	0910	100	3.0	7.26	1.59	21.72	6.65	21.3	2	0.0

Logged by:	Date:
QC'd by:	Date:



Project Name: Longhorn AAP

Location ID: 04WW05

Project No: **501032** 

Sampler(s): Scott Bessinge

FIELD CONDITIONS		Clear	L			
SAMPLING INFORMATION	<u>NC</u>					
Sample No: 04WW05-1911 06		DATE	/TIME: 11/6/19	Pump Inlet Depth: 24.00		
Sampling Method: Sa		Sample P	Purpose: REG	Sample Matri	x: GW	
Appearance of Sample			Assoc. QC Samples Do	econtamination Proc	edures	
-						
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv	
		ALSHT	Alkalinity in Water by SM2320B	1 x 250 mL HDPE	Cool 4C	
2		ALSHT	Anions (nitrite/nitrate/sulfate) in Water by SW9056	1 x 250 mL HDPE	Cool 4C	
		ALSHT	Perchlorate in Water by	1 x 125 mL HDPE	Cool 4C	
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4	
WELL AND PURGING IN	FORMATIC	<u>NC</u>				
Measuring Point : Top of Cas	ing	Purgi	ing Method/Equipment: Low floor	Bladder Pump		
Casing ID (in.):	u .	Purge	e Start Date/Time: 11/6/19	2101		
Depth to Water - Initial (DTWi)	(ft) 1.88	Purge	e End Date/Time: 116/19	045		
Depth to Well Bottom (ft)	9.62	Disch	arge Tube Length:NA	PID Reading:		
Screen Interval (ft): 19.00	-24.00	Disch	arge Tube Diameter: 1/411	Immersible Layer: Y /	D	
W Foss 04/10/2020 16 Approximate depth of pump in	let*(ft): 24	.00	Pump Start Time:	5		
Ferrous Iron (Required Or N	0.31	ma/L				

2ND Depth TOWATER- 7.88

		Loc	ation ID: 0	4WW05	Sample No: 04WW05-1911 06					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L
	Purge Stabilizati on Criteria	12.)	22	Drawdow n limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/6/19	1020	100	.5	7.95	0.884	21.80	6.47	140	-83	0.93
	1025	100	1.0		The second second		6.03	119	-45	0.29
	1030	100	1.5	8.04	0.795	22.50	5.95	108	-38	0.19
	1035	100	2.0	8.07	0.794	22.57	5.95	107	-37	0.19
	1040	100	2.5	8.09	0.794	22.65	5.94	106	-37	0.18
<b>↓</b>	1045	100	3.0	8.11	0.794	22.73	5.94	106	-36	0 .18

Logged by:	Date:
QC'd by:	Date:

#### **Sample Collection Log**

Project Name: Longhorn AAP

Location ID: 04WW08

Project No: **501032** 

Sampler(s): Scott Beesingar

FIELD CONDITIONS		CI	apr		
SAMPLING INFORMATION	<u>NC</u>				
Sample No: <u>04WW08-19</u>	11 06	DATE	TIME: 11/6/14 1056	Pump Inlet Depth:	36.00
Sampling Method: Sampl		Sample P	urpose: REG	Sample Matri	x: GW
Appearance of Sample			Assoc. QC Samples	Decontamination Proce	edures
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
VELL AND PURGING II	NFORMATI			4	
Measuring Point : Top of Cas	sing	Purg	ing Method/Equipment: <u>டில் சி</u>	ow/Bladden Pump	
Casing ID (in.):		Purge	e Start Date/Time: 11619	1105	
Depth to Water - Initial (DTWi	) (ft) 16.13	Purge	e End Date/Time:	1135	
Depth to Well Bottom (ft)	13.68	Disch	arge Tube Length: <b>NA</b>	PID Reading:	_
Screen Interval (ft): 21.00  W Foss 04/10/2020		./3	narge Tube Diameter:		<b>D</b>
Approximate depth of pump in			Pump Start Time:		
Ferrous Iron (Required Y or 🛛	<i></i>	mg/L			

ZND DEPTH TOWATER - 16.B

Location iD: 04WW08 Sample No: 04WW08-1911 06										
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria	744	¥	Drawdow n limit 0.3 ft	<u>+</u> 10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
116/19	1110	100	,5	16.20	2.61	23.88	7.92	77.3	-125	1.09
0 8.	1115	100	1.0	16.26	2.53	23.57	8.69	61.5	-145	0.22
	1/20	100	1.5	16.30	2.56	23.81	8.67	47.9	-148	0.04
	1125	100	2.0	16.32	2.57	23.89	8.66	47.2		0.04
	1130	100	2.5	16.34	2.57	23.95	8.65	46.5	-150	0.03
V	1135	100	3.0	16.35	2.57	24.04	8.65	46.0	-151	6.03

Logged by:	Date:	
QC'd by:	Date:	



Project Name: Longhorn AAP

Location ID: 04WW04

Project No: **501032** 

Sampler(s): Scott Businese

FIELD CONDITIONS		Clea	n Sunny		
SAMPLING INFORMATION	ON .				
Sample No: 04WW04-19	1106	DATE/	TIME: 11/6/19 11 44	Pump Inlet Depth:	16.00
Sampling Method: Sample Purpose: REG Sample Matrix: GW					
Appearance of Sample Assoc. QC Samples Decontamination Procedures					dures
		1		.4	
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
WELL AND PURGING II	NFORMATI	ON			
Measuring Point : Top of Cas	sing	Purgi	ng Method/Equipment: 🚾 🎾	w/Bladden Rup	
Casing ID (in.):	11	Purge	Start Date/Time: 116/19	1156	
Depth to Water - Initial (DTWi	) (ft) <b>5.2</b> 5	Purge	End Date/Time:	1226	
Depth to Well Bottom (ft)	4.55	Disch	arge Tube Length:	PID Reading: NA	_
Screen Interval (ft): 11. 90 W Foss 04/10/2020 10	21.00	Disch	arge Tube Diameter: 1/4"	Immersible Layer: Y	)
Approximate depth of pump in	1 /	00	Pump Start Time:	20	
Ferrous Iron (Required Y or §	)	mg/L			

2ND DeptH TO WATER-5.20

		Loc	ation ID: 0	4WW04	Sample N	lo: 04WW0	4-1911 <u>0</u>	6		
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria	Œ	Ħ	Drawdow n limit 0.3 ft	<u>+</u> 10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/6/19	1155	100	,5	5.28	0.497	25.09	6.98	159	-63	0.84
	1200	100	1.0	5,33	0.66	25.13	6.45	130	-47	0.20
	1205	100	1.5		0.790	25.18	6.32	122	-46	0.07
	1210	100	2.0	5.40	0.790	25.20	6.31	121	-45	0.06
	1215	100	2,5	5,42	0.791	25.23	6.30	121	-44	0.06
<b>→</b>	1220	100	3.0	5,43	0.791	25.25	6.30	120	-43	0.06

Logged by:	Date:
QC'd by:	Date:



Project Name: Longhorn AAP

Project No: **501032** 

Location ID: LHSMW01

Sampler(s): Stott Bausinbur

FIELD CONDITIONS		Cla	AR SUNNY			
SAMPLING INFORMATI Sample No: LHSMW01- Sampling Method:			/TIME: 11/6/19 1236 urpose: REG	Pump Inlet Depth: 12,50 Sample Matrix: GW		
Appearance of Sample			Assoc. QC Samples D	Decontamination Proce	edures	
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv	
-		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C	
WELL AND PURGING I	NFORMATI	ON	<u> </u>	L. 0		
Measuring Point : Top of Ca	sing	Purgi	ing Method/Equipment: السول	ON/BLADDIR YUMP		
Casing ID (in.):		Purge	e Start Date/Time: 11/6/19	1245		
Depth to Water - Initial (DTW	(i) (ft) 7.35	Purge	e End Date/Time: 11/6/19	1315		
Depth to Well Bottom (ft)	17.95	Disch	arge Tube Length:NA_	PID Reading: NA		
Screen Interval (ft): 4.59  W Foss 04/10/2020 7.  Approximate depth of pump i	74 - 17.74	Disch	Pump Start Time:	Immersible Layer: Y/	D	
Ferrous Iron (Required Y or	<b></b>	mg/L				

2ND Dupth TO WATER 7.35

Location ID: LHSMW01					Sample No: LHSMW01-1911_06					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria	San	1/2	Drawdow n limit 0.3 ft	±10%		<u>+</u> 0.1 units	No criteria		± 10% or 0.2 mg/L
116/19	4520	100	.5	7.43	0.271	26.00	6.72	30.3	42	1.21
	1255	100	1.0	7.49	0.248	25,00	6.38	24.7	116	0.54
	1300	100	1,5	10 10	0.247	24.97	6.35	23.1	126	0.50
	1305	(00	2.0	7.55	0.247	24.94	6.34	22.7	126	0.49
	1310	100	2.5	7.57	0.247	24.91	6.34	22.2	127	0.48
$\overline{\mathbf{A}}$	1315	100	3.0	7.58	0.247	24.88	6.34	21.8	127	0.48

Logged by:	Date:
QC'd by:	Date:

#### **Sample Collection Log**

Project Name: Longhorn AAP

AP Location ID: 04WW02

Project No: **501032** 

Sampler(s): Scot BEESINGELL

SAMPLING INFORMATION								
Sample No: 04WW02-1911 05 DATE/TIME: 11/5/14 0745 Pum	p Inlet Depth: 21.00							
Sampling Method: Sample Purpose: REG	Sample Matrix: GW							
Appearance of Sample Assoc. QC Samples Decontame	ination Procedures							
Chain of Custody COC Lab Analyses Co	ontainer Preserv							
ALSHT Perchlorate in Water by 6850 1 x 125	5 mL HDPE Cool 4C							
WELL AND PURGING INFORMATION								
Measuring Point : Top of Casing Purging Method/Equipment: Cowflow Blad	DERPUMP							
Casing ID (in.): Purge Start Date/Time: 115/19 0800								
Depth to Water - Initial (DTWi) (ft) 7.25 Purge End Date/Time: 11/5/19 0830								
Depth to Well Bottom (ft) 26.68 Discharge Tube Length: NA PID Rea	iding: NA							
Screen Interval (ft): 16.9 - 26.9  Discharge Tube Diameter: 1/4!1  Immersible Layer: Y N								
W Foss 04/10/2020 16.9 - 26.9 Approximate depth of pump inlet*(ft): 21.00 Pump Start Time: 08.00	_							
Ferrous Iron (Required Y or 10mg/L								

2ND DAPTH TOWATER 7.25



		Loc	ation ID: 04	4WW02	Sample No: 04WW02-1911_05					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria			Drawdow n limit 0.3 ft	<u>+</u> 10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/5/19	6805	100	.5	7.33	0.364	22.74	6.05	26.5	208	1.56
	08 10	100	1.0	7.38	0.296	23.49	6.18	13,1	202	1.50
	2180	[00	1.5	7.41	0, 293	23.60	6.10	9.9	219	1.48
	0820	100	2.0	7.43	0.293	23.68	6.09	9.7	220	1.46
	0825	100	2.5	7.45	0.212	23.75	6.08	9.4	221	1.45
V	0830	100	3.0	7.46	0.292	23.80	80.0	9.0	221	1.44

Logged by:	Date:	
QC'd by:	Date:	

### **Sample Collection Log**

Project Name: Longhorn AAP

Location ID: 04WW02

Project No: **501032** 

Sampler(s): Seo H Beesing an

FIELD CONDITIONS											
SAMPLING INFORMATION	<u>ON</u>										
Sample No: 04WW02-1911 05-FD DATE/TIME: 11/5/19 0745 Pump Inlet Depth: 21.00											
Sampling Method:		Sample P	urpose: FD	Sample Matrix: GW							
Appearance of Sample			Assoc. QC Samples D	<b>Decontamination Procedures</b>							
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv						
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C						
WELL AND PURGING II	NFORMATI										
Measuring Point : Top of Cas	sing	Purgi	ng Method/Equipment: Low f	ow Bladder Rup							
Casing ID (in.):		Purge	Start Date/Time: 115/19	0800							
Depth to Water - Initial (DTWi	) (ft)	Purge	End Date/Time: 11/5/14 0	830_							
Depth to Well Bottom (ft) 24	84.0	Discha	arge Tube Length:NA	PID Reading:	-						
Screen Interval (ft): W Foss 04/10/2020	0 - 21.00 16.9 - 26.9	Disch	arge Tube Diameter:	Immersible Layer: Y/							
Approximate depth of pump in		00	Pump Start Time:OBOC								
Ferrous Iron (Required Y or	)	mg/L									

Location ID: 04WW02 Sample No: 04WW02-1911_05FD										
Date of Reading Rate Purge DTW Cond. Temp. pl							рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria			Drawdow n limit 0.3 ft	<u>+</u> 10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/5/19	0805	160	.5	7.33	0.364	22.74	6.05	26.5	208	1.5b
	0810	100	1.0	7.38	0.296	23.44	6.18	13.1	202	1.50
	0815	100	1.5	7.41	0.293	23.60	6.10	9.9	719	1.48
	0820	100	2.0	7.43	0.243	23.68	6.09	9.7	220	1.46
N.	0852	100	2.5	7.45	0.242	23.75	6.08	9.4	221	1.45
V	0830	160	3.0	7.46	0.242	23.80	6.08	9.0	221	1.44
								=		

Logged by:	Date:	
QC'd by:	Date:	



Project Name: Longhorn AAP

Location ID: 04WW11

Project No: **501032** 

Sampler(s): Scott Busin Gen

FIELD CONDITIONS		Clar	R	10		
SAMPLING INFORMATION	<u>ON</u>					
Sample No: <u>04WW11-19</u>	1106	DATE	TIME: 11/6/19 0919	Pump Inlet Depth:	13.50	
Sampling Method:		Sample P	urpose: REG	Sample Matrix: GW		
Appearance of Sample			Assoc. QC Samples	econtamination Proce	edures	
<u> </u>						
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv	
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C	
WELL AND PURGING II	NFORMATI	ON				
Measuring Point : Top of Cas	sing	Purg	ing Method/Equipment: 🛵 🛶 🕻 💩	w Bladber Pump		
Casing ID (in.):		Purg	e Start Date/Time:	0925		
Depth to Water - Initial (DTWi	) (ft) <u>7.72</u>	Purge	e End Date/Time:	0955		
Depth to Well Bottom (ft)	8.50	Disch	arge Tube Length: <b>\rangle</b>	PID Reading:	_	
Screen Interval (ft): 2.50.  N Foss 04/10/2020 8.2  Approximate depth of pump in	- 18.2 nlet*(ft):	7211	Pump Start Time:	Immersible Layer: Y/	<b>D</b>	
Ferrous Iron (Required Y or	)	mg/L				

2ND DaptH TO WATER - 7.72

		ation ID: 0	4WW11	Sample N	lo: 04WW1	1-1911	0_			
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria		ığ.	Drawdow n limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/6/19	0930	100	.5	7.80	0.630	20.47	7.12	88.3	139	3.89
	0935	100	1.0	7.86	0.609	20.50	7.11	76.1	152	3.45
	0940	100	1,5	7.90	0.607	20.53	7.12	68.0	156	3.27
	0945	100	2.0	7.43	0.607	20.56	7.13	67.6	157	3.25
	0950	100	2.5	7.95	0,607	20.59	7.13	67.0	158	3.23
	0955	100	3.0	7.96	0.607	20.63	7.13	6\$.6	158	3.21

Logged by:	Date:
QC'd by:	Date:



Project Name: Longhorn AAP

Location ID: 04WW11

Project No: **501032** 

Sampler(s): Sut Businger

FIELD CONDITIONS		Clea	1 <u>C</u>				
SAMPLING INFORMATION		DATE	TIME: 4/6/19 0919	Pump Inlet Depth:	13.50		
Sample No: <u>04WW11-19</u>	1106 -MS			Fump met Deptin.			
Sampling Method:		Sample P	urpose: MS	Sample Matrix: GW			
Appearance of Sample			Assoc. QC Samples Do	<b>Decontamination Procedures</b>			
Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv		
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C		
WELL AND PURGING II	NFORMATI	ON					
Measuring Point : Top of Cas	sing	Purgi	ng Method/Equipment:	low Bladder Pump			
Casing ID (in.):		Purge Start Date/Time: 11/6/19 0925					
Depth to Water - Initial (DTWi	) (ft) 7.72	Purge	End Date/Time: 11/6/14 6	955			
Depth to Well Bottom (ft)	8.50	Discha	Discharge Tube Length:PID Reading:				
Screen Interval (ft): <b>8.50 W Foss 04/10/2020 8.2</b>	- 18.50	Disch	Discharge Tube Diameter: // Immersible Layer: Y				
Approximate depth of pump inlet*(ft): (3.50 Pump Start Time:							
Ferrous Iron (Required Y or 🐧 mg/L							

	wall by	Locat	ion ID: 04V	VW11 :	Sample No	: 04WW11-	1911 06	-MS		
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Тетр.	pН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L
	Purge Stabilizati on Criteria	<b>⊘</b> #1		Drawdow n limit 0.3 ft	<u>+</u> 10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/4/19	0430	100	.5	7.80	0.630	20.47	7.12	88.3	139	3.89
į.	0435	100	1.0	7.86	0.609	20,50	7.11	76.1	152	3.45
	0940	100	1.5	7.90	0.607	20.53	7.12	68.0	156	3.27
	0945	100	2.0	7.93	0.607	20.56	7.13	67.6	157	3.25
	0950	100	2,5	7.45	0.607	20.59	7.13	67.0	158	3.23
$\checkmark$	0955	100	3.0	7.96	0.607	20.63	7.13	66.6	158	3.21

Logged by:	Date:
QC'd by:	Date:

### **Sample Collection Log**

Project Name: Longhorn AAP

Location ID: 04WW11

Project No: **501032** 

Sampler(s): Seo # Bees, NGER

FIELD CONDITIONS CIGAR								
SAMPLING INFORMATION  Sample No: 04WW11-1911 06 -MSD DATE/TIME: 11/6/19 919 Pump Inlet Depth: 13.50  Sampling Method: Sample Purpose: MSD Sample Matrix: GW								
Appearance of Sample			Assoc. QC Samples	Decontamination Proce	edures			
Chair of Custody		Lab	Analyses	Container	Preserv			
Chain of Custody	COC Notes	Lap	Analyses	Container	Preserv			
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C			
WELL AND PURGING II	NFORMATI	ON						
Measuring Point: Top of Cas	sing	Purgi	ng Method/Equipment: Low f	low Bladder Pump				
Casing ID (in.):		Purge	Purge Start Date/Time: 11/6/19 0 925					
Depth to Water - Initial (DTWi	0955							
Depth to Well Bottom (ft)	8.50	Disch	Discharge Tube Length: NA PID Reading: NA					
Screen Interval (ft): W Foss 04/10/2020 8  Approximate depth of pump in			arge Tube Diameter:		)			
Ferrous Iron (Required Y or 🐧 mg/L								

Location ID: 04WW11 Sample No: 04WW11-1911 06 -MSD										
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria		155	Drawdow n limit 0.3 ft	<u>+</u> 10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/6/14	0430	100	.5	7.80	0.630	20.47	7.12	88.3	139	3.89
	0435	100	1.0	7.86	0.604	20.50	7.11	76.1	152	3.45
	0440	lbo	1.5	7.90	0.607	20.53	7:12	68.0	156	3.27
	0945	160	2.6	7.43	0.607	20.56	7.13	67.6	157	3.25
	0950	100	2.5	7.95	0.607	20.59	7.13	67.0	158	3.23
V	0955	100	3.0	7.96	0.607	20.63	7.13	66.6	158	3.21
	_									

Logged by:	Date:
QC'd by:	Date:

PROJECT/CLIENT  Ighorn AAP  032  AAP-50  3-B East Grand Avenue  B 202  rshall  70  .243.7264  veen Srivastav			State TX	X	La	Lab Name b Contect Email Address	ROUND TIMI LABORATOR ALS Laboratorie: RJ Modashia RJ.Modashia@als 10450 Stancliff F				Em	ail Invoice To	RUSH: HER INFO FedInvokes@a	No aptim.com		
nghorn AAP  032  AAP-50  3-B East Grand Avenue  B 202  rshall  70  .243.7264  veen Srivastav					La	Email Address	ALS Laboratories RJ Modashia RJ.Modashia@als				Em	ail Invoice To		ptim.com		
032 AAP-50 3-B East Grand Avenue B 202 rshall 70 .243.7264 veen Srivastav	PLE DET				La	Email Address	RJ Modashia RJ Modashia@als				Em		FedInvoices@a	ptim.com	-	
AAP-50 3-B East Grand Avenue B 202 rshall 70 243.7264 veen Srivastav	PLE DET					Email Address	RJ. Modashia@als	global.com								
3-B East Grand Avenue B 202 rshall 70 243.7264 veen Srivastav	LE DET					Address		giodal.com			Ť-	ail Dannet To	Susan. Huang(	Pantim com		
B 202 rshall 70 243.7264 veen Srivastav	LE DEN						TO420 SIGNEILLY						Susan Huang		-	
rshall 70 243.7264 veen Srivastav	PLE DET							d., Suite 210			1416		4005 Port Ch		ay, Suite 20	0
70 .243.7264 veen Srivastav	PLE DET			SA		City	Houston	State	TX				Concord		State	CA
veen Srivastav	LE DET				Po	stal Code		Соилтту	USA			Postal Code	94520		Countr	y USA
	LE DET				Phon	e Number	281.575.2279 or	281.530.5656								
SAMI	LE DET											oing Company	/			
		AILS				ļ E		1-125ml	1-250ml	ANALYSI 1-250ml /Cool	S REQUESTED					
							Sample Contain and Presevative	Prople Color	/Cool to 6 deg C	to 6 deg C	Amber/H2SO4					
Lagricon	Start	End Denth	Depth	Field	Date	Time	#OfCont	erchlorate by SW6850	inions sulfate/nitrate/Nitrite) y SW9056	Ukalinity by SM2320B	TOC by SM5310C					
	Depth	Depin	Unit			-	- 1		< 32	<			_			
			-					X	-	_						_
							1	X					-		_	_
CHAPOY				wa	115119	7200		LX								_
LHMAP 04				wa	11/6/14	0320		X								
				w6	11/6/10	4		X			1 361					
				126		-	i	X								
					-	_		Y								
				WG	11/6/19	-		X								
				W6	11/6/19		4	V	X	X	X					
				W6				V								
				w6	3			Y								
								X								
OL LHARPOY				we			1	×								
														-	-	+
								-				_				
IENTS/SPECIAL INSTRU	CTIONS	Contact of	RELIN	QUISHED	BY/AFFILIAT	NOF			ACCE	PTED BY/AI	FILIATION			DATE	TIME	
		4	R	Mercy	BHATE		ulpha 14	00								
				0									-			
													-			_
		Location Depth  LHAAP OY  LHAAP OY  LHAAP OY  CHAAP OY  CHAAP OY  LHAAP OY	Location Depth Depth  LHAAP OY  LHAAP OY	Location Depth Depth Unit  LHAAP OY  LHAAP OY	Location Depth Depth Unit Matrix  LHAAP OY  LH	Location Depth Depth Unit Matrix Date  LHAAP OY  LHAAP O	Location Depth Depth Unit Matrix Date (24hr)  LHAAP OY  LHAAP OY	Location Depth Depth Unit Matrix Date (24hr) #Of Cont.  LHAAP OY  LHAAP OY	Location   Depth   Depth   Unit   Matrix   Date   (24hr)   # Of Cont.   E	Location Depth Depth Unit Matrix Date (24hr) #Of Cont.  CHARP OY  CHARP OY	Location  Start End Depth Depth Unit Matrix  UHAAP OY  U	Location  Start End Depth Unit  W6 11\s/19 0820    CHARP 04  CHARP	Start   End   Depth   Depth	Location  Start End Depth Field Date (24hr) #OfCont.  UHAAP O \ UH	Location  Start End Depth Field Date (24hr) # OF Cont.  Uhand Of Unit Web (1/5/19 0830 1 X)  Uhand Of Web (1/5/19 1835 1 X)  U	Location  Start End Depth Field Date Time (24hr) #Of Cont.  Uhanf Of Litario 0830 1  Chanf Of W6 (1/5/19 1835 1  C

# Sample Collection Log

Project Name: Longhorn AAP

Location ID: 04WW05

Project No: 501032

Sampler(s): \_\_\_\_\_\_\_\_\_\_\_\_

Sample No: 04WW05-19 Sampling Method: CF Appearance of Sample		Sample P	Urpose: REG Assoc. QC Samples De	Sample Matrix contamination Proce	x: GW
Chain of Custody	coc	Lab	Analyses	Container	Preserv
	Notes	ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
MELL AND PURGING  Measuring Point: Top of Ca  Casing ID (in.):	asing	Purg Purg	ing Method/Equipment: <u>LF/</u> e Start Date/Time: <u>//~/3~/9</u> e End Date/Time: <u>//~/3~/9</u> harge Tube Length: <u>~/4</u> harge Tube Diameter: <u>//4</u>	1	

# Sample Collection Log

		Locatio	n ID: 04W	W05 Sa	ample No:	04WW05-19	911/3 Pc	st-Inj		
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria			Drawdow n limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0,2 mg/L
11-13-19	1400	100	1.0	7.85	0.958	18.36	5.51	4.4	-102.4	0.85
11-1379	1405	100	1.5	7.85	0.991	19.03	5.00	4.4	-116.4	0.44
11-13-19	1410	100	2.0	7.85	1.004	19.29	5.43	3.4	-172.8	0.54
11-13-19	1415	100	2.5	7.85	1,015	19:30	5.04	3,0	-1747	0.51
11-13-19	1420	106	3.6	7.83	1.035	19.27	5.66	4.0	-129.1	0.49
11-13-19	1425	100	3.5	7.83	1.03 4	19.25	5.68	3.6	-133.1	0.47
11-13-19	1430	100	4.0	7.83	1,637	19.25	5.48	3.1	-135-1	0,46
11-12-19	3	ac	10		-					
		1		1	lag					

Logged by:	1-00	Date: 11-13-19
QC'd by:	0	Date:

# Sample Collection Log

Project Name: Longhorn AAP

Location ID: 04WW07

Project No: 501032

Sampler(s): Now

Sample No: 04WW07-19 Sampling Method: ∠F  Appearance of Sample  Opage / C/ac			Purpose: REG Assoc. QC Samples  ALLA	Pump Inlet Depth: Sample Matri econtamination Proce	x: GW
Chain of Custody	COC	Lab	Analyses	Container	Preserv
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
Measuring Point: Top of Cacaning ID (in.): 4"  Depth to Water - Initial (DTW Depth to Well Bottom (ft) Screen Interval (ft): 12.9	asing vi) (ft) <u>8.85</u> 22.61	Purg Purg Discl	harge Tube Length: N4	7	

# Sample Collection Log

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	04WW07-1 Temp.	рН	Turbidity	ORP	DO
		(ml/mln)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria		6	Drawdow n limit 0.3 ft	±10%		<u>+</u> 0.1 units	No criteria		± 10% or 0.2 mg/L
11-13-19	1450	100	1.0	9.15	6.440	20.07	5.98	115.4	-303.8	0.25
11-13-19	1455	100	1.5	9.20	4.593	19.35	4-06	1223	-340.1	0.11
11-13-19	1500	100	2-0	9.26	6.562	19.10	6.04	172-1	-3403	0.10
11-13-19	1505	106	2.5	9.26	6.479	18-76	6.02	115.4	-338-3	0.09
11-13-19	1510	100	3.0	9.26	6.409	18-79	5.98	133.1	-334-3	0.08
11-13-19	1515	100	3.5	9.24	6.400	18.77	5.97	131.6	-333./	0.08
11-13-19	1520	100	4.6	9.26	4399	18-75	5-96	138.1	-333.1	0-08
			400	K	9					

Logged by:	Date: 11-13-19
QC'd by:	Date:

# Sample Collection Log

Project Name: Longhorn AAP

Location ID: 04WW09

Project No: 501032

Sampler(s): USU

Sample No: 04WW09-1911/3 Post-Inj DATE/TIME: 11-13-19/1 Sampling Method: 2		
Appearance of Sample  Chain of Custody  Chain of Custody  Chain of Custody  Chain of Custody  Coc Lab Analyses  Notes  ALSHT TOC in Water by SM:  WELL AND PURGING INFORMATION  Measuring Point: Top of Casing  Purging Method/Equipment: 4  Purge Start Date/Time: 1/-/.	233  Pump Inlet Depth: _/	8.14
Chain of Custody  Chain of Custody  Coc Lab Analyses  Notes  ALSHT TOC in Water by SM:  VELL AND PURGING INFORMATION  Measuring Point: Top of Casing  Purging Method/Equipment: 4  Purge Start Date/Time: 1/-/.	Sample Matrix: (	GW
Notes  ALSHT TOC in Water by SM:  VELL AND PURGING INFORMATION  Measuring Point: Top of Casing Purging Method/Equipment: 4  Casing ID (in.): 4'' Purge Start Date/Time: 1/-/.	Decontamination Procedu	ıres
WELL AND PURGING INFORMATION  Measuring Point: Top of Casing Purging Method/Equipment: 4  Casing ID (in.): 4'' Purge Start Date/Time: 1/-/	Container	Preserv
Measuring Point : Top of Casing Purging Method/Equipment: 4  Casing ID (in.): 4'' Purge Start Date/Time: 1/-/3	5310C 2 x 40 mL Amber	H2SO4
Depth to Well Bottom (ft) 23. 42  Screen Interval (ft): 13.14 - 23.14  Discharge Tube Length: MA  Discharge Tube Diameter: 1  Approximate depth of pump inlet*(ft): 18.14  Pump Start Time: 1	7-19 / 13 00 19 / 1338 PID Reading: 0.0	



# Sample Collection Log

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	рН	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria	•	1	Drawdow n limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-13-19	1305	200	L	4.10	1.943	18.29	4.25	776	-0.2	1.97
11-13-19	1310	200	2	4.18	1.999	18.03	4.32	1.155	-13.0	0.95
11-13-19	1315	200	3	4.16	1.995	17.58	4.34	911.5	-14.3	0.61
11-13-19	1376	200	4	4.16	1.991	17.57	4.35	984.5	-18-2	0.49
11-13-19	1325	200	5	4.10	1.984	17.16	4.35	984.3	-20.8	0-35
11-17-19	1330	200	6	4.10	1.980	17.16	4.36	991.1	-25.4	0.34
11-13-19	1335	200	7	410	1.981	17.17	4.36	994.3	-27.5	0.33
11-13-19	Sa	116	3							

Logged by:	Je	Date: //-/3-19
QC'd by:	0	Date:



# Sample Collection Log

Project Name: Longhorn AAP

Location ID: 04WW10

Project No: 501032

Sample No: 04WW10-19 Sampling Method: LF Appearance of Sample	911 13 Post-Ir	Sample P	urpose: REG	Pump Inlet Depth: Sample Matri contamination Proce	x: GW
Chain of Custody	COC	Lab	Analyses	Container	Preserv
	,,,,,,,,	ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
WELL AND PURGING  Measuring Point: Top of Ca  Casing ID (in.): 4"  Depth to Water - Initial (DTW  Depth to Well Bottom (ft) 2  Screen Interval (ft): 12.2	asing. - vi) (ft) <u>4.75</u> 23.46	Purg Purg Purg Disch	ing Method/Equipment: EF/F e Start Date/Time: //-/3-19 / e End Date/Time: //-/3-19 / // harge Tube Length:	1545	

# Sample Collection Log

Date of	Time of	Purge	Total	DTW	Cond.	04WW10-19 Temp.	рН	Turbidity	ORP	DO
Reading	Reading	(ml/min)	Purge (L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilizati on Criteria	J.	L.	Drawdow n limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-13-19	1550	100	1.0	5.21	1.858	17.36e	5.72	51.7	-288.4	0.20
11-13-19	1555	100	1.5	5.28	1.849	17.18	5.66	34.9	-290.7	0.18
11-13-19	1400	100	7.0	5.33	1.820	14.91	5.44	35.9	-291.4	0.12
11-15-19	11005	100	2.5	5.39	1.79Ce	14.40	5.04	31.7 .	1.685	0.10
11-13-19	1410	100	3.0	5.44	1.784	14.48	5-43	32.4 -	292-1	0.09
11-13-19	1415	100	7.5	5.48	1.779	14.48	5.41		291.1	0.09
11-13-19	1620	100	4.0	5.50	1.776	16.46	5.01	35.8	791.8	0.08
11-13-19		S	cep	60	-					
					1	ey .	A 1			

Logged by:	Date: _//-/3 7 9
QC'd by:	Date:

# Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • April 2021

# Appendix C Site Photographs

# **SITE PHOTOGRAPHS**

Photo No.	Date	Task and Description
1	10/28/19	Injection Trailer and Mobile 4,000-gallon Tank at LHAAP-04
2	10/28/19	Injection Hoses Connected to 04DPT01 and 04DPT05
3	10/28/19	DPT Rig Setting Up to Push 04DPT17 North of Ditch and Culvert
4	10/29/19	Grouting Completed DPT Locations



 $PHOTO\ 1: \quad \textit{Injection Trailer and Mobile 4,000-gallon Tank at LHAAP-04}$ 

*DATE:* October 28, 2019



PHOTO 2: Injection Hoses Connected to 04DPT01 and 04DPT05

*DATE:* October 28, 2019



PHOTO 3: DPT Rig Setting Up to Push 04DPT17 North of Ditch and Culvert DATE: October 28, 2019



PHOTO 4: Grouting Completed DPT Locations

*DATE:* October 29, 2019

# Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • April 2021

# Appendix D Laboratory Analytical Reports

(Provided electronically on CD and Portal)



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

F: +1 281 530 5887 www.alsglobal.com

# WorkOrder: HS19011046

**Aptim Environmental & Infrastucture, Inc.** 

Susan Huang 2500 City West Blvd., Suite 1700 Houston TX 77042

29-Jan-2019





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

F: +1 281 530 5887

January 29, 2019

Susan Huang Aptim Environmental & Infrastucture, Inc. 2500 City West Blvd., Suite 1700 Houston, TX 77042

Work Order: **HS19011046** 

Laboratory Results for: LHAAP-04

Dear Susan,

ALS Environmental received 7 sample(s) on Jan 23, 2019 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



Client: Aptim Environmental & Infrastucture, Inc.

Project: LHAAP-04 SAMPLE SUMMARY

Work Order: HS19011046

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19011046-01	04WW11_190122	Groundwater		22-Jan-2019 08:20	23-Jan-2019 08:00	
HS19011046-02	04WW09_190122	Groundwater		22-Jan-2019 09:05	23-Jan-2019 08:00	
HS19011046-03	04WW09_190122-FD	Groundwater		22-Jan-2019 09:05	23-Jan-2019 08:00	П
HS19011046-04	04WW10_190122	Groundwater		22-Jan-2019 09:55	23-Jan-2019 08:00	$\overline{\Box}$
HS19011046-05	LHSMW01_190122	Groundwater		22-Jan-2019 10:50	23-Jan-2019 08:00	П
HS19011046-06	04WW07_190122	Groundwater		22-Jan-2019 11:40	23-Jan-2019 08:00	П
HS19011046-07	04WW01 190122	Groundwater		22-Jan-2019 12:30	23-Jan-2019 08:00	Н



Client: Aptim Environmental & Infrastucture, Inc. CASE NARRATIVE

Project: LHAAP-04

Work Order:

# **Work Order Comments**

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



**ANALYTICAL REPORT** 

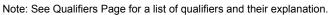
Client: Aptim Environmental & Infrastucture, Inc.

 Project:
 LHAAP-04
 WorkOrder:HS19011046

 Sample ID:
 04WW11\_190122
 Lab ID:HS19011046-01

 Collection Date:
 22-Jan-2019 08:20
 Matrix:Groundwater

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:NA						Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	29-Jan-2019 15:59





Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19011046 Lab ID:HS19011046-02 Matrix:Groundwater

**ANALYTICAL REPORT** 

 Project:
 LHAAP-04

 Sample ID:
 04WW09\_190122

 Collection Date:
 22-Jan-2019 09:05

ANALYSES	RESULT QUAL DL LOD		LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	29-Jan-2019 15:59



Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19011046 Lab ID:HS19011046-03

Project: LHAAP-04

Matrix:Groundwater

**ANALYTICAL REPORT** 

Sample ID: 04WW09\_190122-FD Collection Date: 22-Jan-2019 09:05

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	29-Jan-2019 15:59



Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19011046 Lab ID:HS19011046-04 Matrix:Groundwater

**ANALYTICAL REPORT** 

 Project:
 LHAAP-04

 Sample ID:
 04WW10\_190122

 Collection Date:
 22-Jan-2019 09:55

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		Method:NA						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	29-Jan-2019 15:59



Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19011046 Lab ID:HS19011046-05 Matrix:Groundwater

**ANALYTICAL REPORT** 

Project: LHAAP-04
Sample ID: LHSMW01\_190122
Collection Date: 22-Jan-2019 10:50

ANALYSES	RESULT QU	JAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		Method:NA						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	29-Jan-2019 15:59



Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19011046 Lab ID:HS19011046-06 Matrix:Groundwater

**ANALYTICAL REPORT** 

 Project:
 LHAAP-04

 Sample ID:
 04WW07\_190122

 Collection Date:
 22-Jan-2019 11:40

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		Method:N	4					Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	29-Jan-2019 15:59



Client: Aptim Environmental & Infrastucture, Inc.

 Project:
 LHAAP-04
 WorkOrder:HS19011046

 Sample ID:
 04WW01\_190122
 Lab ID:HS19011046-07

 Collection Date:
 22-Jan-2019 12:30
 Matrix:Groundwater

**ANALYTICAL REPORT** 

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	I:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	29-Jan-2019 15:59



Client: Aptim Environmental & Infrastucture, Inc.

Project: LHAAP-04 DATES REPORT

WorkOrder: HS19011046

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R33	Test Name :	SUBCONTRACT ANALY	/SIS - PERCHLOR	RATE (EPA 6850) Matri	x: Groundwater	
HS19011046-01	04WW11_190122	22 Jan 2019 08:20			29 Jan 2019 15:59	1
HS19011046-02	04WW09_190122	22 Jan 2019 09:05			29 Jan 2019 15:59	1
HS19011046-03	04WW09_190122-FD	22 Jan 2019 09:05			29 Jan 2019 15:59	1
HS19011046-04	04WW10_190122	22 Jan 2019 09:55			29 Jan 2019 15:59	1
HS19011046-05	LHSMW01_190122	22 Jan 2019 10:50			29 Jan 2019 15:59	1
HS19011046-06	04WW07_190122	22 Jan 2019 11:40			29 Jan 2019 15:59	1
HS19011046-07	04WW01 190122	22 Jan 2019 12:30			29 Jan 2019 15:59	1



Date: 29-Jan-19 **ALS Houston, US** 

Aptim Environmental & Infrastucture, Inc. Client: QUALIFIERS, Project: LHAAP-04 **ACRONYMS, UNITS** 

WorkOrder: HS19011046

Work Or don	110 100 1 10 10
Qualifier	Description
*	Value exceeds Regulatory Limit
а	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	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
0	Sample amount is > 4 times amount spiked
Р	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

DCS	Detectability Check Study
DCG	Detectability Check Study

LCS Laboratory Control Sample

Laboratory Control Sample Duplicate LCSD

MBLK Method Blank

Method Detection Limit MDL MQL Method Quantitation Limit

MS Matrix Spike

Matrix Spike Duplicate MSD PDS Post Digestion Spike **PQL** Practical Quantitaion Limit

SD Serial Dilution

SDL Sample Detection Limit

**TRRP** Texas Risk Reduction Program



# **CERTIFICATIONS, ACCREDITATIONS & LICENSES**

Agency	Number	Expire Date
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	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019



Client: Aptim Environmental & Infrastucture, Inc.

Project: LHAAP-04 SAMPLE TRACKING

Work Order: HS19011046

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19011046-01	04WW11_190122	Login	1/22/2019 8:24:25 PM	JRM	Sub
HS19011046-02	04WW09_190122	Login	1/22/2019 8:24:25 PM	JRM	Sub
HS19011046-03	04WW09_190122-FD	Login	1/22/2019 8:24:25 PM	JRM	Sub
HS19011046-04	04WW10_190122	Login	1/22/2019 8:24:25 PM	JRM	Sub
HS19011046-05	LHSMW01_190122	Login	1/22/2019 8:24:25 PM	JRM	Sub
HS19011046-06	04WW07_190122	Login	1/22/2019 8:24:25 PM	JRM	Sub
HS19011046-07	04WW01_190122	Login	1/22/2019 8:24:25 PM	JRM	Sub



			<b>\$</b>		2	-/ <sup>3</sup>	BHATY		22/19 1	400						- NO YEAT IV.	HE	
ADDITIONAL COMA	EMES/SPECIAL INSTRU	CTIONS		RELINO	UISHED I	3Y/4	FFILIATIO		DATE/TIME		<u>, vc</u> c	EPTED DY	APPILIA	TION		DATENTIA		
			- +	<del>-</del>		·												
<u> </u>						 		·		-		<del></del>			LHAA	P-04 <b>             </b>		
	·-	<del>-</del>	<del>-</del>	<del></del>			— <b>—</b>			-	_ <del>-</del>		Aptim	Environr	nental	& Infras	stuctu	e. I
		<del> </del>					i			! [						11046		
<del></del>		<u>!</u>	<u>-</u>								· - <del>/</del> -	' 	,	, ,	, 3465	444-		
- 22 10 PI- 1000	LHAAPOY	7.33	7.56		wg		122/19				_ <u>~</u> _	├─-┼		<del></del>			· 	~
721061-10mm	_		6.84		MG		122/19				<del></del>		$-\dotplus$		<del></del>		·	
den -251061 lomms	LHAAPOY	·	4.63		WG		12214		<u> </u>	┧┟	-⊱-	<u> </u>				<del> </del>	<u> </u>	
smuol-160/22-145	LHAAPOY		4.63		w.C.		122/19	-	<del> </del>	-	<del>- }-</del>							
Smwo1-190122	LHHAP OY	4.45	463		we	1	12219				_ <u>X</u>		- <b>-</b>				ļ	
www.10-190122	LHAAP OY	6.79			wG	7	1/22/19	<del></del>		1	<del>_</del> }	<del> </del>						Ĺ
4mm09-190122-FD		6.50			uc		12214				₹.	<del> </del>					ļ <u></u>	
tumog-190122	LHAAPOY	6.50		j <u>-</u>	WG	السيد. ا	12219			┤╏	_X	<u> </u>						
10011=19017Z	LHAAPOY	2:13	5.36		WG	1	122/19			+	_ <u></u>							i [
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix		Date	Time (24hr)	I OF C	ANALYSIS	Perchlorate in Water by 6850		!			:		
-										Τ-							<del>  -</del>	<u> </u>
				j	į				Sample Con	inines	IxIIS ml HDPE, tce	Ţ <u>~~</u> Ţ	1313 KEC	DESTED	· ·			<del></del>
	SA	MPLE DE	FAILS	1	_ <del></del>	<del></del>	==		<del>-</del>	····- ·		ANAI	YSIS REC	pping Company				
Project Manager I						4-		ic municipe	281.575.2779	or 23	81.530.5656						Country	TOSM
Phone Number 7		- <del></del> -	- —	Country C	ISA	-		ostal Code			Country	TISA		Pestal Code	Concord 94320	<del></del>	State Country	CA
Postal Code, 7				State T				Cit	/ Salt Lake		State	UTAH	<u> </u>	Audress	4005 Port	Chicago High		way, Suite 200
[1	MB 202 Marshall			<del></del> -		-		Addies	s 960 W. LeVo	by Dr	lve			Mail Reports To	Susan Hua	<u>.</u>		
	203-B East Grand Avenu	<del></del> -			——.			Ema	il RJ.Modashia	@als	global.com		<u> </u>	Email Report To	Susan Hua		<del></del>	
	UHAAP-04							ab Contac	† R1 Modashia		<del></del>		I	mail Invoice T	) Ferilinvoices	@aptim.com		<u>·</u>
Project Number	Longhorn AAP						<del></del>	Lab Nam	LABORATO CIALS Laborat	RY				RUSH: VES Page 1 of OTHER INFO				
	PROJECT/CL(E)								T DAUGAA								: 11:	





# **Case Narrative**

Method: 6850 Client: ALS Laboratories (Houston, TX)

Analysis: Perchlorate Matrix: Water

**Analysis SOP:** LC-MS-CLO4 **ELMS Batch (HBN):** 2212 (231797) **ALS WO ID(s):** 1902253; 1902392

**General Set Information:** There were fourteen 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 <sup>18</sup>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.  $50\mu$ L 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 0.45 µm Syringe filters.

**Holding Times:** Holding times were met for all analyses.

**Dilutions:** Field samples 1902253007 and 1902392008 were analyzed and reported from 1:10 dilutions. Field samples 1902392002/03 were analyzed and reported from 1:100 dilutions. Field sample 1902392004 was analyzed and reported from a 1:1,000 dilution. The reporting limits have been adjusted accordingly.

**Method QC data:** The method blank (LMB 637599) was less than 1/2 the CRDL. The recovery for the LCS (637600) was within acceptable parameters.





MS/MSD Analysis: MS/MSD was performed on samples 1902392006/07 (Client ID's: LHSMW01-190122). 5.0μl of Working Standard Solution Horizon ID <u>43701</u> was added to 10.0mL of sample preparation. The spike target was 5.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  $\mu$ g/L. Results were calculated in  $\mu$ g/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve ( $\mu g/L$ )

B = Dilution performed at time of analysis

**Miscellaneous Comments:** These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS -637597) is reported from the analysis of the Laboratory Control Sample (LCS -637600) at a level  $4.0\mu g/L$ . Samples 1902253007 and 1902392002 failed the 50-150% method requirement for ISTD recovery. These samples were re-prepped, re-analyzed and reported.

Thomas Bosch January 29, 2019
Analyst Date





RJ Modashia

Suite 210

ALS Environmental (Houston)

10450 Stancliff Road

Houston, TX 77099

# **ANALYTICAL REPORT**

Report Date: January 29, 2019

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1902392** 

Project ID: HS19011046 Purchase Order: HS19011046 Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
04WW11-190122	1902392001	01/22/19	01/23/19	LHAAP-04
04WW09-190122	1902392002	01/22/19	01/23/19	LHAAP-04
04WW09-190122-FD	1902392003	01/22/19	01/23/19	LHAAP-04
04WW10-190122	1902392004	01/22/19	01/23/19	LHAAP-04
LHSMW01-190122	1902392005	01/22/19	01/23/19	LHAAP-04
04WW07-190122	1902392008	01/22/19	01/23/19	LHAAP-04
04WW01-190122	1902392009	01/22/19	01/23/19	LHAAP-04
Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
LHSMW01-190122-MS	1902392006	01/22/19	01/23/19	LHAAP-04
LHSMW01-190122-MSD	1902392007	01/22/19	01/23/19	LHAAP-04

\*Client QC is reported as part of the Quality Control results report, if requested.

ALS 5

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992 ALS GROUP USA, CORP. An ALS Limited Company

www.alsglobal.com



## ANALYTICAL REPORT

Workorder: 34-1902392

Client: ALS Environmental

(Houston)

**Project Manager:** Kevin W. Griffiths

### **Analytical Results**

Sample ID: **04WW11-190122** Sampling Site: LHAAP-04 Collected: 01/22/2019

Lab ID: 1902392001 Media: 125 mL Nalgene Received: 01/23/2019

Matrix: Water Sampling Parameter: NA

Watth. Water		ournpling i	aramotor: 10 t						
Analysis Method - EPA 6850, DoD QSM									
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04			
			Batch: ELMS/22	12 (HBN: 231797)	Percent	Solid: NA			
			<b>Analyzed:</b> 01/28/20	19 11:39	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: **04WW09-190122** Sampling Site: LHAAP-04 Collected: 01/22/2019

Lab ID: 1902392002 Media: 125 mL Nalgene Received: 01/23/2019

Matrix: Water Sampling Parameter: NA

**Preparation:** Not Applicable Analysis: EPA 6850, DoD QSM Water **Instrument ID:** LCMS04 Batch: ELMS/2212 (HBN: 231797) Percent Solid: NA Analyzed: 01/28/2019 14:11 **Report Basis: Wet Analyte Dilution** Result (ug/L) DL (ug/L) LOD (ug/L) LOQ (ug/L) Qual Perchlorate 100 400 100

Sample ID: **04WW09-190122-FD**Lab ID: 1902392003

Sampling Site: LHAAP-04

Collected: 01/22/2019

Received: 01/23/2019

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/2212 (HBN: 231797) Percent Solid: NA Analyzed: 01/28/2019 12:07 **Report Basis: Wet Analyte** Result (ug/L) DL (uq/L) LOD (uq/L) LOQ (uq/L) **Dilution** Qual Perchlorate 100 2300 100 200

Sample ID: **04WW10-190122** Sampling Site: LHAAP-04 Collected: 01/22/2019
Lab ID: 1902392004 Media: 125 mL Nalgene Received: 01/23/2019

Matrix: Water Sampling Parameter: NA

### Analysis Method - EPA 6850, DoD QSM

Preparation: Not ApplicableAnalysis: EPA 6850, DoD QSM WaterInstrument ID: LCMS04Batch: ELMS/2212 (HBN: 231797)Percent Solid: NAAnalyzed: 01/28/2019 14:25Report Basis: Wet

	Α	nalyzed: 01/28/201	19 14:25	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: 34-1902392

Client: ALS Environmental

(Houston)

**Dilution** 

**Dilution** 

Qual

Qual

U

Project Manager: Kevin W. Griffiths

LOQ (ug/L)

LOQ (ug/L)

4.0

### **Analytical Results**

Analyte

**Analyte** 

Perchlorate

Perchlorate

Sample ID: <b>LHSMW01-190122</b>	Sampling Site: LHAAP-04	Collected: 01/22/2019
Lab ID: 1902392005	Media: 125 mL Nalgene	Received: 01/23/2019
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/2212 (HBN: 231797)	Percent Solid: NA
	Analyzed: 01/28/2019 12:49	Report Basis: Wet

1.0

LOD (ug/L)

LOD (ug/L)

20

DL (ug/L)

Sample ID: <b>04WW07-190122</b>	Sampling Site: LHAAP-04	Collected: 01/22/2019
Lab ID: 1902392008	Media: 125 mL Nalgene	Received: 01/23/2019
Matrix: Water	Sampling Parameter: NA	
Analysis Method - EPA 6850, DoD QSM		
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Water	Instrument ID: LCMS04
	<b>Batch:</b> ELMS/2212 (HBN: 231797)	Percent Solid: NA
	Analyzed: 01/28/2019 13:30	Report Basis: Wet

Sample ID: 04WW01-190122	Sampling Site: LHAAP-04	Collected: 01/22/2019
Lab ID: 1902392009	Media: 125 mL Nalgene	Received: 01/23/2019
	0 " D	

DL (ug/L)

Matrix: Water		Sampling P	arameter: NA						
Analysis Method - EPA 6850, DoD QSM									
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04			
			Batch: ELMS/22	212 (HBN: 231797)	Percent	Solid: NA			
			Analyzed: 01/28/20	19 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			

### Comments

### Quality Control: EPA 6850, DoD QSM - (HBN: 231797)

Field samples 1902253007 and 1902392008 were analyzed and reported from 1:10 dilutions. Field samples 1902392002/03 were analyzed and reported from 1:100 dilutions. Field sample 1902392004 was analyzed and reported from a 1:1,000 dilution. The reporting limits have been adjusted accordingly.

## Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Result (ug/L)

Result (ug/L)

110

ND

Method	Analyst	Peer Review	
EPA 6850, DoD QSM	/S/ Thomas Bosch	/S/ Stephen Brose	
	01/29/2019 08:13	01/29/2019 13:52	





## ANALYTICAL REPORT

Workorder: 34-1902392

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		
	lowa		





#### ANALYTICAL REPORT

Workorder: 34-1902392

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: 1902392

Limits: Client SOW/Contract Specified Preparation: NA Analysis: EPA 6850, DoD QSM

Basis: DoD QSM Batch: NA Batch: ELMS/2212 (HBN: 231797)

Prepared By: NA Analyzed By: Thomas Bosch

#### **Blank**

LMB: 637599

Analyzed: 01/28/2019 09:49

Units: ua/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

#### **Laboratory Control Sample**

LCS: 637600

Analyzed: 01/28/2019 09:21

Dilution: 1 Units: ug/L

Analyte	Result	Target	% Rec	QC L	imits
Perchlorate	3.81	4.00	95.3	78.8	123.8

#### Matrix Spike - Matrix Spike Duplicate

 Sample:
 1902392005
 MS:
 1902392006
 MSD:
 1902392007

 Analyzed:
 01/28/2019
 12:49
 1902392007
 Analyzed:
 01/28/2019
 14:39
 1902392007
 Analyzed:
 01/28/2019
 13:16

 Dilution: 1
 Dilution: 1
 Dilution: 1

 Units: ug/L
 Units: ug/L
 Units: ug/L

Result % Rec **QC Limits** Result % Rec **RPD QC Limits Analyte** Result **Target** Perchlorate ND 4.18 105 78.8 123.8 3.76 94.0 10.7 0.0 20.0

#### **Continuing Calibration Verification**

CCV: 637596 CCV: 637601 CCV: 637602

Analyzed: 01/28/2019 09:06 Analyzed: 01/28/2019 12:21 Analyzed: 01/28/2019 14:53

 Units: ug/L
 Units: ug/L
 Units: ug/L

 Criteria: ± 15%
 Criteria: ± 15%
 Criteria: ± 15%

% Rec. **Analyte** Result **Target** % Rec. Result **Target** Result **Target** % Rec. Perchlorate 26.0 25.0 104 26.5 25.0 26.9 25.0 106 108

#### **Interference Check Sample**

ICSA: 637598

**Analyzed:** 01/28/2019 09:35

Units: ug/L Criteria: ± 30%

 Analyte
 Result
 Target
 % Rec.

 Perchlorate
 3.84
 4.00
 95.9

#### **Comments**

Field samples 1902253007 and 1902392008 were analyzed and reported from 1:10 dilutions. Field samples 1902392002/03 were analyzed and reported from 1:100 dilutions. Field sample 1902392004 was analyzed and reported from a 1:1,000 dilution. The reporting limits have been adjusted accordingly.





#### Quality Control Sample Batch Report

#### **Analysis Information**

Workorder: 1902392

Limits: Client SOW/Contract Specified Preparation: NA

Basis: DoD QSM

Batch: NA

Batch: ELMS/2212 (HBN: 231797)

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
01/29/2019 10:02	01/29/2019 13:48

#### **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



	OS TVNOLLYDDY			All		042mo) -190127	04ww07-190122	18-18-18-18-18-18-18-18-18-18-18-18-18-1	145mmol-140122-145	145 MW01-190122	221061-01mm10	04mm09-190/22-1-D	04mm0q-190122	22.16 1-110mph	Sample ID		- The ship of the state of the	A PARENTIC LICENSE LI LISA BILINIA 103 POLITA	Phone Number 713.243.7264	Postal Code 75670	City		Address		Project Number 501032	Facility Name Longhorn AAP	190239	
: * · · · · · · · · · · · · · · · · · ·	ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	A STATE OF THE STA		The state of the s		つるまでって	CHAPPOY	- CHARPOT	CHARON ON	こままのイ	_	一个是多个	マモチの子	CHAPOT	Location			TAYGGII OTTYASTAY	713.243.7264	75670	City Marshall	PMB 202	1203-B East Grand Avenue	LHAAP-04	501032	Longhorn AAP	PROJECT	_
	UCTIONS					7.33 7.5%	6.63 6.84	F. 12 7:63	K45 4.63	4.45 463	6.79 7.01	P.30 6.74	6.50 6.74	5.3 5.36	Start End Depth Depth D			SAMPIE DETAILS		С	Sı			And the second development dev			PU4-JAINZU19-ALSSAITLARC-1901-22	
Just Beesing	RELINQUISHED BY/AFFILIATION	-			1472/1	E or	EQ.	23	En	3	ξ	E.	50	WG.	Depth Unit Matrix					Country USA	State TX						tLake-1901-22	
BHATY	//AFFILIATION	The state of the s				1/22/19 1230	1/22/19 1140	1/22/14 1050	112219 1050	1/22/19/1050	1/22/19 0955	1/22/19 0905	1/22/19 090S	12210 0820	Time Date (24hr)				Phone Number 281.575.2279 or	Postal Code 84123	City		Address	Email	Lab Contact RJ Modashia	Lab Name		
1/22/19 1400	DATE/TIME		19.40								7				# Of Oont ANALYSIS	े हुन संदेश	Sample Container IX and Presavatives HD		281.575.2279 or 281.530.5656		City Salt Lake State		Address 960 W. LeVoy Drive	Email RJ.Modeshie@alsglobel.com	RJ Modashia	Lab Name ALS Laboratories	TURNAROUND TIME: 5 B	18698
abelut	ACCEPTED BY/AFFELIATION		,			×	×	~	<b>X</b>	<b>X</b>	×	<b>X</b>		×	Water by 68:		Ix125 ml HDPE, Ice	ANAT VOICE	0.5656	lгу	e UTAH		and the state of t	.com			5 BUSINESS DAYS	C#/8
O	*FXLATION																TO VOLUME TO TO A CONTRACTOR	Shipping Company		Postal Code 94520	City	Address 4	Mail Reports To Susan Huang	Email Report To s	, A.S. (1900)	Email Invoice Tols		Chetabi
water ho	DATE/TIME																			94520	City Concord	Address 4005 Port Chicago Highway Suite 200	Susan Huang	Email Report To Susan Buang@antim com	opening of the state of the sta	Email Invoice To Fedinyoices@antim.com	ige	Ch
9 45	aMI.							Pag	e 2	5 of	125	5								á	State CA	hway Suite 200					1 of	



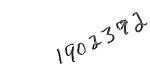
# ALSCOCV3.1

Wed, 01/23/19 1:24 PM

# ALS Environmental chain-of-custoby

Pro	Project / Job / Task: 501032		Split:	Workord	Workorder ID: 1902392	Level: ENV_LVL4	4			Requested Analysis	ted A	nalys	<u>:</u>		
	Client: ALS Environmental (Houston)	mental (Houston)			Account: 8101	Type: 125Poly									
S	Comments:			•		Preservatives		MS							
			and the second s			7000		50, DoD Q		 			- H		
	Collect					Containers		89 Y43				-			
Item	Item Date/Time	Sample ID	Lab ID	၁ဗ	Matrix	) (s) <u>aı</u>	Count						_		
-	01/22/2019 08:20	04WW11-190122/LHAAP04	1902392001		Water	٨	-	٨							T
2	01/22/2019 09:05	2 01/22/2019 09:05 04WW09-190122/LHAAP04	1902392002		Water	4	-	∢							
က	01/22/2019 09:05	04WW09-190122-FD/LHAAP04	1902392003		Water	4	-	4							T
4	01/22/2019 09:55	4 01/22/2019 09:55 04WW10-190122/LHAAP04	1902392004		Water	А	-	4							:.
5	01/22/2019 10:50	LHSMW01-190122/LHAAP04	1902392005		Water	4	_	∢	2		_				
9	01/22/2019 10:50	LHSMW01-190122-MS/LHAAP04	1902392006	MS	Water	А	-	∢	3.0						a 12
7	01/22/2019 10:50	LHSMW01-190122-MSD/LHAAP04	1902392007	MSD	Water	٨	-	4				-			
∞ Pa		01/22/2019 11:40 04WW07-190122/LHAAP04	1902392008		Water	А	-	∢			- 1- 1 - 1- 1			2 4 5 - 2 4	
6 ige	01/22/2019 12:30	04WW01-190122/LHAAP04	1902392009		Water	А	-	A							T
₽ 27		· · · · · · · · · · · · · · · · · · ·													

		AND THE PROPERTY OF THE PROPER		SAMPLE PREI	PARATION / AI	SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY	USTODY
ANIGIAC	N FIELD SAME	OBIGINAL EIELD SAMPLE CHAIN-OF-CUSTODY	YOC	Sample Prep / Analysis for:		Lab Notebook No.:	
	ייר ורבל לאווי		1	Prepared / Analyzed by:		Date / Time:	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location	Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Schmith, Marianne	01/23/2019 09:45	ALS Sample Receiving	Sample Login				
J. M. M. A.	25 pod 2100	·	Storalle				
R.33.1 OIS	cs: 51/bijle	0137/19/13:30 C. ESOS	685%				
A CONTRACTOR OF THE CONTRACTOR			•				
					27100		
							,
The state of the s			The state of the s				





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: 10639

#### **SUBCONTRACT TO:**

ALS Laboratory Group 960 LeVoy Dr

Salt Lake City, UT 84123

**Phone:** +1 801 266 7700

CUSTOMER INFORMATION:

**Contact:** ALS Houston 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:** HS19011046 **TSR:** Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS R	EQUESTED	DI	UE DATE
1.	HS19011046-01	04WW11_190122	Groundwater	22 Jan 2019 08:20
	SUB_Perch-685	50	06	Feb 2019
2.	HS19011046-02	04WW09_190122	Groundwater	22 Jan 2019 09:05
	SUB_Perch-685	50	06	Feb 2019
3.	HS19011046-03	04WW09_190122-FD	Groundwater	22 Jan 2019 09:05
	SUB_Perch-685	50	06	5 Feb 2019
4.	HS19011046-04	04WW10_190122	Groundwater	22 Jan 2019 09:55
	SUB_Perch-68!	50	06	5 Feb 2019
5.	HS19011046-05	LHSMW01_190122	Groundwater	22 Jan 2019 10:50
	SUB_Perch-68!	50	06	5 Feb 2019
6.	HS19011046-06	04WW07_190122	Groundwater	22 Jan 2019 11:40
	SUB_Perch-68	50	06	5 Feb 2019
7.	HS19011046-07	04WW01_190122	Groundwater	22 Jan 2019 12:30
	SUB_Perch-68	50	06	5 Feb 2019

Comments:





#### **Subcontract Chain of Custody**

COC ID: 10639

Please analyze for the analysis listed above. Send report to the emails shown above.

HS19011046-05 MS/MSD

**QC Level:** DOD IV (DoD Data Package)

Relinquished By:	Date/Time:
Received By:	Date/Time:
Cooler ID(s):	Temperature(s):



Page 2 of 2

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR) COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle) Project/Task/Site: Client Name: 09:45 01/23/2019 Number of Coolers Received: Date/Time of Receipt: Acceptable/Unacceptable Temperature Control: Present/Not Included Condition of Coolers: Cooler Custody Seals: Present/Absent/NA Ontrol/Between Samples: Intact/Brøken/NA Location Temp Taken: Present/Absent/NA Container Custody Seals: Intact/Broken/NA) Are all temperatures within Yes/No/NA project specific guidelines? Yes/No/NA Ice Present: VOA Headspace Present? Yes/No/NA Frozen/Melted/NA NO3/NO2 Yes/No/NA Yes/No/NA Total Phenolics Yes/No/NA pH Check Metals Performed: Yes/No/NA Oil & Grease Yes/No/NA Yes/No/NA TPH-418.1 Cyanide **Total Phosphorous** Yes/No/NA Yes/No/NA Sulfide Yes/No/NA COD Yes/No/NA Yes/No/NA Gross A.B, Gamma Spec Yes/No/NA TKN Ammonia Cooler Cooler Cooler DCL Cooler No. Temp. DCL Cooler No. Temp. Received DCL Cooler No. Temp. Received Received °C C19 C19 C19 °C °C C19 8 C19 °C C19 2 °C C19 °C 6 C19 °C 3 C19 Taken By: CLIENT-RELATED INFORMATION ☐ Insufficient Sample ☐ Missing Cooler ☐ Missing Samples/Bottles ☐ Incorrect Preservation Volume pH Criteria Not Met ☐ Broken/Leaking Samples ☐ Cooler Conditions Chain of Custody Residual Chlorine Present ☐ Incorrect Bottle Type ☐ Missing Paperwork Problems ☐ Head Space in Bottles Cooler Temperatures Out Missing/Incorrect Bottle Other: Labels of Range BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN: No 🗆 YES 🗌 Client Notified? Response Required Within 24 Hours PROJECT MANAGEMENT **PROJECT MANAGER COMMENTS:** Date: ALS Project Manager: Returned to Sample Receipt by: Revised 01/01/2018 CRIR.doc



# Must Deliver Next Business Day Time and Tempature Sensitive!

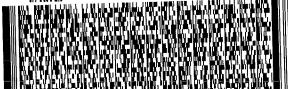
ORIGIN ID:SGRA (903) 930-6193 SCOTT BEESINGER APTIM ENVIROMENTAL & INFASTRUCTURE 1203-B EAST GRAND AVE PMB 202 MARSHALL, TX 75670 UNITED STATES US

SHIP DATE: 15JAN19 ACTUST: 1.00 LB MAN CAD: 300130/CAFE3211 DIMS: 14x11x10 IN

SAMPLE RECEIVING **ALS ENVIRONMENTAL** 960 W LEVOY DRIVE

**SALT LAKE CITY UT 84123** 

(801) 266-7700 REF: LHAAP-4-BO 63312-RJ



FedEx Express

FecEx. TRK# 0221 4809 7830 0627

RETURNS MON - SAT WED - 23 JAN 10:30A PRIORITY OVERNIGHT

**AX BTFA** 

84123 SLC





# :h Worklist -

Batch: ELMS/ 2212 Rule: EPA 6850, DoD QSM Water

Workorder: 1902253 [ENV\_LVL4] Workorder: 1902392 [ENV\_LVL4]

Created: 1/28/2019 08:41

Analyst: T. Bosch

Instrument: Status:

Ş



Pos LabID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx Container	Procedure	Expire Mgr Date	e Due Date	Run Date
1 637596	CCV for HBN 231797 [ELMS/2212]				CCV	3	E685041C3Q	5311	1/29/2019	
2 637597	RLVS for HBN 231797 [ELMS/2212				RLVS	9	E685041C3Q	5311	1/29/2019	
3 637598	ICS for HBN 231797 [ELMS/2212]	and a facility of the facility of the control of th	يقوي ومستوي والمراجع والمراجع والمستوية والمستوية والمراجع والمراع		ICS	3	E6850D3Q	5311	1/29/2019	
4 637599	LMB for HBN 231797 [ELMS/2212]				LMB	3	E6850Q413Q	5311	1/29/2019	
5 637600	LCS for HBN 231797 [ELMS/2212]	des vier MAD Sin RD Genetico.	ene Kanik Alia Moli sprincia de presidente de mante y de la del		rcs	3	E6850Q413Q	5311	1/29/2019	
6 1902253001	04WW03_190121				SAMPLE	3 1902253001-A	E6850Q41.3	5480 2/18/2019	119 1/29/2019	
7 1902253002	04WW02_190121		o company a company of		SAMPLE	3 1902253002-A	E6850Q41.3	5480 2/18/2019	1/29/2019	1
85 1902253003	04WW02_190121-FD				SAMPLE	3 1902253003-A	E6850Q41.3	5480 2/18/2019	1/29/2019	
902253004 902253004	04WW06_190121				SAMPLE	3 1902253004-A	E6850Q41.3	5480 2/18/2019	1/29/2019	
2 <sup>9</sup> 1	LHSMW02_190121			E	SAMPLE	3 1902253005-A	E6850Q41.3	5480 2/18/2019	1/29/2019	
<b>I</b> 1902253006	outs interaction which of it from an efficient and the second and the proposition of the second and the second				SAMPLE	3 1902253006-A	E6850Q41.3	5480 2/18/2019	1/29/2019	
12 1902253007	04WW05_190121				SAMPLE	3 1902253007-A	E6850Q41.3	5480 2/18/2019	1/29/2019	
13 1902392001	04WW11-190122	for its of the first frequency and the lands	algener Werfelden obereichte der Werfel in Werter		SAMPLE	3 1902392001-A	E6850Q41.3	5480 2/19/2019	1/30/2019	
14 1902392002	04WW09-190122				SAMPLE	3 1902392002-A	E6850Q41.3	5480 2/19/2019	1/30/2019	
15 1902392003	The included particular is the factor of the contract of the		Argamenta ya kendakisa Munda ya masa		SAMPLE	3 1902392003-A	E6850Q41.3	5480 2/19/2019	1/30/2019	
16 637601	CCV for HBN 231797 [ELMS/2212]				CCV	9	E685041C3Q	5311	1/29/2019	
17 1902392004	04WW10-190122			and the first of t	SAMPLE	3 1902392004-A	E6850Q41.3	5480 2/19/2019	1/30/2019	
18 1902392005	LHSMW01-190122				SAMPLE	3 1902392005-A	E6850Q41.3	5480 2/19/2019	719 1/30/2019	
19 1902392006	LHSMW01-190122-MS				MIS	3 1902392006-A	E6850Q413Q	5480	1/29/2019	
.20 1902392007	LHSMW01-190122-MSD				MSD	3 1902392007-A	E6850Q413Q	5480	1/29/2019	
21 1902392008	04WW07-190122	A A consist of MM characters and attended and of the characters and the characters are characters and the characters and the characters are characters are characters and the characters are characters and the characters are characters are characters and the characters are characters and the characters are characters are characters and the characters are characters are characters and the characters are characters are characters are characters are characters and the characters are characters are characters are characters are characters are character			SAMPLE	3 1902392008-A	E6850Q41.3	5480 2/19/2019	019 1/30/2019	
1902392009	04WW01-190122				SAMPLE	3 1902392009-A	E6850Q41.3	5480 2/19/2019	019 1/30/2019	
23 637602	CCV for HBN 231797 [ELMS/2212]	olumbikanilibida peropet menteroponistisa	anapadi p.P.C didistrania (n.P.C physianapais bendi		CCV	3	E685041C3Q	5311	1/29/2019	



**Environmental Division** 

# Analytical Documentation



ALS Work Order #'s & Sample #()'s: 1902253 (001-07); 1902392 (001-09)

ELMS Batch/HBN ID: 2212 (231797)

Prep Date: 01/27/2019 Analysis Date: 01/27/2019 Analyst: T. Bosch

Analyte: Perchlorate Matrix: Water Method: 6850

Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\JAN\15JAN19D.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.

Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot AH015-4)/0.1% glacial acetic acid (JT-Baker Lot 04802). REAGENTS:

Eluent B1: 95% ACN (B&J Lot AH015-4)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 43730. Dilutions of Working Standard Solution ID 43702 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 10/08/2018, sequence 08OCT18D.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.

Fragmentor: 160 Output Gain: 3 Injection Volume: 30μL Online Acquisition Method: <u>CLO4-AQN.M</u> Instrument ID: LCMS04 Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

11011	O K L K L K L K L K L K L K L K L K L K
Time (min.)	Flow (mL/min)
0	0.50
5.0	0.50
5.3	0.25
10.0	0.25
10.5	0.50
12.0	0.50

QC DATA: 5.0μL of QC Solution Horizon ID 41830 was used for LCS 637600; Target = 5.0μg/L. ASTM type II water was used for LMB 637599.

MS/MSD: MS/MSD were performed on samples 1902392006/07 (Client ID's: LHSMW01-190122). 5.0µl of Working Standard Solution  $\overline{\text{Horizon ID}}$  43701 was added to 10.0mL of sample preparation. Spike target = 5.0 $\mu$ g/L.

#### **COMMENTS:**

- 1) Results reported in μg/L. Field samples 1902253007 and 1902392008 were analyzed and reported from 1:10 dilutions. Field samples 1902392002/03 were analyzed and reported from 1:100 dilutions. Field sample 1902392004 was analyzed and reported from a 1:1,000 dilution. The reporting limits have been adjusted accordingly. Samples 1902253007 and 1902392002 failed the 50-150% method requirement for ISTD recovery. These samples were re-prepped, re-analyzed and reported.
- 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\2019\JAN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
- 4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\231797-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
- 5) The Reporting Limit Verification Standard (RLVS 637597) is reported from the analysis of the Laboratory Control Sample (LCS -637600) at a level 4.0µg/L.



#### 5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria	Analyst Initials	Reviewer Initials
Batch(es)/SDG: ELMS: 2212 HBN: 231797		
Sample Set IDs if Applicable: 1902353 190392		
Calibration standards analyzed and meets criteria	TIS	56
Standards traceability checked and meets criteria	78	53
Standard curve coefficients evaluated and meet criteria	TB	53
ICVs analyzed and meet acceptance criteria	TB	565
CCVs analyzed and meet acceptance criteria	TB	56
Method Blanks analyzed and meet acceptance criteria	TB	55
Retention Time Windows checked	TB	56
For method 8081A, Endrin/DDT Breakdown is checked for		
compliance		
Surrogate recoveries checked and appropriately addressed		
Method Preparation Blanks analyzed and meet acceptance criteria	TB	35
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable		
flags applied on QC reports; LCSs analyzed and meet acceptance	TB	56
criteria when performed		
RLVS analyzed	TB	137
Preparation and analysis hold times met	TB	1-017
Preparation deviations and re-preparations noted when performed	TB	57
Analysis deviations and re-analyses noted when performed	TB	513
Sample dilution factors noted on reports	TB	1505
Electronic records in HBN transcription accuracy and completeness	1_	
checked	TB	
Preparation and analysis calculations checked	TB	
NCRs are completed as necessary NC/CAR#	<u> </u>	
Report forms are complete and accurate	TB	15/2
Manual integrations checked	TB	197





#### Working Standard - CLO4 WRK

Description = 6850 WKG Std 100.ug/L CLO4 WRK

Standard: 43702

Created By: Thomas Bosch Create Date: 09/18/2018 02:09PM Amount: 10 mL

MFG: ALS/SLC

Expires: 09/18/2019

MFG Lot: TNB: 09/18/2018 Pipette ID: Not Provided

Usable: Yes Lab Lot: CLO4 WRK

- 1	Nutriovided			Concent	ration
Pos.	Analyte	Name		estrogical actions are	0.1 ug/mL
1	14797-73-0	Perchlorate		60.4.5. SSB-4.5	
Composi	ition		L	Volume	Expires
Standard	Standard ID	Description	Lab Lot ID	9.9 mL	11/07/2025
109	ASTM H2O	ASTM Type II Water	LAB 109		
43701	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	09/18/2019





#### Constituent

#### Stock Standard - CLO4 STOCK

Part ID: IC-PER-10X-1	Standard: MFG: MFG Lot:	AccuStandard 218065075	Created By: Thomas Bosch Create Date: 09/17/2018 09:09AM	Amount: 100 Expires: 07/2 Usable: No Lab Lot: CLC	5/2020
Pos Analyte Name	Part ID:				Concentration
		14797-73-0	Perchlorate		. 1000 ug/n





#### Constituent

#### Solvent Standard - ASTM H2O

Standard: 109  MFG: DCL In House  MFG Lot: Not Provided  Part ID: Not Provided	Created By: ALS Support (Lims) Create Date: 10/06/2005 09:10AM	Amount: 1000 L Expires: 11/07/2025 Usable: Yes Lab Lot: LAB 109
os. Analyte	Name	Concentration





#### Constituent

#### Working Standard - CLO4 INT

MFG Lot:	: 43701 : ALS/SLC : TNB: 09/18/2018 : Not Provided	Created By: Thomas Bos Create Date: 09/18/2018		Usable: `	09/18/2019	
Pos.	Analyte	Name			Concent	
1	14797-73-0	Perchlorate	and the first state of the first			10 ug/mL
Compos	ition					Expires
Standard	Standard ID	Description	Lab Lot ID		Volume ∵	40 MM CO CAMAGA
109	ASTM H2O	ASTM Type II Water	LAB 109		9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STO	СК	0.1 mL	07/25/2020





開発を発表したます。 Participate Advisor Advis

Milado de como o como do encomo porte destado de sacione e mos estado destado, por cambio de como encomo encomo

## Working Standard - CLO4 QC WRK

	C WRK		Description - 6			) 100ug/E
Standard: MFG:		Created By: Thomas Bosch Create Date: 05/09/2018 10	05AM	Usable:	05/09/2019	:K 100.ua/L
	Not Provided			Lab Lot.	Concent	
Pos.	Analyte	Name			9 E   647 / C	100 ug/L
1	14797-73-0	Perchlorate				
Composi			Lab Lof ID		Volume	Expires
Standard.	Standard ID	Description	LAB 109		9.9 mL	11/07/2025
109	ASTM H2O	ASTM Type II Water	CLO4 QC INT 10	O ua/mL	0.1 mL	05/09/2019
41930	CI:O4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC IIVI			<u> </u>





TOTAL STEEL STEEL TO A CONTROL OF THE PROPERTY OF THE PROPERTY

Light Personal telephone (1) Second of the s

#### Constituent

## Working Standard - CLO4 QC INT

CLO4 Q	CINT		ription = 6850.1	Amount '		
Standard:	41830 ALS/SLC	Created By: Thomas Boso Create Date: 05/09/2018 1	41	Expires:	05/09/2019	
MFG Lot:	TNB: 05/09/2018			Usable: ` Lab Lot	tes CLO4 QC INT	10.ug/mL
	Not Provided				Concentr	ation
Pos.	Analyte	Name		5 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 -		10 ug/mL
1	14797-73-0	Perchlorate	2000014			洲洲洲
Composi	tion-		Lab Lot ID		Volume .	Expires
Standard.	Standard ID	Description	LAB 109		9.9 mL	11/07/2025
109	ASTM H2O	ASTM Type II Water	CLO4 QC STO	СК	0.1 mL	03/31/2020
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	10104 00010			





#### Constituent

## Solvent Standard - ASTM H2O

Solvent Standard - Aorn		escription - ASTM Type II Water
ASTM H2O Standard: 109 MFG: DCL In House MFG Lot: Not Provided	Created By: ALS Support (Lims) Create Date: 10/06/2005 09:10AM	Amount: 1000 L Expires: 11/07/2025 Usable: Yes Lab Lot: LAB 109
Part ID: Not Provided	Name	Concentration
Pos: Analyte  Solvent - Analyte(s) not applicable	name	





State of the original and the continuent of the continuent of the second of the continuent of the cont

#### Constituent

### Stock Standard - CLO4 QCSTOCK

Stock Stationard	Description	5850 QC Stock STD 1,000 ug/mL
CLO4 QCSTOCK Standard: 36748 MFG: Ultra Scientific MFG Lot: CP-0860	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
Part ID: ICC-013		Concentration
Pos. Analyte 14797-73-0	Perchlorate	1000 ug/mL





#### Working Standard - CLO4ISTDWRK

MFG Lot:	: 43730 : ALS/SLC : TNB: 05/09/2018 : Not Provided	Created By: Thomas I Create Date: 09/20/20 Verified By: Thomas I Verify Date:	18 09:09AM Exp Bosch Us	ount: 25 pires: 09/ sable: Yes p Lot: CL	20/2019	RK
Pos.	Analyte	Name			Concenti	tage to the second second second
<u></u>	14797-73-0-8385	Perchlorate 83:85 Ratio		•		1000 ug/L
2	14797-73-0-89	Perchlorate 89	and the second s	onet Erone iinle	All To All The Control	1000 ug/L
Compos	ition 🔭 🛴					
Standard	Standard ID	Description	Lab Lot ID	Vol	ume	Expires
	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK		0.25 mL	04/28/2026





#### Constituent

#### Stock Standard - CLO4ISTDSTK

14797-73-0-8385

14797-73-0-89

Perchlorate 89

Description - Perchlorate ISTD Stock CLO4ISTDSTK Amount: 1 mL Created By: Thomas Bosch Standard: 43729 Expires: 04/28/2026 Create Date: 09/20/2018 09:09AM MFG: Cambridge Isotope Usable: Yes Verified By: Thomas Bosch MFG Lot: SDFF-012A Lab Lot: CLO4ISTDSTK Verify Date: Part ID: OLM-7310-S Concentration Name Analyte Pos. 100 ug/mL Perchlorate 83:85 Ratio



100 ug/mL



# Certificate of Analysis



#### ISO Guide 34 Reference Material

Lot Issue Date:

29-Feb 2016

Expiration Date:

Product Number: ICC-013

31-Mar 2020

Lot Number:

CP-0860

Product Name:

Perchlorate IC Standard

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

perchiorate

potassium

RIM07987

100

1001±5 μg/mL

976±6 µg/mL

LET'S Company of A Society of management

NIST SRM 3141A; ICP-OES

perchlorate Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

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.

The true value is reported, with its uncertainty value calculated at the 95% confidence level.

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.

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.

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.

Refer to the Safety Data Sheet for information regarding this RM.

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.







# 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

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.





125 Market Street New Haven, CT 06513 USA



Tel (203)786-5290 Fax (203)786-5287 www.AccuStandard.com

# CERTIFICATE OF ANALYSIS

S



#### AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1 Description: Perchlorate Standard Element: Perchlorate (ClO<sub>4</sub>)

SRM: Ind. Std. Lot: 218065075 Matrix: Water

Hazards: Refer to SDS for complete safety information

Date Certified: Jun 25, 2018 Expiration: Jul 25, 2020 Sample Size: 100 mL Components: 1

Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes Included on ISO 17034 Scope of Accreditation: Yes

Signal Word: None

SRM#

Prepared Concentration (µg/mL)

CIO<sub>4</sub>

Component

Perchlorate

Ind. Std.

· 1000

The gravimetric uncertainty for this product is ±0.24%.

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 delonized 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 NST. Test No. 822-275872-11

All bottles are trible rinsed with deionized water prior to use,

Shake bottle prior use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the acciting 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

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.



Page 1 of 1





## Cambridge Isotope Laboratories, Inc.

# Certificate of Analysis

Quality Standards: 150 Guide 34 · ISO/IEC 17025 · ISO 13485 · cGMP



Product Name:

(Isotopic Label & Enrichment Specification)

PERCHLORIC ACID, SODIUM SALT (1804, 90%+) 100 UG/ML IN WATER

Lot Number:

SDDG-013

Catalog Number:

OLM-7310-S

#### Product Information

Chemical Purity Specification:

Labeled CAS Number:

Unlabeled CAS Number:

:\*WM

Chemical Formula:

Storage: Stability: >98%

NA

7601-89-0 130.4

NaCl<sup>‡</sup>O4

Store at room temperature away from light and moisture.

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 of erwise 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.

Approved by: T. J. Edursley

Timothy I Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date

2/27/2014

Expiration Date

2/27/2024

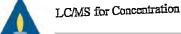
Concentration Based on Gravimetry

102 µg/mL

Chemical Purity of Neat Material(s)

98%

 $109.4 \pm 2.8 \,\mu \text{g/mL} (k=2)$ 



For isotopically labeled compounds, MW listed is for the fully enriched product.



#### **Environmental Division**

# **Raw Data**



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	Ini	SampleType	Run	Perchlorate	Perchlorat	Perchlorate
# 3				201760		Area	RT	Amount
	-							
,	* 637596 CCV@25	Vial 71	1 '	Control	' 1 <sup>'</sup>	3.12100e6	9.015	25.95102
	* 637600 QC@4.0	Vial 72	1	Control	2	4.13390e5	8.849	3.81271
	* 637598 ICS@4.0	Vial 73	1	Control	3	4.96412e5	9.081	3.83557
,	* 637599 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
,	* 1902253001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
. 7	* 1902253002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
7	* 1902253003	Vial 77	1	Sample	7	0.00000	0.000	0.00000
7	* 1902253004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
7	* 1902253005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
3	* 1902253006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
	* 1902253007 10X	Vial 81	1	Sample	11	1.57986e6	8.971	79.67959 RE
•	* 1902392001	Vial 82	1	Sample	12	4.27875e4	8.564	5.29415e-1
	* 1902392002 100	Vial 83	1	Sample	13	4.30851e6	9.025	2083.70176 RE
. 1	* 1902392003 100	Vial 84	1	Sample	14	3.95123e6	9.042	2283.02829
	* 637601 CCV@25	Vial 71	1	Control	15	3.78068e6	9.018	26.51174
	* 1902392004 100	Vial 85	1	Sample	16	1.38682e7	9.019	1.01848e4
7	* 1902392005	Vial 86	1	Sample	17	5.14429e4	8.580	6.81182e-1
. ,	* 1902392007 MSD	Vial 88	1	Sample	19	3.89106e5	8.606	3.75866
	* 1902392008 10X	Vial 89	1	Sample	20	1.26964e6	8.800	112.54970
7	* 1902392009	Vial 90	1	Sample	21	0.00000	0.000	0.00000
	* 1902253007 10X	Vial 81	1	Sample	22	9.77785e5	8.973	77.80146
3	* 1902392002 100	Vial 83	1	Sample	23	3.10068e6	9.026	2101.46339
7	* 1902392004 1K	Vial 91	1	Sample	24	1.68105e6	9.042	1.02454e4
7	* 1902392006 MS	Vial 87	1	Sample	25	6.94066e5	9.071	4.18291
7	* 637602 CCV@25	Vial 71	1	Control	26	3.49567e6	9.030	26.89841
:			_	001101101	20	0.1330700	2.030	20.03041
	Sample	Location	Inj	SampleType	Ruņ	CLO4-85	CLO4-85	CLO4-85
# 3	<b>*</b>					Area	RT	Amount
	-							
	* 637596 CCV@25	Vial 71	1	Control	1	9.02235e5	9.029	24.89900
7	* 637600 QC@4.0	Vial 72	1	Control	2	1.60136e5	8.861	4.78853
	* 637598 ICS@4.0	Vial 73	1	Control	3	1.66004e5	9.100	4.17764
	* 637599 LMB	Vial 74	1	Control	4	0.00000	0.000	0.0000
	1902253001	Vial 75	1	Sample	5	0.00000	0.000	0.0000
	1902253002	Vial 76	1	Sample	6	0.00000	0.000	0.0000
	1902253003	Vial 77	1	Sample	7	0.00000	0.000	0.0000
	1902253004	Vial 78	1	Sample	8	0.00000	0.000	0.0000
. 7	1902253005	Vial 79	1	Sample	9	0.00000	0.000	0.0000
*	1702233000	Vial 80	1	Sample	10	0.00000	0.000	0.0000
	1902253007 10X	Vial 81	.1	Sample	11	4.64346e5	8.989	77.67649
7	1902392001	Vial 82	1	Sample	12	1.74136e4	8.594	5.27632e-1
7	1902392002 100	Vial 83	1	Sample	13	1.24153e6	9.041	1996.47343
. +	1902392003 100	Vial 84	1	Sample	14	1.14330e6	9.057	2194.74179
4	637601 CCV@25	Vial 71	1	Control	15	1.08432e6	9.034	25.24310
7	100000 ± 100	Vial 85	1	Sample	16	4.16084e6	9.034	9801.36420
4	1902392005	Vial 86	1	Sample	17	2.26997e4	8.597	7.91263e-1
4	1000000000	Vial 88	.1	Sample	19	1.31669e5	8.620	4.13838
. 4	1902392008 10x	Vial 89	1	Sample	20	3.91954e5	8.817	115.32711
. 4	1902392009	Vial 90	1	Sample	21	0.00000	0.000	0.00000
. 4	1902253007 10X	Vial 81	1	Sample	22	3.04113e5	8.985	80.10603
4		Vial 83	1	Sample	23	8.94469e5	9.042	2015.49432
. 4		Vial 91	1	Sample	24	4.99807e5	9.055	1.01195e4
7		Vial 87	1	Sample	25	2.15905e5	9.083	4.25837
, *	637602 CCV@25	Vial 71	1	Control	26	9.92722e5	9.046	25.37122



#*	Sample	Location I	inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
						3.58268e5	9.038	5.00000
*	637596 CCV@25	Vial 71	1	Control	1	3.52345e5	8.868	5.00000
*	637600 QC@4.0	Vial 72	1	Control	2	4.20424e5	9.104	5.00000
*	637598 ICS@4.0	Vial 73	1	Control	3	4.30750e5	9.078	5.00000
*	637599 LMB	Vial 74	1	Control	4	4.04683e5	8.623	5.00000
*	1902253001	Vial 75	1	Sample	5	4.72599e5	8.800	5.00000
*	1902253002	Vial 76	1	Sample	6		8.815	5.00000
*	1902253003	Vial 77	1	Sample	7	4.74255e5	8.517	5.00000
*	1902253004	Vial 78	1	Sample	8	3.82664e5	8.870	5.00000
*	1902253005	Vial 79	1	Sample	9	4.90120e5	8.809	5.00000
*	1902253006	Vial 80	1	Sample	10	4.95621e5	8.993	50.00000
*	1902253007 10X	Vial 81	1	Sample	11	6.20862e5	8.590	5.00000
* *	1902392001	Vial 82	1	Sample	12	4.11974e5	9.047	500.00000
*	1902392002 100	Vial 83	1	Sample	13	6.22673e5	9.047	500.00000
*	1902392003 100	Vial 84	1	Sample	14	5.18929e5	9.040	5.00000
*	637601 CCV@25	Vial 71	1	Control	15	4.24334e5		500.00000
*	1902392004 100	Vial 85	1	Sample		3.56653e5	9.034	5.00000
*	1902392005	Vial 86	1	Sample		3.36196e5	8.605	5.00000
*	1902392007 MSD	Vial 88	1	Sample		3.36729e5	8.630	50.00000
*	1902392008 10X	Vial 89	1	Sample		3.48447e5	8.824	5.00000
*	1902392009	Vial 90	1	Sample		3.02558e5	8.511	50.00000
*	1902253007 10X	Vial 81	1	Sample		3.93917e5	8.994	500.00000
*	1902392002 100	Vial 83	1	Sample		4.44153e5	9.044	5000.00000
*		Vial 91	1	Sample	24	5.08672e5	9.062	
*	1902392006 MS	Vial 87	1	Sample		5.36117e5	9.092	5.00000
*	637602 CCV@25	Vial 71	1	Control		3.86404e5	9.053	5.00000
	33,032		End	of Report *	**			

#### Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
====	=======	===========	=======	===	========		
1	Vial 71	637596 CCV@25	CLO4-AQN	1	Ctrl Samp		
2.	Vial 72	637600 QC@4.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	637598 ICS@4.0			Ctrl Samp		•
4	Vial 73	637599 LMB	CLO4-AQN		Ctrl Samp		
5	Vial 75	1902253001	CLO4-AQN	1	Sample		
6	Vial 76	1902253002	CLO4-AQN	1	Sample		
7	Vial 77	1902253003	CLO4-AQN	1	Sample		
8	Vial 78	1902253004	CLO4-AQN	1	Sample		
9	Vial 79	1902253005	CLO4-AQN	1	Sample		
10	Vial 80	1902253006	CLO4-AQN	1	Sample		
11	Vial 81		CLO4-AQN	1	Sample		
12	Vial 82	1902392001	CLO4-AQN		Sample		
13	Vial 83	1902392002 100	CLO4-AQN	1	Sample		
$\frac{14}{14}$	Vial 84	1902392003 100	CLO4-AQN	1	Sample		
15	Vial 71	637601 CCV@25	CLO4-AQN	1	Ctrl Samp		
16	Vial 85	1902392004 100	CLO4-AQN	1	Sample		
17	Vial 86	1902392005	CLO4-AQN	1	Sample		
18	Vial 87	1902392006 MS	CLO4-AQN	1	Sample		
19	Vial 88	1902392007 MSI	CLO4-AQN	1	Sample	•	
20	Vial 89	1902392008 102	CLO4-AQN	1	Sample		
21	Vial 90	1902392009	CLO4-AQN		Sample		
22	Vial 81	1902253007 102	CLO4-AQN		Sample		
23	Vial 83	1902392002 100	CLO4-AQN	1	Sample		
$^{-1}_{24}$	Vial 91	1902392004 1K	CLO4-AQN		Sample		
25	Vial 87	1902392006 MS	CLO4-AQN		Sample		
26	Wial 71	637602 CCV@25	CLO4-AQN	1 1	Ctrl Samp		



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND01.D Samp

Sample Name: 637596 CC

CCV@25

Injection Date:

1/28/2019 09:06:47 637596 CCV@25

Seq Line: Location:

Inj. No.:

Inj. Vol.:

1 Vial 71 1

Sample Name: Acq Operator:

TNB

 $\begin{array}{c} 1 \\ 30 \mu 1 \end{array}$ 

Acq. Method:

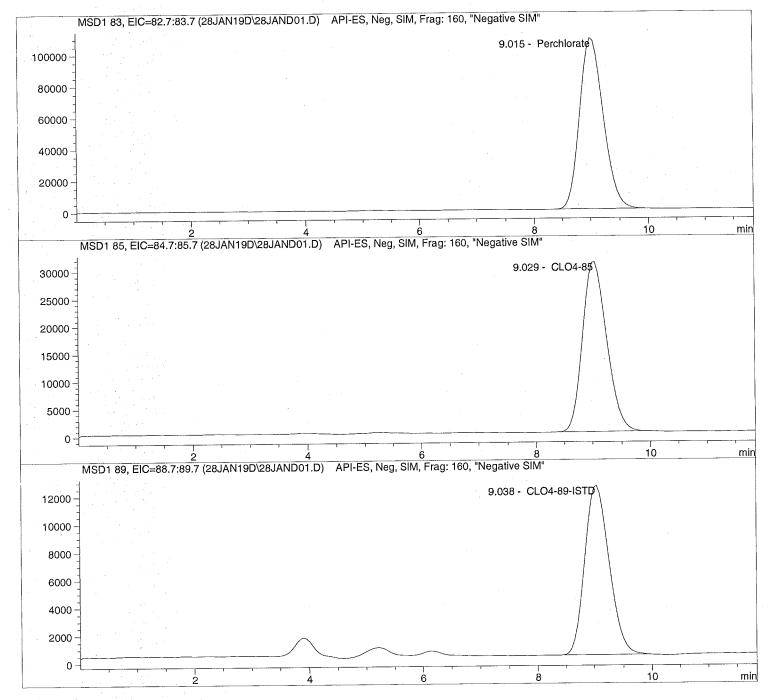
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND01.D Sample Name: 637596 

Injection Date: 1/28/2019 09:06:47

Seq Line: Location:

Sample Name: 637596 CCV@25 Acq Operator:

TNB

Inj. No.: Inj. Vol.:

Vial 71 1

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000

Dilution: Sample Amount:

1.000000 25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

, -	T T	ype	Area	Amount [ug/sample]	Compound Name
9	.015 PB	A	3120997.8	25.9510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.029 P	BA	902234.6	24.8990	CLO4-85	-

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.038	BBA	358267.7	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND02.D Sample Name: 637600 QC@4

Injection Date: 1/28/2019 09:21:26 Sample Name: 637600 QC@4.0 Acq Operator: TNB Seq Line: 2
Location: Vial 72
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method:

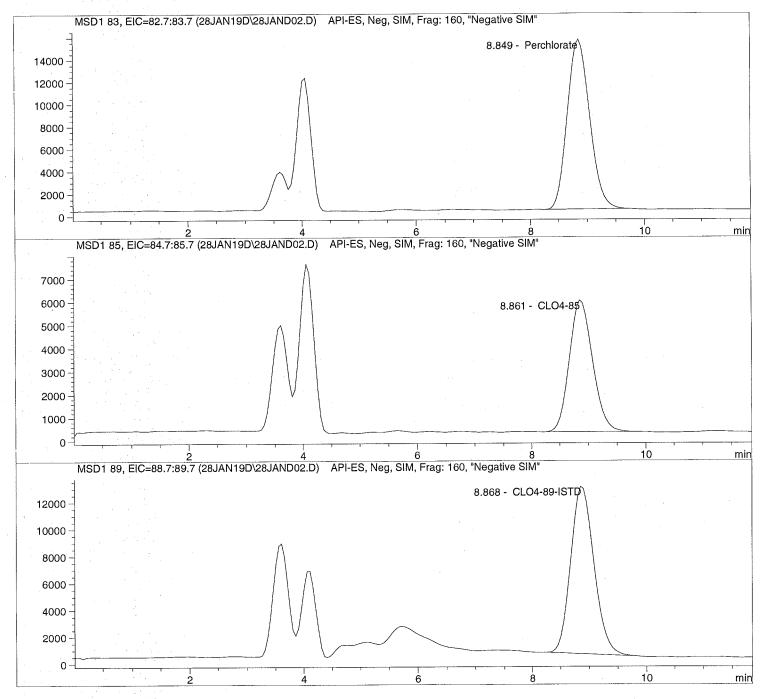
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 637600 QC@4.0 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND02.D 

Injection Date: 1/28/2019 09:21:26
Sample Name: 637600 QC@4.0
Acq Operator: TNB

Seq Line: Location: 2

Inj. No.: Inj. Vol.:

Vial 72 1  $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 1.000000

Dilution: Sample Amount:

4.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.849	PBA	 413389.9	3.8127	Perchlorate	İ

Signal2: MSD1 85, EIC=84.7:85.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
-	8.861	PBA	 160136.1	4.7885	CLO4-85	_

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.868	PBA	352344.9	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

Sample Name: 637598 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND03.D 

Injection Date:

1/28/2019 09:35:13 Seq Line:

Inj. Vol.:

Sample Name: Acq Operator:

637598 TNB

ICS@4.0

Location: Inj. No.: Vial 73 1  $30 \mu l$ 

3

Acq. Method:

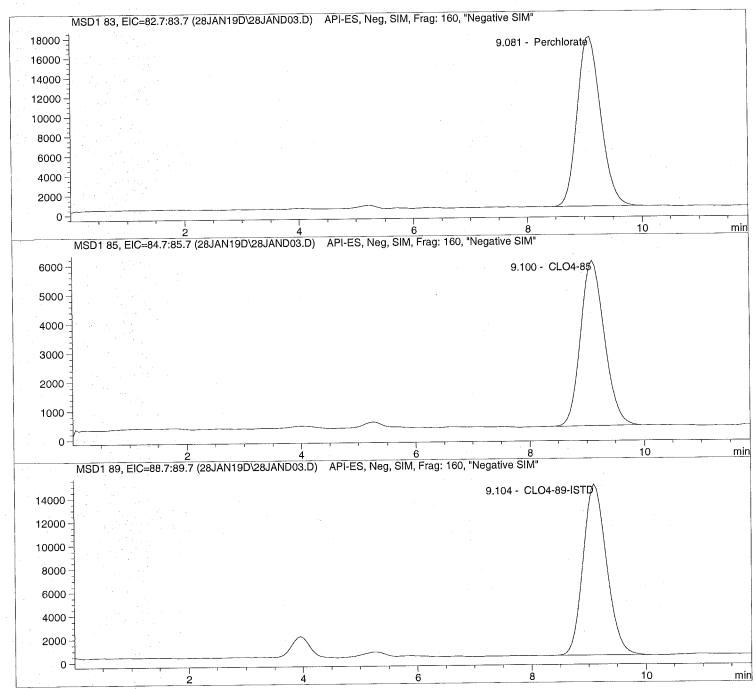
CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 637598 ICS@4.0 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND03.D 

Injection Date: 1/28/2019 09:35:13
Sample Name: 637598 ICS@4.0
Acq Operator: TNB

Seq Line: Location:

Inj. Vol.:

Inj. No.:

3 Vial 73 1

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 1.000000

Dilution: Sample Amount:

4.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.081	PBA	496412.4	3.8356	Perchlorate	•

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.100	BBA	166003.7	4.1776	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	a	Amount [ug/sample]	Compound Name	ł
9.104	PBA	420	423.8	5.0000	CLO4-89-ISTD	



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND04.D

Sample Name: 637599

09:49:03 Injection Date: 1/28/2019

Seg Line: Location:

Sample Name:

637599

Inj. No.:

Vial 74 1

Acq Operator:

TNB

Inj. Vol.:

 $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

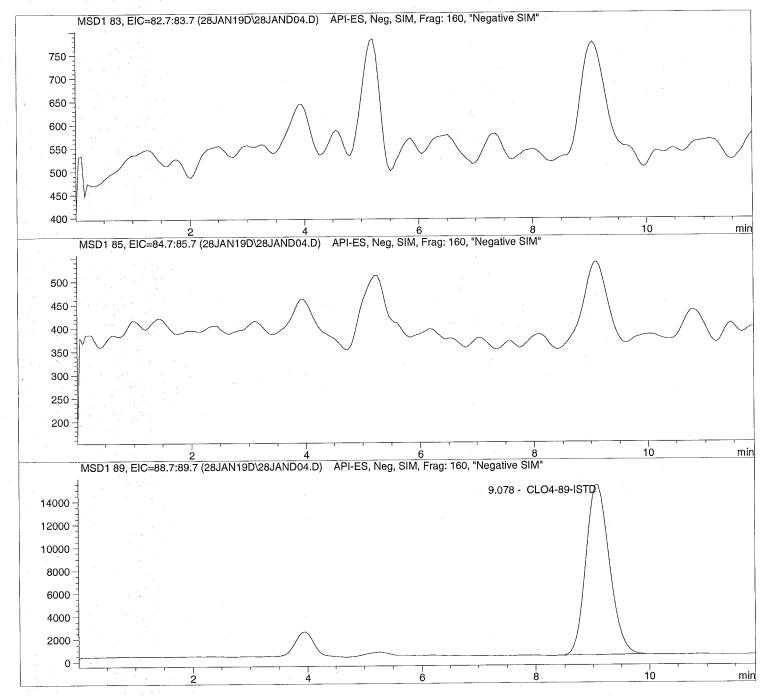
Last Changed:

12/3/2018 12:46:06

 $_{
m LMB}$ 

Perchlorate analysis

\_\_\_\_\_\_\_





Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND04.D Sample Name: 637599 LMB 

Injection Date: 1/28/2019 09:49:03
Sample Name: 637599 LMB
Acq Operator: TNB

Seq Line:

Inj. Vol.:

Location: Inj. No.:

4 Vial 74  $\begin{array}{cc} & 1 \\ 30 & \mu 1 \end{array}$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 1,000000

Dilution: 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]	Туре	Area	Amount [ug/sample]	Compound Name	
9.078	PBA	430750.0	5.0000	CLO4-89-ISTD	İ

Sample Name: 1902253001 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND05.D

Injection Date:

10:02:50 1/28/2019

Seq Line: Location:

Vial 75

Sample Name: Acq Operator: 1902253001 TNB

Inj. No.: Inj. Vol.:

1 30  $\mu$ 1

Acq. Method:

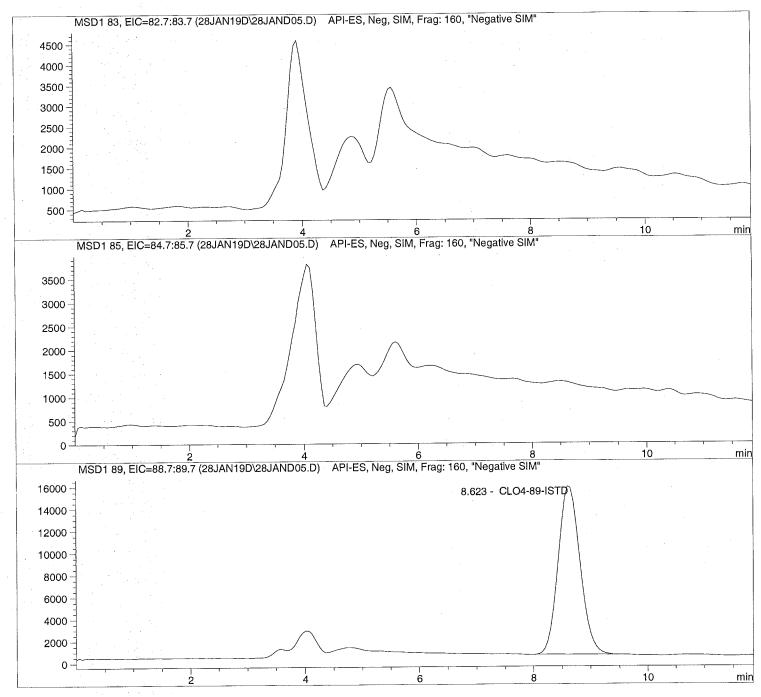
Analysis Method:

CLO4-AQN.M 

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND05.D Sample Name: 1902253001

Injection Date: 1/28/2019 10:02:50

Seq Line: Location:

Sample Name: 1902253001 Acq Operator:

Vial 75 1

TNB

Inj. No.:
Inj. Vol.:

 $30 \mu 1$ 

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information 

Sorted By: Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 1.000000

Dilution: Sample Amount:

0.000

LCMS Results 

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.623	PBA	404682.6	5.0000	CL04-89-ISTD	



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND06.D Sample Name: 1902253002

Injection Date: 1/28/2019 10:16:43 Sample Name: 1902253002

TNB

Seq Line: 6
Location: Vial 76
Inj. No.: 1

 $30 \mu 1$ 

Inj. Vol.:

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

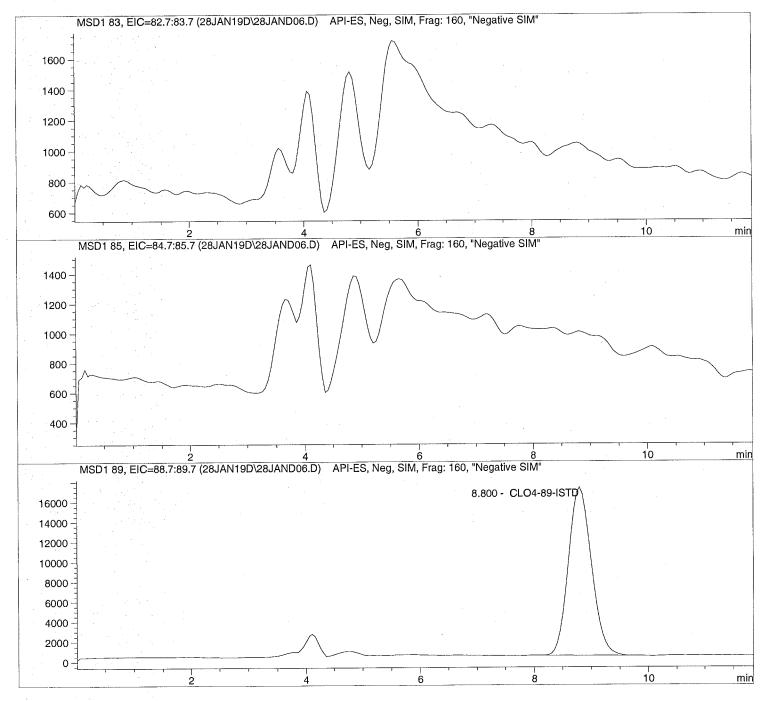
Last Changed:

Acq Operator:

12/3/2018 12:46:06

## Perchlorate analysis

\_\_\_\_\_\_\_





Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND06.D Sample Name: 1902253002 \_\_\_\_\_\_\_

Injection Date: 1/28/2019 10:16:43

Seq Line:

6

Sample Name: 1902253002
Acq Operator: TNB

Location:

Vial 76

Acq Operator:

Inj. No.: Inj. Vol.:  $\begin{array}{cc} & 1 \\ 30 & \mu 1 \end{array}$ 

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

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

_	T nin]	Туре	Area	Amount [ug/sample]	Compound Name	
0	.000		0.0	0.0000	CLO4-85	_

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
8.800	BBA	472598.8	5.0000	CLO4-89-ISTD

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND07.D

Sample Name: 1902253003

Injection Date:
Sample Name:

1/28/2019 10:30:41 1902253003 Seq Line: Location: Vial 77

Acq Operator:

TNB

Inj. No.: Inj. Vol.:

30 μ1

Acq. Method:

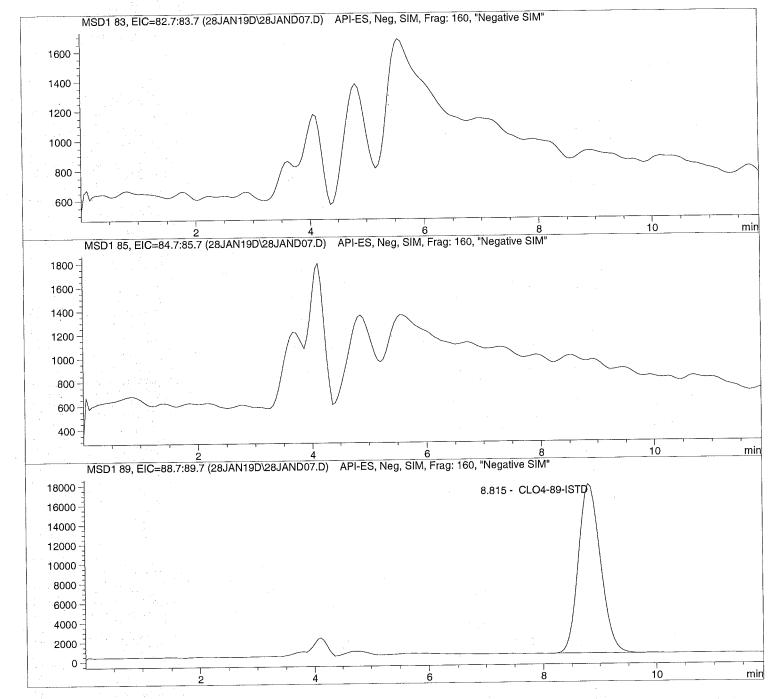
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902253003 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND07.D

Injection Date: 1/28/2019 10:30:41
Sample Name: 1902253003
Acq Operator: TNB

Seq Line: Location:

Inj. No.:

Vial 77 1

Acq. Method:

Inj. Vol.:

 $\begin{array}{cc} & 1 \\ 30 & \mu 1 \end{array}$ 

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

\_\_\_\_\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: 1.000000

1.000000

Dilution: Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

	RT min]	Туре	Area	Amount [ug/sample]	Compound Name	
	0.000		0.0	0.0000	  CLO4-85	
•						•

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.815	PBA	474255.2	5.0000	CLO4-89-ISTD	i

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND08.D

 ${\tt CLO4-AQN.M}$ 

Sample Name: 1902253004

Injection Date: Sample Name:

10:44:28 1/28/2019

Seq Line: Location:

8 Vial 78

Acq Operator:

1902253004

Inj. No.: Inj. Vol.:

1 30  $\mu$ 1

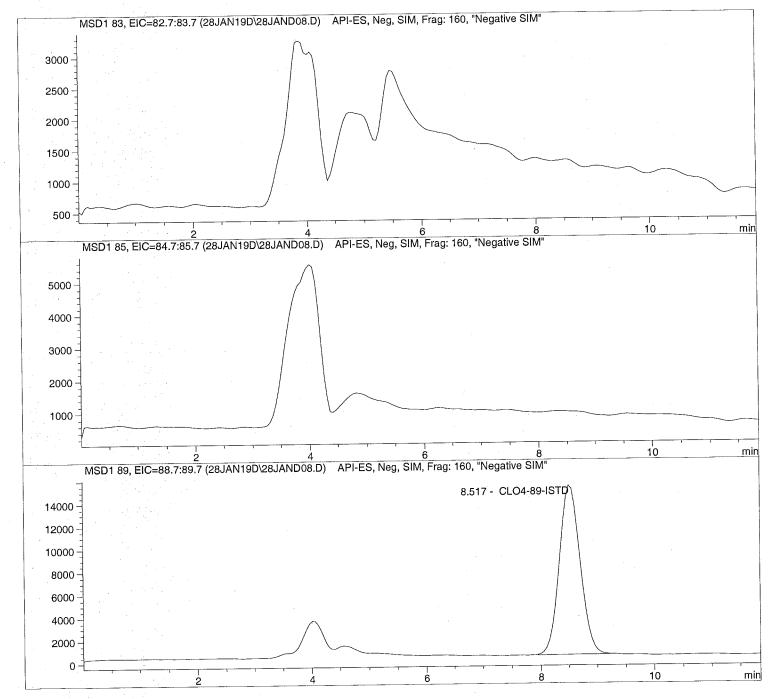
Acq. Method:

TNB

Analysis Method: Last Changed:

C:\HPCHEM\1\METHODS\CLO4-DPR.M 12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902253004 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND08.D

Injection Date: 1/28/2019 10:44:28
Sample Name: 1902253004
Acq Operator: TNB

Seq Line: Location:

Vial 78 1

Inj. No.:

Inj. Vol.:

 $\begin{array}{c} 1 \\ 30 \ \mu 1 \end{array}$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 1.000000

Dilution: Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT 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
0.0	00	0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.517	BBA	382663.6	5.0000	CLO4-89-ISTD	

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND09.D

Sample Name: 1902253005

Injection Date:

1/28/2019 10:58:22

Seq Line:

9

Sample Name: Acq Operator:

1902253005 TNB Location: Inj. No.: Inj. Vol.: Vial 79

30  $\mu$ 1

Acq. Method:

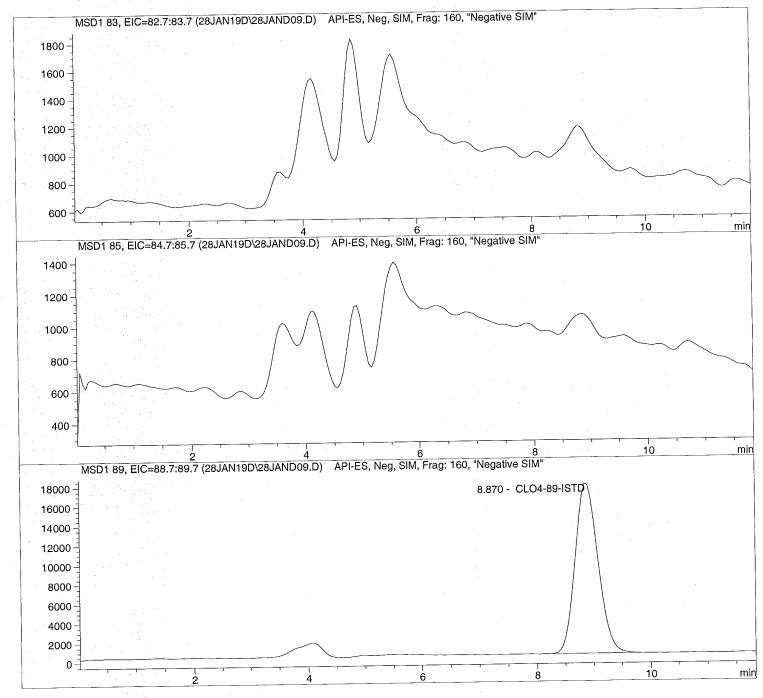
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902253005 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND09.D

Injection Date: 1/28/2019 10:58:22

Seq Line:

Sample Name: 1902253005 Acq Operator:

TNB

Location:
Inj. No.:
Inj. Vol.:

Vial 79 1  $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000

Dilution:

1.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
	8.870	PBA	490120.0	5.0000	CLO4-89-ISTD	



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND10.D

Sample Name: 1902253006

Injection Date:

1/28/2019 11:12:12 1902253006

Seq Line: Vial 80 Location:

Sample Name: Acq Operator:

TNB

Inj. No.: Inj. Vol.:

1 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

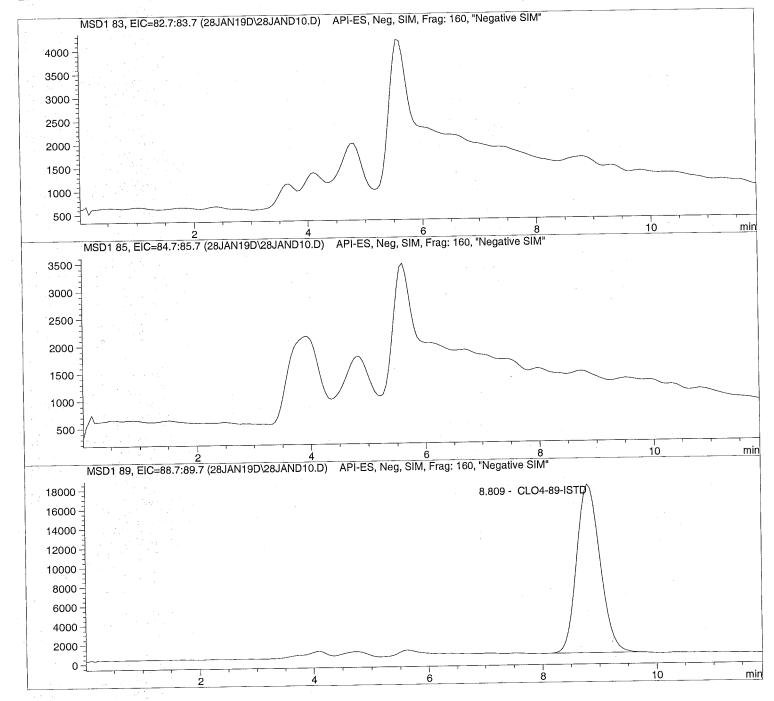
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902253006 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND10.D

Injection Date: 1/28/2019 11:12:12 Sample Name: 1902253006

Seq Line: Location: 10

Acq Operator: TNB

Inj. No.: Inj. Vol.: Vial 80 1 30 μ1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 1.000000

Dilution: Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	CLO4-85	İ

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
8.809	PBA	495621.1	5.0000	CLO4-89-ISTD

Mon, 28. Jan. 2019

Sample Name: 1902253007 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND11.D

Injection Date:

1/28/2019 11:26:10 Seq Line:

Sample Name:

1902253007 10X Location:

Vial 81

Acq Operator:

 $\mathtt{TNB}$ 

Inj. No.: Inj. Vol.:

1  $30 \mu 1$ 

Acq. Method: Analysis Method:

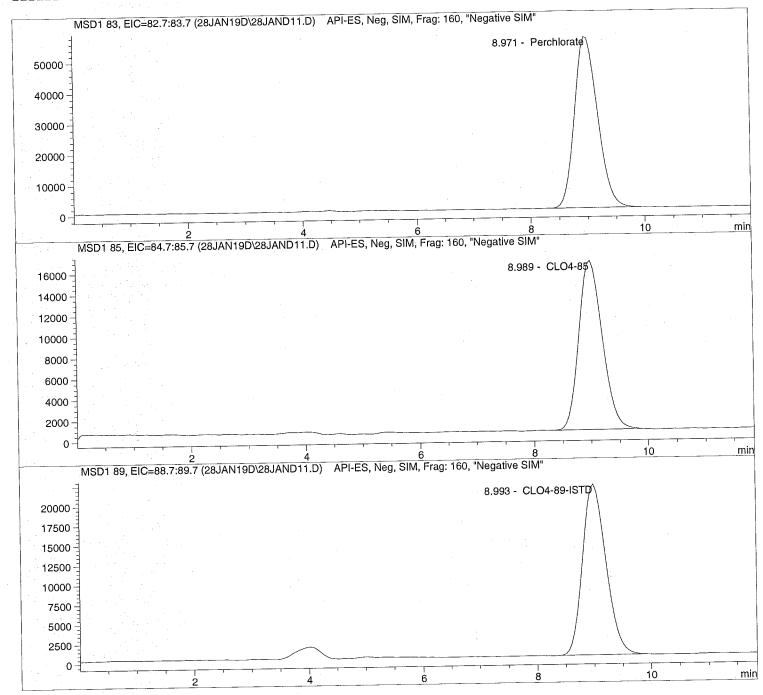
CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902253007 10X Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND11.D 

Injection Date: 1/28/2019 11:26:10
Sample Name: 1902253007 10X
Acq Operator: TNB Seq Line: 11 Location: Vial 81 Location: Inj. No.: Inj. Vol.:

CLO4-AQN.M Acq. Method:

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Signal Sorted By:

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: 1.000000 10.000000 Dilution: 0.000 Sample Amount:

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.971	   BBA	 1579865.0	79.6796	Perchlorate	-

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.989	BBA	464345.6	77.6765	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

1 -	T in]	Туре	Area	Amount [ug/sample]	Compound Name	
8	.993	PBA	620861.9	50.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

1

 $30 \mu 1$ 

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND12.D Sample Name: 1902392001

Data IIIC. C. (MI GALLA) ( (1-1-1-1)

Injection Date:

1/28/2019 11:39:55

Seq Line: Location: 12

Sample Name: Acq Operator:

1902392001 TNB

Inj. No.: Inj. Vol.: Vial 82 1 30 µl

Acq. Method:

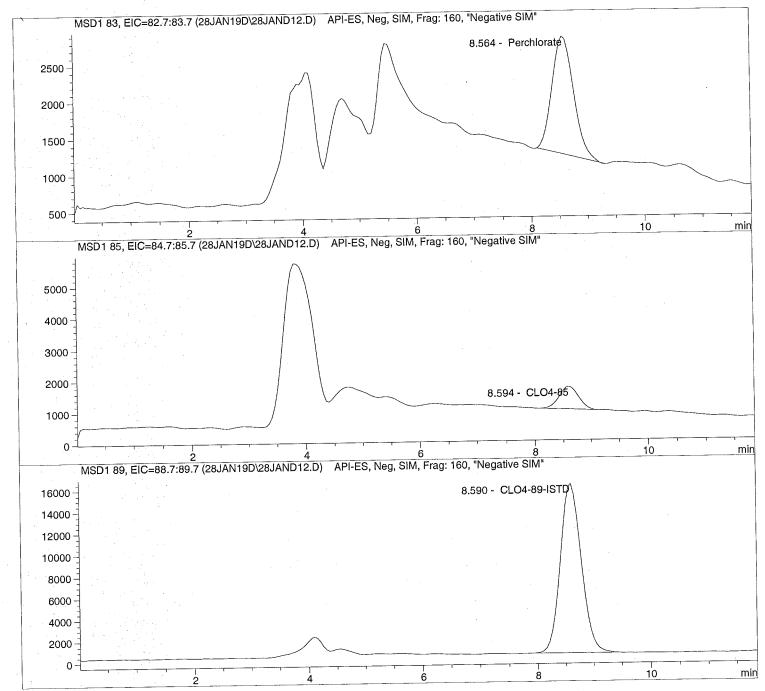
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902392001 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND12.D

Injection Date: 1/28/2019 11:39:55 Sample Name: 1902392001

Seq Line: Location: 12

Sample Name: 1902 Acq Operator: TNB

Inj. No.: Inj. Vol.:

-1  $30 \mu l$ 

Vial 82

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 1.000000

Dilution: Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT Type [min]	Area	Amount [ug/sample]	Compound Name	
8.564 PBA	42787.5	0.5294	Perchlorate	-

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре		Area	Amount [ug/sample]	Compound Name	
8.594	PBA		17413.6	0.5276	CLO4-85	-

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.590	BBA	411974.2	5.0000	CLO4-89-ISTD	

Sample Name: 1902392002 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND13.D 

1/28/2019 11:53:40 Injection Date: 1902392002 100

Seq Line: Location:

Sample Name: Acq Operator:

Inj. No.: Inj. Vol.: Vial 83  $30 \mu 1$ 

Acq. Method:

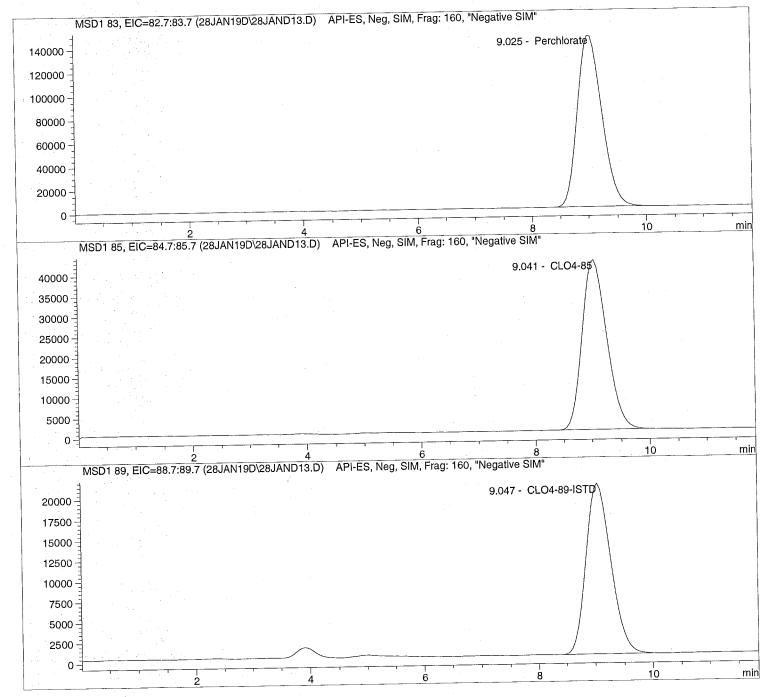
 ${\tt CLO4-AQN.M}$ 

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND13.D Sample Name: 1902392002 100 

Injection Date: 1/28/2019 11:53:40 Sample Name: 1902392002 100 Sample Name: 1902
TNB

13 Vial 83 Seq Line: Location: Inj. No.:

Inj. Vol.:

1 30 μ1

Acq. Method: CLO4-AQN.M

Acq Operator:

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier:

1.000000 100.000000

Dilution: Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT Type [min]	Area	Amount [ug/sample]	Compound Name
9.025 BBA	4308506.0	2083.7018	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.041	PBA	1241533.1	1996.4734	CLO4-85	-

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.047	PBA	622672.9	500.0000	CLO4-89-ISTD	_

Sample Name: 1902392003 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND14.D 

Injection Date: 12:07:33 1/28/2019 1902392003 100 Sample Name: TNB Acq Operator:

14 Seq Line: Vial 84 Location: 1 Inj. No.:  $30~\mu 1$ Inj. Vol.:

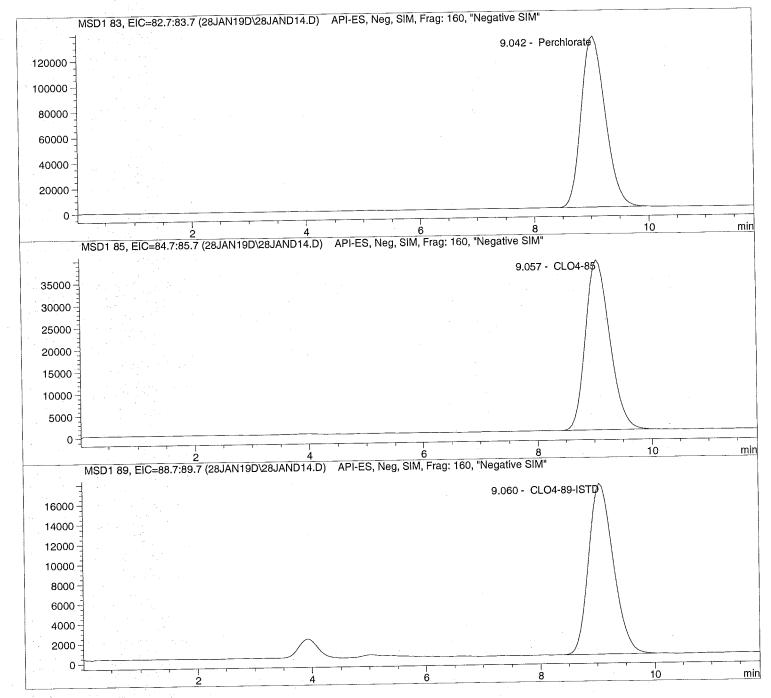
Acq. Method:

CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

12/3/2018 12:46:06 Last Changed:

Perchlorate analysis





Sample Name: 1902392003 100 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND14.D 

Injection Date: 1/28/2019 12:07:33
Sample Name: 1902392003 100
Acq Operator: TNB

14 Vial 84 Seq Line: Location: 1 Inj. No.: 30 μ1

Inj. Vol.:

CLO4-AQN.M Acq. Method:

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

12/3/2018 12:46:06 Last Changed:

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 100.000000

Sample Amount:

0.000

LCMS Results 

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.042	PBA	3951233.8	2283.0283	Perchlorate	_

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	ļ
9.057	PBA	1143303.5	2194.7418	CLO4-85	•

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.060	PBA	518929.0	500.0000	CLO4-89-ISTD	Ĺ

Sample Name: 637601 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND15.D

1/28/2019 12:21:18 Injection Date:

Seq Line: Location:

Sample Name: Acq Operator: 637601 TNB

CCV@25

Inj. No.: Inj. Vol.: Vial 71 1  $30 \mu 1$ 

Acq. Method:

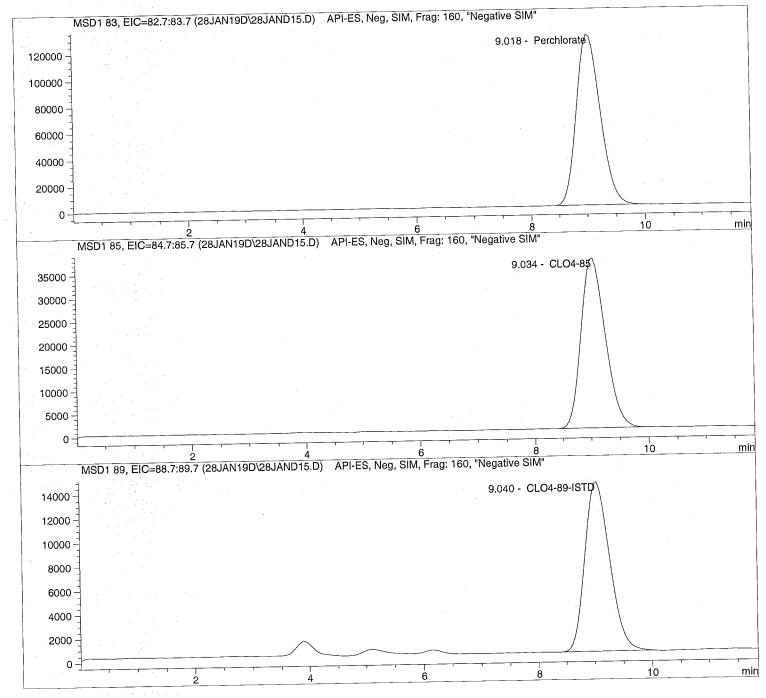
CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 637601 CCV@25 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND15.D 

Injection Date: 1/28/2019 12:21:18
Sample Name: 637601 CCV@25
Acq Operator: TNB

Seq Line: 15
Location: Vial 71 Seq Line: Inj. No.: 30 μ1 Inj. Vol.:

1

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: 1.000000 Dilution:

1.000000

Sample Amount:

25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT Type [min]	Area	Amount [ug/sample]	Compound Name
9.018 PBA	3780684.7	26.5117	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT   Type	Area	Amount	Compound
[min]		[ug/sample]	Name
9.034 PBA	1084316.3	25.2431	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.040	BBA	424334.0	5.0000	CLO4-89-ISTD

Sample Name: 1902392004 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND16.D 

1/28/2019 12:35:04 Injection Date: 1902392004 Sample Name:

TNB

16 Seq Line: Vial 85 Location: Inj. No.: 1  $30 \mu 1$ Inj. Vol.:

Acq. Method:

Acq Operator:

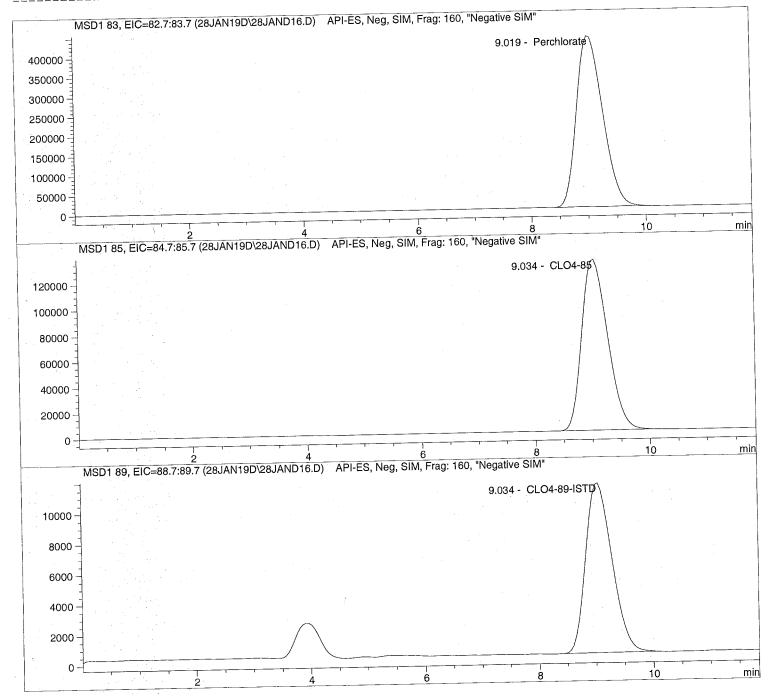
 ${\tt CLO4-AQN.M}$ 

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902392004 100 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND16.D 

Injection Date: 1/28/2019 12:35:04
Sample Name: 1902392004 100
Acq Operator: TNB

16 Vial 85 Seq Line: Location: 30 μ1 Inj. No.: Inj. Vol.:

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

12/3/2018 12:46:06 Last Changed:

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: 1.000000 Dilution:

100.000000

Sample Amount:

0.000

LCMS Results \_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.019	PBA	13868192.0	10184.8136	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.034	PBA	4160845.0	9801.3642	CLO4-85	_

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.034	PBA	356653.1	500.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND17.D

Sample Name: 1902392005

Injection Date:

1/28/2019 12:49:00

Seq Line:

Sample Name:

1902392005

Location: Inj. No.: Vial 86

Acq Operator:

TNB

Inj. Vol.:

1 30  $\mu$ 1

Acq. Method:

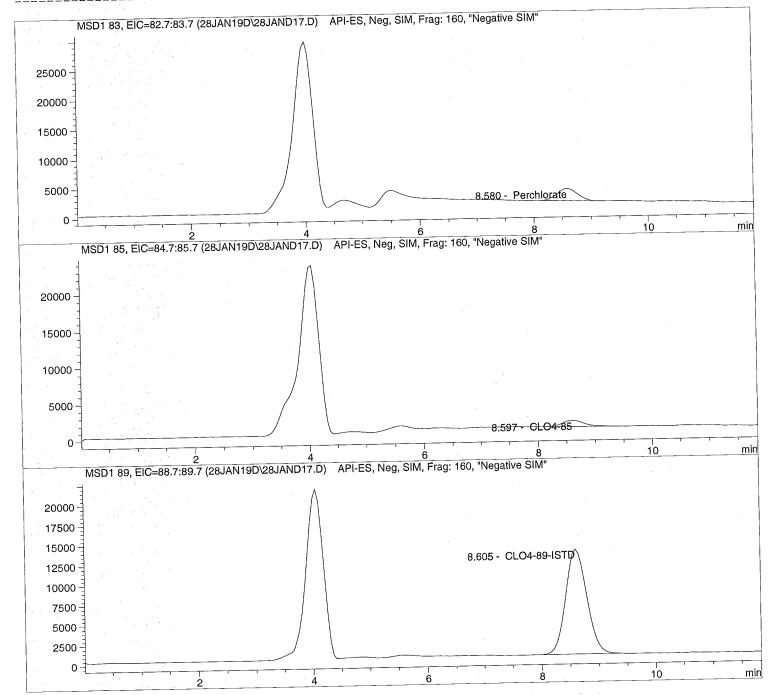
CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902392005 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND17.D

17

Injection Date: 1/28/2019 12:49:00
Sample Name: 1902392005
Acq Operator: TNB

Seq Line: Vial 86 Location: 1 Inj. No.:

Inj. Vol.:

 $30 \mu 1$ 

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 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
8.580	PBA	51442.9	0.6812	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
8.597	PBA	22699.7	0.7913	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.605	BBA	336195.9	5.0000	CLO4-89-ISTD	ĺ



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND19.D Sample Name: 1902392007 M

19 Seq Line: 13:16:32 1/28/2019 Injection Date: Vial 88 Location: 1902392007 MSD Sample Name: 1 Inj. No.: TNB Acq Operator:  $30 \mu 1$ Inj. Vol.:

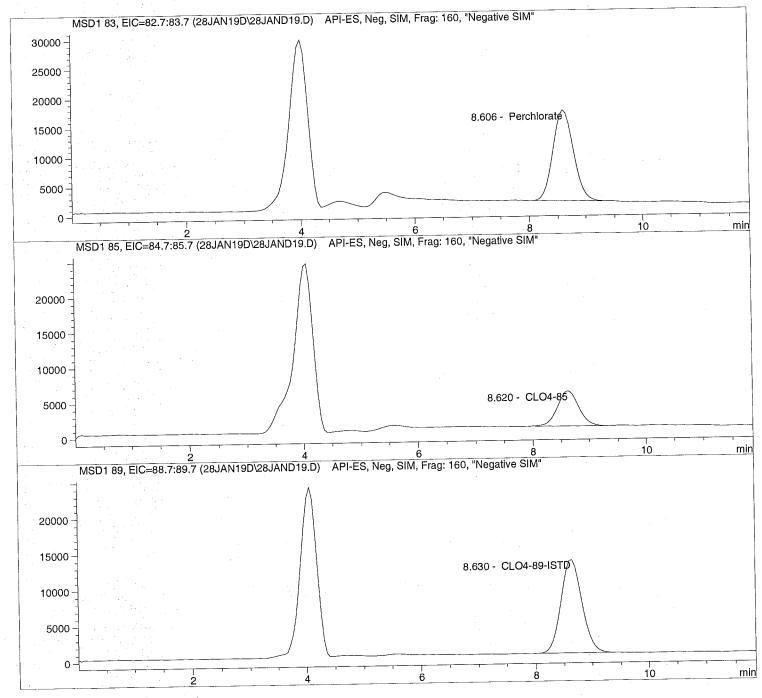
Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902392007 MSD Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND19.D 

Injection Date: 1/28/2019 13:16:32
Sample Name: 1902392007 MSD
Acg Operator: TNB TNB

19 Seq Line: Vial 88 Location: 1

Inj. No.: 30 μl Inj. Vol.:

Acq. Method:

Acq Operator:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.606	PBA	 389105.6	3.7587	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

R [m	T in]	Type	Area	Amount [ug/sample]	Compound Name
8	.620	BBA	131668.6	4.1384	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
8.630	BBA	336729.2	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_\_ \*\*\* End of Report \*\*\*

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND20.D

Sample Name: 1902392008

Injection Date:

1/28/2019 13:30:27 1902392008

Seq Line: Location:

Vial 89

Sample Name: Acq Operator:

Inj. No.:

Acq. Method:

TNB

Inj. Vol.:

 $30 \mu l$ 

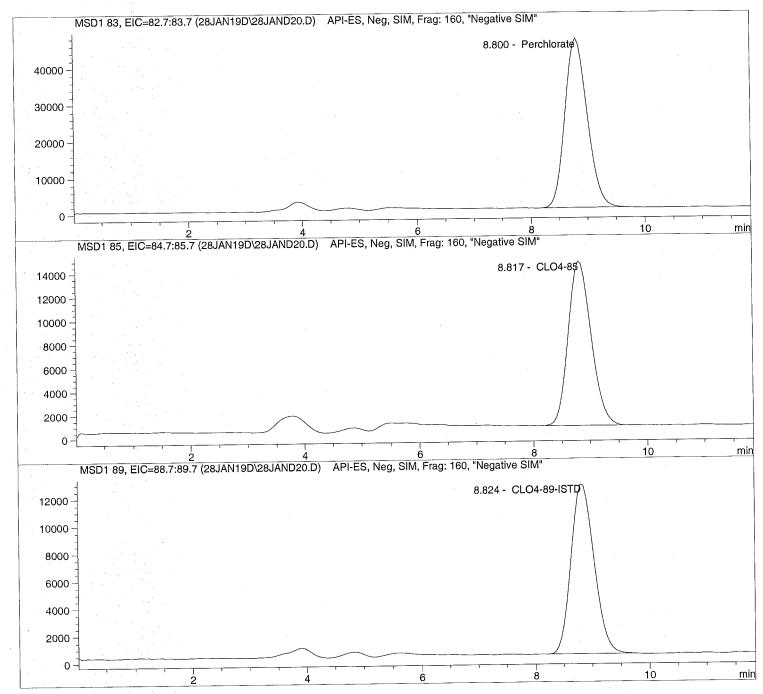
CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Page 90 of 125

Sample Name: 1902392008 10X Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND20.D 

Injection Date: 1/28/2019 13:30:27

2.0 Seq Line:

Sample Name: 1902392008 10X Acq Operator:

Location:

Vial 89

TNB

Inj. No.: Inj. Vol.:

1  $30 \mu 1$ 

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified:

Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 10.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
8.800	PBA	1269636.9	112.5497	Perchlorate	İ

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
8.817	PBA	391953.7	115.3271	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT' Ty	pe Area	Amount [ug/sample]	Compound Name
8.824 PBA	348447.3	50.0000	CLO4-89-ISTD



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND21.D

Sample Name: 1902392009

Data 111e: C:\NFCHEM\1\DAIM\2001M199\8001M2001

Injection Date:

1/28/2019 13:44:15 1902392009 Seq Line: Location: 21 Vial 90

Sample Name: Acq Operator:

TNB

Inj. No.:
Inj. Vol.:

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

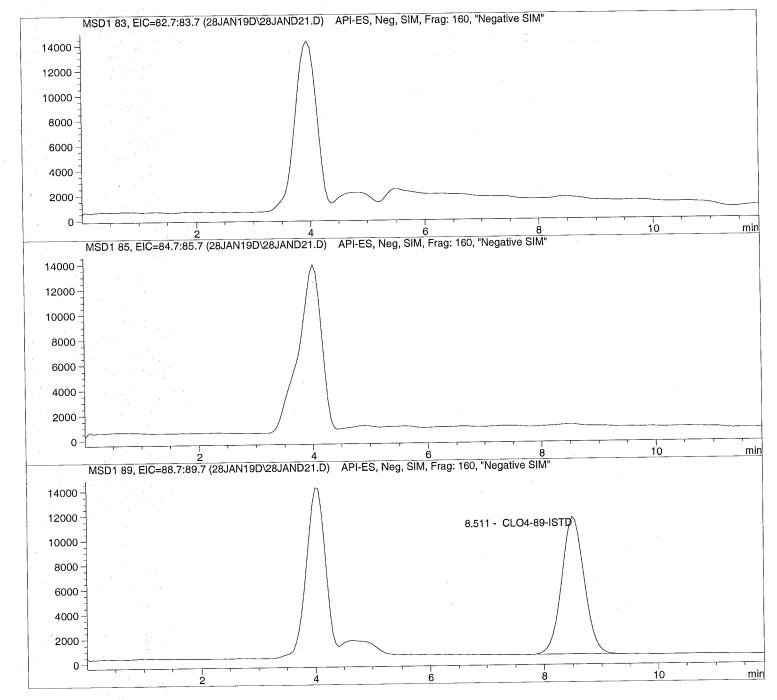
Analysis Method: C:

C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902392009 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND21.D

Injection Date: 1/28/2019 13:44:15 Sample Name: 1902392009

Seg Line: Vial 90 Location:

Acq Operator: TNB

Inj. No.: Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 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	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	ì
8.511	BBA	302558.0	5.0000	CLO4-89-ISTD	



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND22.D

Sample Name: 1902253007

1

10x

Injection Date: Sample Name:

1/28/2019 13:58:01

Seq Line: 22

10X 1902253007

TNB

Vial 81 Location: Inj. No.: 30  $\mu$ 1 Inj. Vol.:

Acq. Method:

Acq Operator:

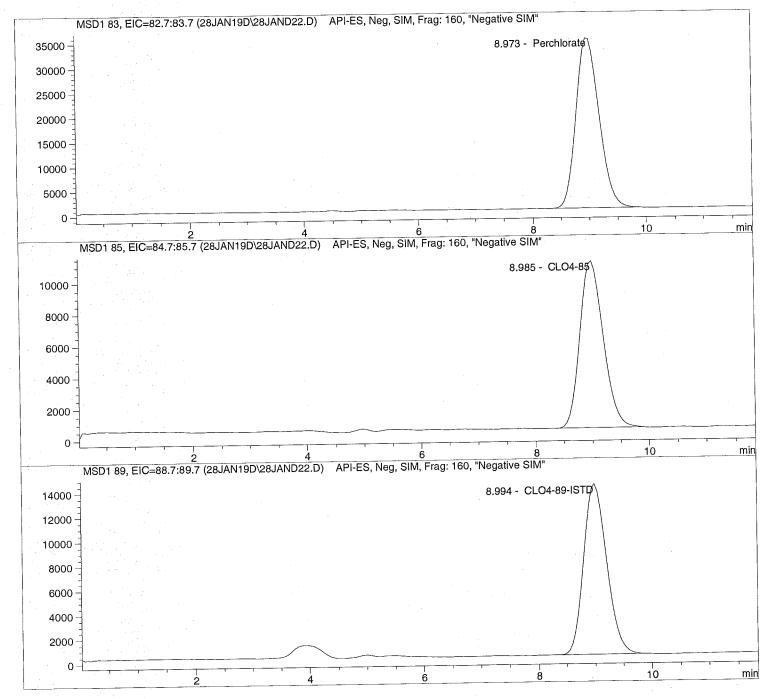
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902253007 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND22.D 

Injection Date: 1/28/2019 13:58:01 Seq Line: Sample Name: 1902253007 10X Location: Vial 81 Inj. No.: Acq Operator: TNB 30 µl Inj. Vol.:

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 10.000000

Sample Amount:

0.000

#### LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
8.973	BBA	977785.3	77.8015	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
8.985	PBA	304112.6	80.1060	CLO4-85	_

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
8.994	BBA	393916.7	50.0000	CLO4-89-ISTD



Sample Name: 1902392002 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND23.D

23 1/28/2019 14:11:46 Seq Line: Injection Date:

Vial 83 Location: 1902392002 100 Sample Name: 1 Inj. No.: TNB Acq Operator: 30  $\mu$ 1 Inj. Vol.:

Acq. Method:

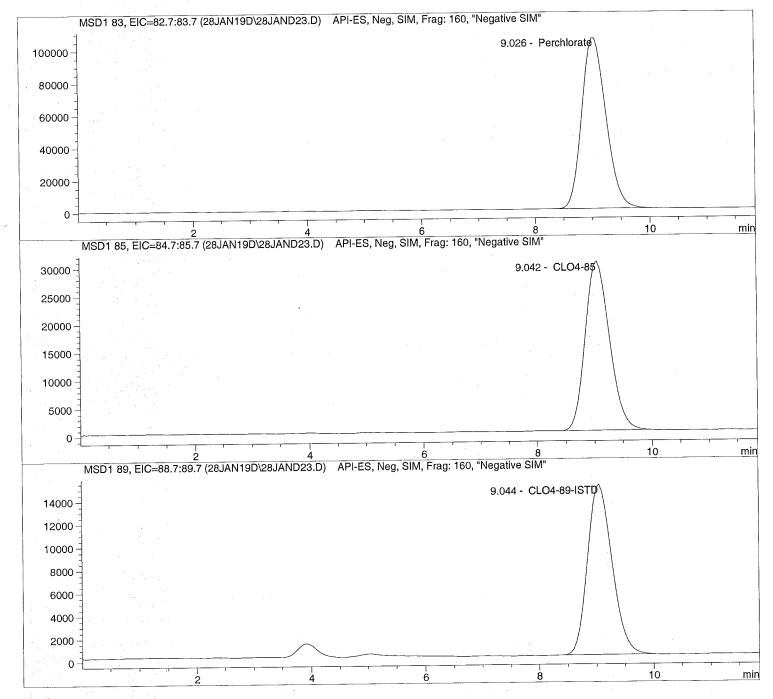
CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

12/3/2018 12:46:06 Last Changed:

Perchlorate analysis

\_\_\_\_\_\_\_





100

Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND23.D Sample Name: 1902392002 100

23 Injection Date: 1/28/2019 14:11:46 Seq Line:

Sample Name: 1902392002 100 Vial 83 Location: Inj. No.: 1 TNBAcq Operator:  $30 \mu 1$ Inj. Vol.:

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 100.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.026	PBA	3100678.5	2101.4634	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.042	PBA	894469.5	2015.4943	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.044	PBA	444153.2	500.0000	CLO4-89-ISTD



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND24.D

Sample Name: 1902392004

)4 1K

Data IIIe: C:\nrcnem\I\DAIA\2001MIJB\2001MB2IIB

Injection Date:

1/28/2019 14:25:34 1902392004 1K Seq Line: Location: 24 Vial 91

Sample Name: Acq Operator:

Inj. No.:
Inj. Vol.:

 $\begin{array}{c} 1 \\ 30 \ \mu 1 \end{array}$ 

Acq. Method:

CLO4-AQN.M

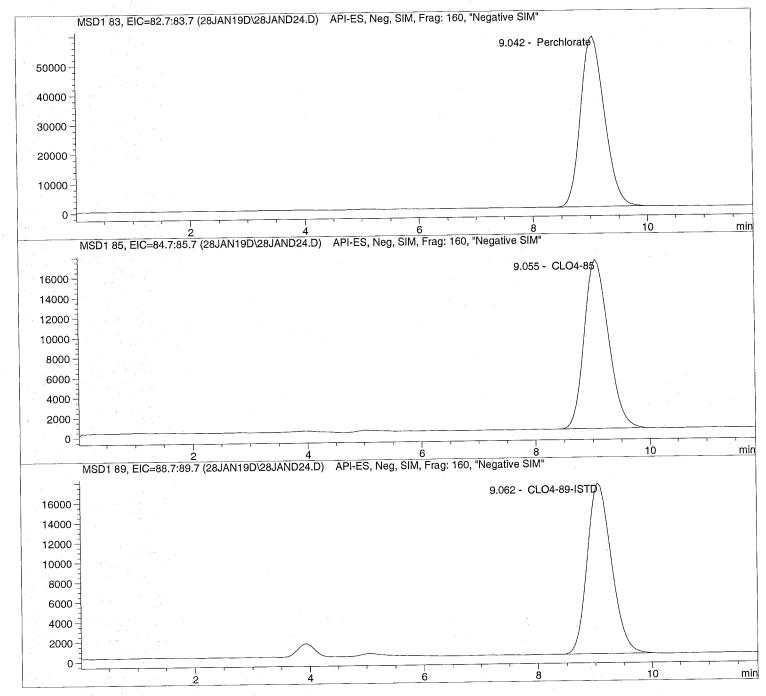
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902392004 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND24.D 

Injection Date: 1/28/2019 14:25:34 1902392004 1K Sample Name:

TNB

24 Seq Line: Location: Vial 91

Inj. No.: Inj. Vol.:  $30 \mu l$ 

Acq. Method:

Acq Operator:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 1000.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.042	PBA	1681054.9	10245.3827	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.055	PBA	499806.8	10119.5370	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре		Area	Amount [ug/sample]	Compound Name	
9.062	PBA		508672.5	5000.0000	CLO4-89-ISTD	



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND25.D

Sample Name: 1902392006

1/28/2019 14:39:20

Seq Line:

Injection Date: Sample Name:

1902392006

Location: Inj. No.:

Vial 87

Acq Operator:

TNB

Inj. Vol.:

30  $\mu$ 1

Acq. Method:

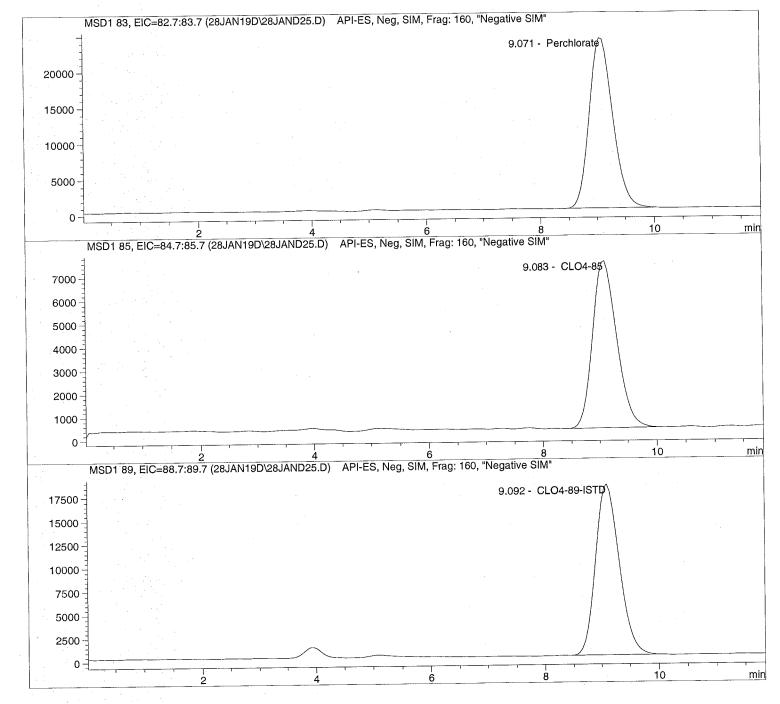
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 1902392006 MS Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND25.D

Injection Date: 1/28/2019 14:39:20 Seq Line:

Sample Name: 1902392006 MS Acq Operator: TNB

Location: Vial 87 Inj. No.: 30 μ1 Inj. Vol.:

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.071	BBA	694065.9	4.1829	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9,083	   PBA	215904.9	4.2584	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.092	BBA	536116.9	5.0000	CLO4-89-ISTD	_



Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND26.D

Sample Name: 637602

Injection Date: Sample Name:

1/28/2019 14:53:57 CCV@25 637602

Seq Line: Location:

Vial 71 1

Acq Operator:

TNB

Inj. No.: Inj. Vol.: 30  $\mu$ 1

Acq. Method:

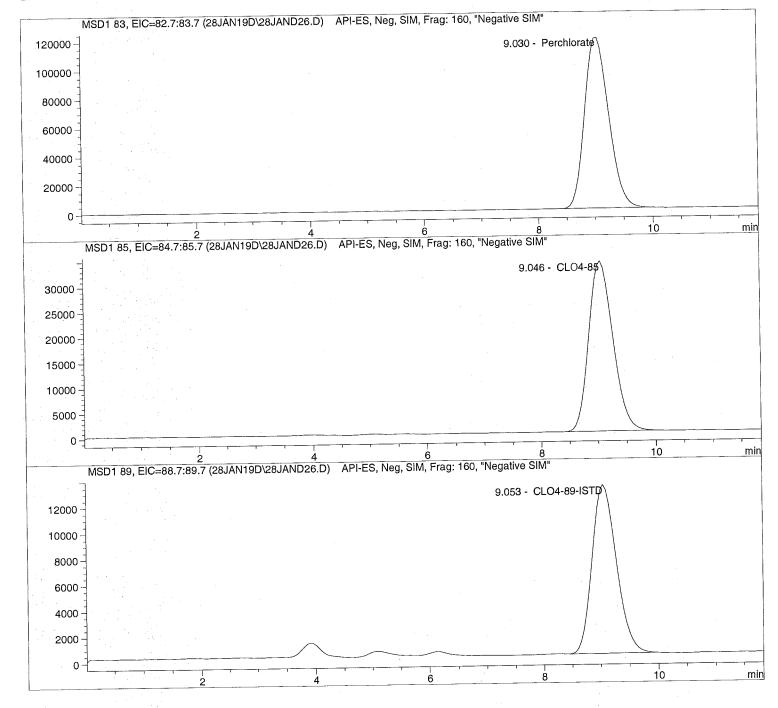
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis





Sample Name: 637602 CCV@25 Data file: C:\HPCHEM\1\DATA\28JAN19D\28JAND26.D

Injection Date: 1/28/2019 14:53:57

Seq Line: 26 Location:

Sample Name: 637602 CCV@25

Inj. No.:

Vial 71

Acq Operator:

TNB

Inj. Vol.:

30 μl

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 3. Dec. 2018, 00:29:27 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.030	PBA	3495668.0	26.8984	  Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.046	PBA	992722.0	25.3712	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.053	PBA	386403.7	5.0000	CLO4-89-ISTD	





**Environmental Division** 

# **Raw Data**

Initial Calibration



## 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	Perchlorate	Perchlorate
#*		* . ·				Area	RT	Amount
.#*	CLO4@ 1.0u	Vial 74	1	Control	4	9.40790e4	9.287	9.73826e-1
#*	CLO4@ 2.0u	Vial 75	1	Control	5	2.26957e5	9.259	2.19167
#*	CLO4@ 5.0u	Vial 76	1	Control	6	5.50307e5	9.208	4.80912
#*	CLO4@ 10.u	Vial 77	1	Control	7	1.07623e6	9.246	9.38291
#*	CLO4@ 25.u	Vial 78	1	Control	8	2.88097e6	9.175	25.83039
#*	CLO4@ 50.u	Vial 79	1	Control	9	6.29507e6	9.261	49.91981
#*	CLO4@ 75.u	Vial 80	1	Control	10	9.45737e6	9.236	74.88523
*.	ICAL Verf@	Vial 81	1	Control	11	1.10069e6	9.244	9.38952
	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD	CLO4-89-ISTD	CLO4-89-ISTD
#*						Area	RT	Amount
#*	CLO4@ 1.0u	Vial 74	1	Control	4	3.79545e5	9.314	5.00000
.#*	CLO4@ 2.0u	Vial 75	1	Control	5	3.52582e5	9.297	5.00000
#*	CLO4@ 5.0u	Vial 76	1	Control	6	3.66805e5	9.223	5.00000
#*	CLO4@ 10.u	Vial 77	1	Control	7	3.56815e5	9.266	5.00000
#*	CLO4@ 25.u	Vial 78	1	Control	8	3.32340e5	9.196	5.00000
#*	CLO4@ 50.u	Vial 79	1	Control	9	3.59393e5	9.277	5.00000
#*	CLO4@ 75.u	Vial 80	1	Control	10	3.45193e5	9.253	5.00000
*	ICAL Verf@	Vial 81	1	Control	11	3.64657e5	9.264	5.00000
	Sample	Location	Inj	SampleType	Run	CLO4-85	CLO4-85	CLO4-85
#*						Area	RT	Amount
#*	CLO4@ 1.0u	Vial 74	. 1 ·	Control	4	3.17987e4	9.316	9.60861e-1
# *	CLO4@ 2.0u	Vial 75	1	Control	5	7.05436e4	9.273	2.16955
# *	CLO4@ 5.0u	Vial 76	1	Control	6	1.69833e5	9.217	4.87565
#*	CLO4@ 10.u	Vial 77	1	Control	7	3.31565e5	9.259	9.58732
#*	CLO4@ 25.u	Vial 78	1	Control	8	8.62978e5	9.187	25.62680
#*	CLO4@ 50.u	Vial 79	1	Control	9	1.91847e6	9.278	49.74848
#*	CLO4@ 75.u	Vial 80	1	Control	10	2.93835e6	9.251	75.02646
*	ICAL Verf@	Vial 81	1	Control	11	3,27974e5	9.261	9.28908
			**		rt **			
				-				



```
______
                    Calibration Table
__________
Perchlorate
Calib. Data Modified :
                         10/9/2018 8:01:57 AM
Calculate
                   :
                         Internal Standard
Based on
                        Peak Area
Rel. Reference Window:
                       20.000 %
Abs. Reference Window:
                       0.000 min
                       20.000
0.000 min
Rel. Non-ref. Window :
Abs. Non-ref. Window :
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
                         No recalibration if peaks missing
Partial Calibration :
                         Quadratic (some peaks differ, see below)
Curve Type
                          Ignored (some peaks differ, see below)
Origin
                          Linear (Amnt) (some peaks differ, see below)
Weight
Recalibration Settings:
                       Average all calibrations Floating Average New 75%
Average Response :
Average Retention Time:
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
____
        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
                              Amt/Area Ref Grp Name
RetTime Lvl
             Amount Area
[min] Sig
_____
  9.287 1 1 1.00000 9.40790e4 1.06294e-5
2 2.00000 2.26957e5 8.81224e-6
                                          1 Perchlorate
              5.00000 5.50307e5 9.08584e-6
             10.00000 1.07623e6 9.29172e-6
              25.00000 2.88097e6 8.67764e-6
              50.00000 6.29507e6 7.94272e-6
              75.00000 9.45737e6 7.93033e-6
              5.00000 3.79545e5 1.31737e-5 +I1
                                               CLO4-89-ISTD
  9.314 3
          1
              5.00000 3.52582e5 1.41811e-5
           2
               5.00000 3.66805e5 1.36312e-5
           3.
               5.00000 3.56815e5 1.40129e-5
               5.00000 3.32340e5 1.50448e-5
               5.00000 3.59393e5 1.39124e-5
             5.00000 3.45193e5 1.44847e-5
          7
                                               CLO4-85
             1.00000 3.17987e4 3.14479e-5
  9.316 2 1
          2 2.00000 7.05436e4 2.83513e-5
              5.00000 1.69833e5 2.94406e-5
           3
             10.00000 3.31565e5 3.01600e-5
          4
              25.00000 8.62978e5 2.89695e-5
           6 50.00000 1.91847e6 2.60625e-5
```



```
Amt/Area Ref Grp Name
RetTime Lvl Amount
                  Area
[min] Sig
_____
        7 75.00000 2.93835e6 2.55246e-5
More compound-specific settings:
Compound: Perchlorate
                  : From 7.196 min To 11.196 min
 Time Window
                  : Ouadratic
 Curve Type
 Origin
                  : Ignored
 Calibration Level Weights:/
  Level 1
  Level 2
                 : 0.5
  Level 3
               : 0.2
: 0.1
  Level 4
  Level 5
                 : 0.04
  Level 6
                 : 0.02
  Level 7
                  : 0.013333
Compound: CLO4-89-ISTD
                  : From 7.207 min To 11.192 min
 Time Window
 Curve Type
                  : Linear
                  : Included
 Origin
 Calibration Level Weights:/
  Level 1
                  : 1
  Level 2
                  : 1
  Level 3
  Level 4
                  : 1
                  : 1
  Level 5
                  : 1
  Level 6
  Level 7
Compound: CLO4-85
                  : From 7.211 min To 11.211 min
 Time Window
            : Quadratic
 Curve Type
                  : Ignored
 Origin
 Calibration Level Weights:/
  Level 1 : 1
                  : 0.5
   Level 2
  Level 3
                  : 0.2
                  : 0.1
   Level 4
                  : 0.04
   Level 5
  Level 6
Level 7
                  : 0.02
                  : 0.013333
Peak Sum Table
______
***No Entries in table***
_______
```



# 

#### Calibration Curves

```
Area Ratio

25

20

15

10

5

4

0

10

Amount Ratio
```

```
______
         Perchlorate at exp. RT: 9.287
         MSD1 83, EIC=82.7:83.7
         Correlation:
         Residual Std. Dev.:
                              0.16701
         Formula: y = ax^2 + bx + c
             , a:
                     1.45482e-2
              b:
                     1.61590
                     -6.73998e-2
              c:
              x: Amount Ratio
              y: Area Ratio
         Calibration Level Weights:
             Level 1
                      : 1
             Level 2
                      : 0.5
             Level 3
                      : 0.2
             Level 4
                      : 0.1
                      : 0.04
             Level 5
```

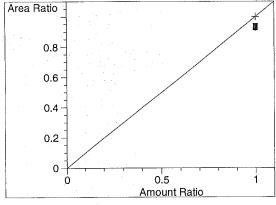
: 0.02

: 0.013333

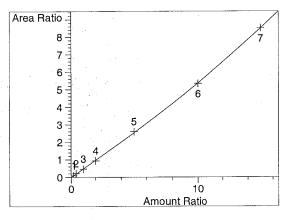
Level 6

Level 7

Level 7



```
CLO4-89-ISTD at exp. RT: 9.314
MSD1 89, EIC=88.7:89.7
                       1.00000
Correlation:
Residual Std. Dev.:
                       0.00000
Formula: y = mx + b
              1.00000
      m:
      b:
             0.00000
      x: Amount Ratio
      y: Area Ratio
Calibration Level Weights:
    Level 1
            : 1
    Level 2
    Level 3
    Level 4
    Level 5
    Level 6
```



```
CLO4-85 at exp. RT: 9.316
MSD1 85, EIC=84.7:85.7
Correlation:
                       0.99984
Residual Std. Dev.:
                    0.03901
Formula: y = ax^2 + bx + c
             6.03220e-3
      a:
      b:
             4.77309e-1
             -8.16718e-3
      c:
      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
```

\_\_\_\_\_\_



# Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
====	=======	=======================================	=======	===	========	=======	========
1	Vial 71	CLO4@ .10ug/L	CLO4-AQN	1	Ctrl Samp		
. 2	Vial 72	CLO4@ .20ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 80	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 81	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		



Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI04.D

Sample Name: CLO4@ 1.0ug/L

\_\_\_\_\_\_ Injection Date:

10/08/2018 11:37:35

Seq Line: Vial 74 Location:

Sample Name: Acq Operator: CLO4@ 1.0ug/L TNB

Inj. No.: Inj. Vol.:

1  $25 \mu 1$ 

Acq. Method:

 ${\tt CLO4-AQN.M}$ 

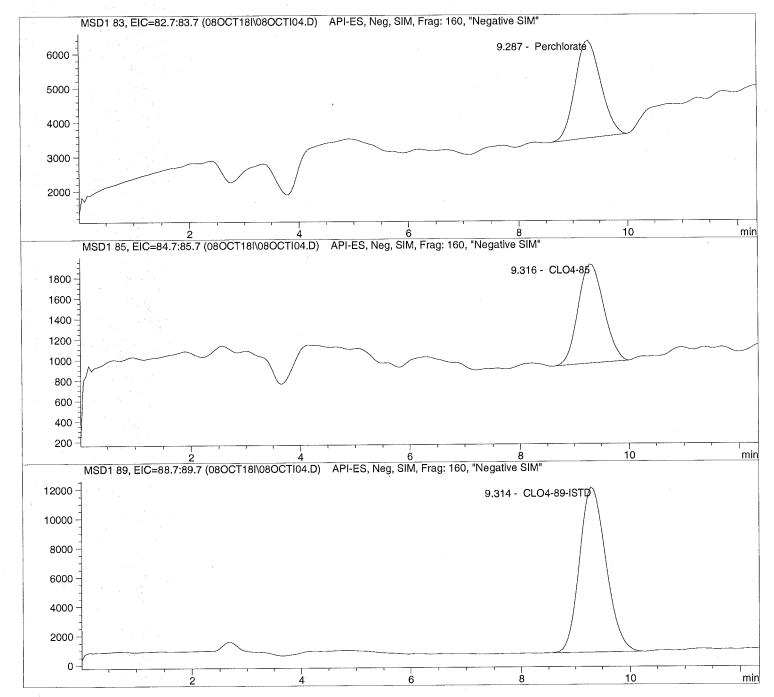
C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

Last Changed:

10/9/2018 08:22:51

Perchlorate analysis

~\_\_\_\_\_\_





Sample Name: CLO4@ 1.0ug/L Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI04.D

\_\_\_\_\_\_ Injection Date: 10/08/2018 11:37:35
Sample Name: CLO4@ 1.0ug/L
Acq Operator: TNB Seq Line: Location: Vial 74 1

Inj. No.: Inj. Vol.:  $25 \mu 1$ 

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

10/9/2018 08:22:51 Last Changed:

Perchlorate analysis

Sample Information

\_\_\_\_\_\_

Sorted By: Signal

Calib. Data Modified: Tue, 9. Oct. 2018, 08:01:57 am

1.000000 Multiplier: 1.000000 Dilution: 1.000 Sample Amount:

\_\_\_\_\_\_\_

LCMS Results

\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
	9.287	PBA	94079.0	0.9738	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	 Area	Amount [ug/sample]	Compound Name
9.316	PBA	 31798.7	0.9609	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.314	PBA	379544.7	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI05.D Sample Name: CLO4@ 2.0ug/L

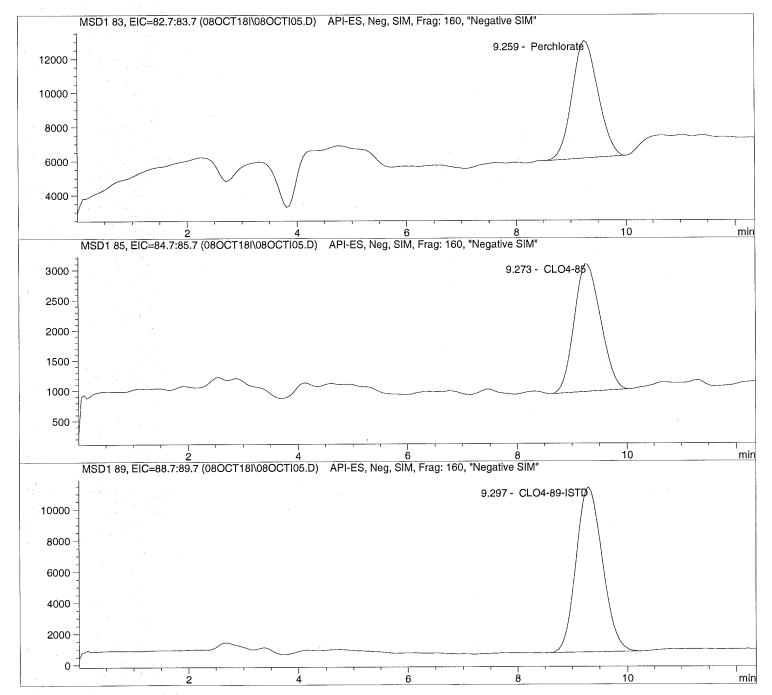
Injection Date: 10/08/2018 11:51:45 Seq Line: 5
Sample Name: CLO4@ 2.0ug/L Location: Vial 75
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 25 µl

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI05.D Sample Name: CLO4@ 2.0ug/L

\_\_\_\_\_\_\_

Injection Date: 10/08/2018 11:51:45 Seq Line: Sample Name: CLO4@ 2.0ug/L Acq Operator: TNB Vial 75 Location:

Inj. No.: 1  $25 \mu 1$ Inj. Vol.:

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By: Signal

Calib. Data Modified: Tue, 9. Oct. 2018, 08:01:57 am

Multiplier: 1.000000 Dilution: 1.000000 Sample Amount: 2,000

LCMS Results

\_\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT Type [min]	Area	Amount [ug/sample]	Compound Name	
9.259 BBA	226957.1	2,1917	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
9.273	PBA	70543.6	2.1695	  CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.297	PBA	352581.8	5.0000	CLO4-89-ISTD



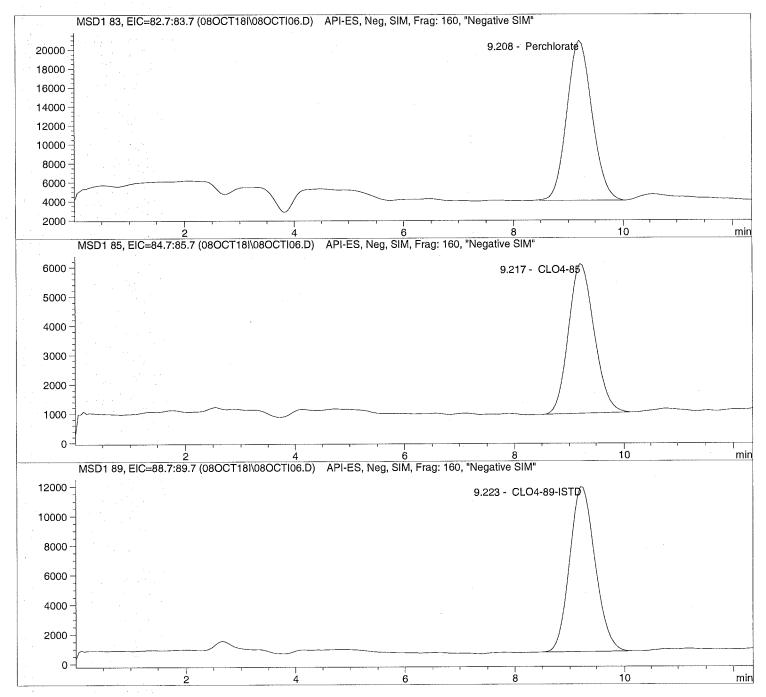
Data file: C:\HPCHEM\1\DATA\080CT18I\080CT106.D Sample Name: CLO4@ 5.0ug/L

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\080CT18I\080CT106.D Sample Name: CL04@ 5.0ug/L

Inj. Vol.:

 $25 \mu 1$ 

Injection Date: 10/08/2018 12:05:59 Seq Line: 6
Sample Name: CLO4@ 5.0ug/L Location: Vial 76
Acq Operator: TNB Inj. No.: 1

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By: Signal

Calib. Data Modified: Tue, 9. Oct. 2018, 08:01:57 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	
	9.208	BBA	550306.9	4.8091	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.217	PBA	169833.3	4.8757	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.223	PBA	 366804.8	5.0000	CLO4-89-ISTD

\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI07.D

Sample Name: CLO4@ 10.ug/L

Injection Date:

10/08/2018 12:20:10

Seq Line: Location:

 $25 \mu 1$ 

Sample Name: Acq Operator:

CLO4@ 10.ug/L

Inj. No.: Inj. Vol.: Vial 77 1

Acq. Method:

CLO4-AQN.M

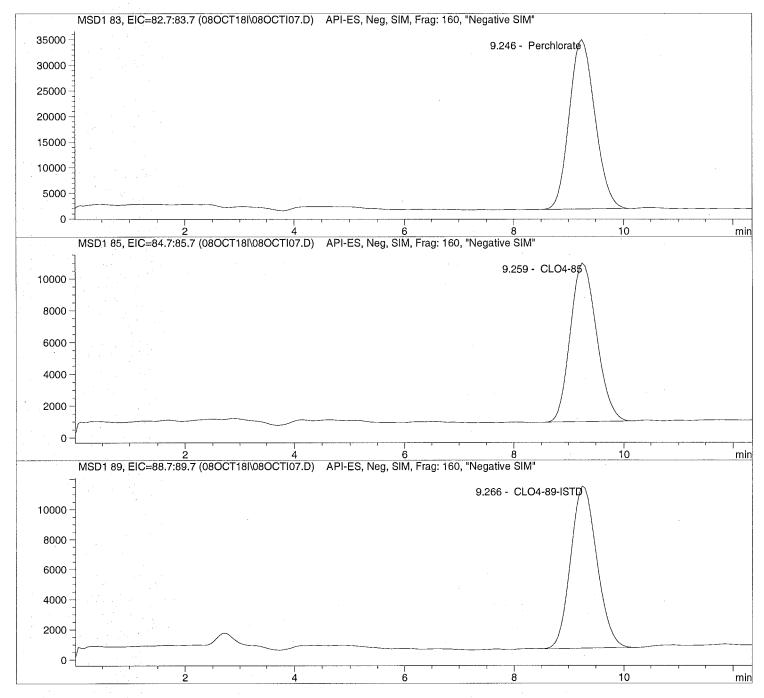
 $\mathtt{TNB}$ 

C:\HPCHEM\1\METHODS\CLO4-DPR.M Analysis Method:

Last Changed:

10/9/2018 08:22:51

Perchlorate analysis





Sample Name: CLO4@ 10.ug/L Data file: C:\HPCHEM\1\DATA\080CT18I\080CT107.D

\_\_\_\_\_\_

Injection Date: 10/08/2018 12:20:10 Sample Name: CLO4@ 10.ug/L

Seq Line: Location: Vial 77

Acq Operator:

TNB

Inj. No.: 1 Inj. Vol.:  $25 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified:

Tue, 9. Oct. 2018, 08:01:57 am

Multiplier: Dilution:

1.000000 1.000000 10.000

Sample Amount:

\_\_\_\_\_\_

LCMS Results

\_\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [mi	1 -750	Area	Amount [ug/sample]	Compound Name
9.	246   PBA	1076227.4	9.3829	  Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.259	PBA	 331564.9	9.5873	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.266	PBA	356815.3	5.0000	CLO4-89-ISTD

\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\080CT18I\080CT108.D Sample Name: CL04@ 25.ug/L

Injection Date: 10/08/2018 12:34:24 Sample Name: CLO4@ 25.ug/L

Seq Line: 8
Location: Vial 78
Inj. No.: 1

Sample Name: CLO4 Acq Operator: TNB

Inj. No.: Inj. Vol.:

25 μ1

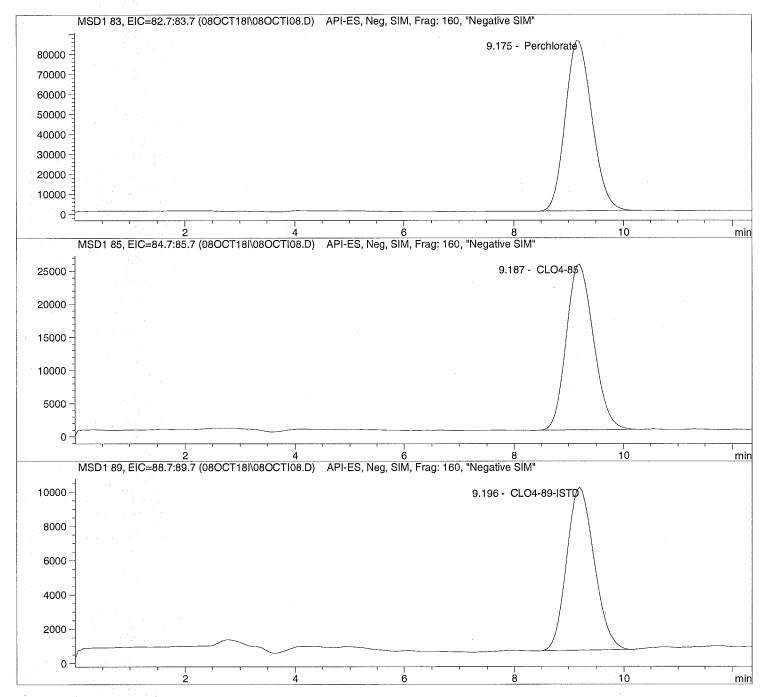
Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI08.D Sample Name: CLO4@ 25.ug/L

Injection Date: 10/08/2018 12:34:24 Seq Line: Sample Name: CLO4@ 25.ug/L Vial 78 Location: Acq Operator: TNB Inj. No.: 1  $25 \mu 1$ Inj. Vol.:

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

Sorted By: Signal

Calib. Data Modified: Tue, 9. Oct. 2018, 08:01:57 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	
9.175	PBA	2880966.0	25.8304	Perchlorate	Ì

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.187	  PBA	862978.0	25.6268	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.196	PBA	332339.7	5.0000	CLO4-89-ISTD



Data file: C:\HPCHEM\1\DATA\080CT18I\080CT109.D Sample Name: CLO4@ 50.ug/L

Injection Date:

10/08/2018 12:48:34

Seq Line:

Sample Name: Acq Operator:

CLO4@ 50.ug/L

Location: Inj. No.:

Vial 79 1

\_.

TNB

Inj. Vol.:

 $25 \mu 1$ 

Acq. Method:

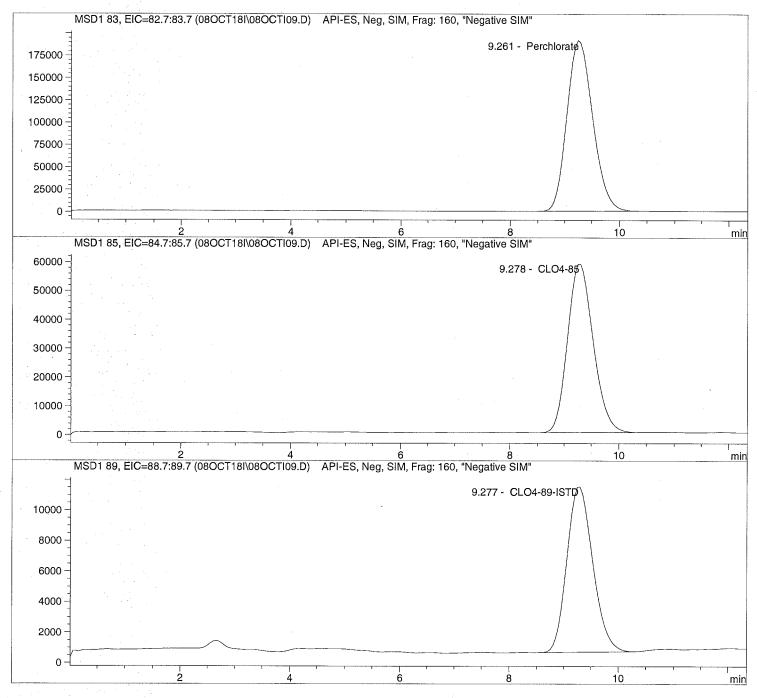
CLO4-AQN.M

Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI09.D Sample Name: CLO4@ 50.ug/L \_\_\_\_\_\_\_

Injection Date: 10/08/2018 12:48:34
Sample Name: CLO4@ 50.ug/L
Acq Operator: TNB

Seq Line: 9

Vial 79 Location:

Inj. No.:
Inj. Vol.:

1  $25 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Tue, 9. Oct. 2018, 08:01:57 am

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

50.000

\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.261	PBA	6295070.5	49.9198	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.278	PBA	1918466.9	49.7485	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.277	PBA	359392.8	5.0000	CLO4-89-ISTD

\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI10.D

Sample Name: CLO4@ 75.ug/L

Injection Date:

10/08/2018 13:02:48

Seq Line:

Sample Name:

CLO4@ 75.ug/L

Location:

10

Sample Name: Acq Operator:

TNB

Inj. No.:
Inj. Vol.:

Vial 80 1 25 µl

Acq. Method:

CLO4-AQN.M

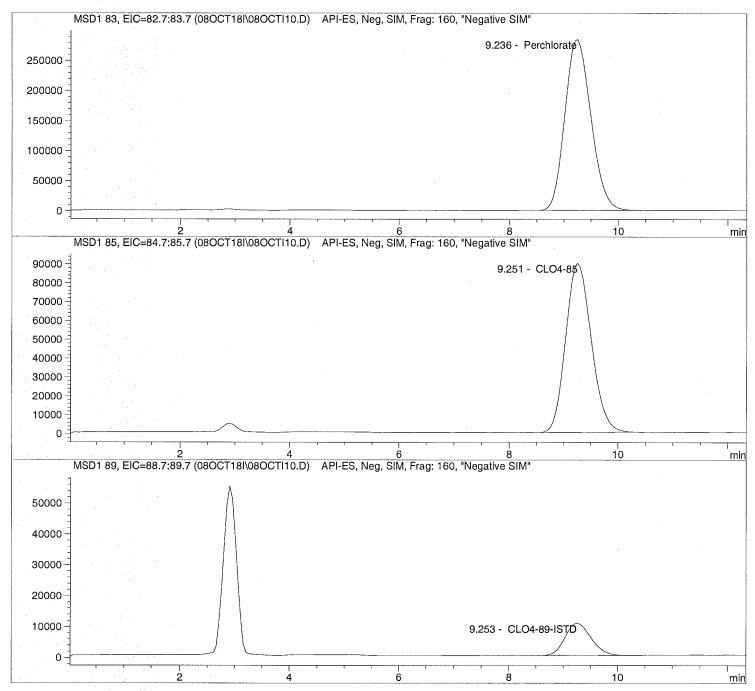
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed:

10/9/2018 08:22:51

Perchlorate analysis





Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI10.D Sample Name: CLO4@ 75.ug/L

\_\_\_\_\_\_\_ Injection Date: 10/08/2018 13:02:48
Sample Name: CLO4@ 75.ug/L
Acq Operator: TNB Seq Line: 10 Location: Vial 80 1

Inj. No.:  $25 \mu l$ Inj. Vol.:

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

10/9/2018 08:22:51 Last Changed:

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_\_

Sorted By: Signal

Calib. Data Modified: Tue, 9. Oct. 2018, 08:01:57 am

1.000000 Multiplier: 1.000000 Dilution: 75.000 Sample Amount:

\_\_\_\_\_\_\_

LCMS Results

\_\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
.	9.236	PBA	9457367.0	74.8852	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.251	PBA	2938347.5	75.0265	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
9.253	PBA	345192.7	5.0000	CLO4-89-ISTD	į



Data file: C:\HPCHEM\1\DATA\080CT18I\080CT111.D Sample Name: ICAL Verf@10ug/L

Injection Date: 10/08/2018 13:17:00 Seq Line: 11 Sample Name: ICAL Verf@10ug/L Location: Vial 81 Acq Operator: TNB Inj. No.: 1 Inj. Vol.: 25  $\mu$ l

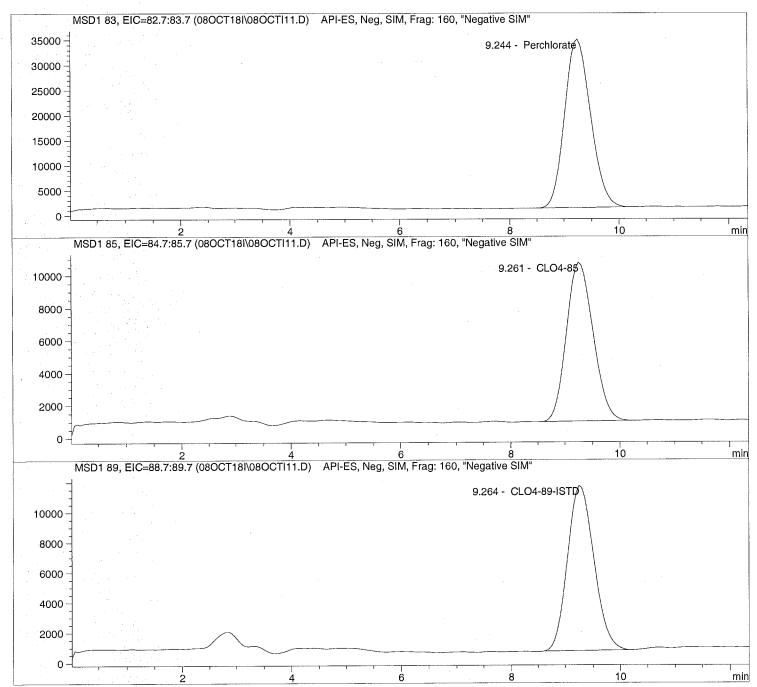
Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

\_\_\_\_\_\_





Sample Name: ICAL Verf@10ug/L Data file: C:\HPCHEM\1\DATA\080CT18I\080CTI11.D 

Injection Date: 10/08/2018 13:17:00
Sample Name: ICAL Verf@10ug/L Seq Line: 11 Location: Vial 81 Acq Operator: TNB Inj. No.: 25 μl Inj. Vol.:

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M

10/9/2018 08:22:51 Last Changed:

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_\_

Sorted By: Signal

Calib. Data Modified: Tue, 9. Oct. 2018, 08:01:57 am

Multiplier: 1.000000 1.000000 Dilution: Sample Amount: 10.000

\_\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
-	9.244	PBA	1100685.7	9.3895	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
9.261	PBA	327974.4	9.2891	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name		
9.264	PBA	364657.2	5.0000	CLO4-89-ISTD		

\_\_\_\_\_\_\_





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

F: +1 281 530 5887

November 27, 2019

Susan Huang Aptim Environmental & Infrastucture, Inc. 2500 City West Blvd., Suite 1700 Houston, TX 77042

Work Order: **HS19110320** 

Laboratory Results for: Longhorn Army Ammunition Plant

Dear Susan,

ALS Environmental received 11 sample(s) on Nov 07, 2019 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

Client: Aptim Environmental & Infrastucture, Inc.

Project: Longhorn Army Ammunition Plant SAMPLE SUMMARY

Work Order: HS19110320

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19110320-01	04WW02-191105	Water		05-Nov-2019 08:30	07-Nov-2019 14:00	
HS19110320-02	04WW02-191105-FD	Water		05-Nov-2019 08:30	07-Nov-2019 14:00	
HS19110320-03	LHSMW02-191105	Water		05-Nov-2019 09:55	07-Nov-2019 14:00	
HS19110320-04	04WW03-191106	Water		06-Nov-2019 08:20	07-Nov-2019 14:00	
HS19110320-05	04WW06-191106	Water		06-Nov-2019 09:10	07-Nov-2019 14:00	
HS19110320-06	04WW11-191106	Water		06-Nov-2019 09:55	07-Nov-2019 14:00	
HS19110320-07	04WW05-191106	Water		06-Nov-2019 10:45	07-Nov-2019 14:00	
HS19110320-08	04WW08-191106	Water		06-Nov-2019 11:35	07-Nov-2019 14:00	
HS19110320-09	04WW04-191106	Water		06-Nov-2019 12:20	07-Nov-2019 14:00	
HS19110320-10	LHSMW01-191106	Water		06-Nov-2019 13:15	07-Nov-2019 14:00	
HS19110320-11	Fire Station Well-191106	Water		06-Nov-2019 13:35	07-Nov-2019 14:00	

Client: Aptim Environmental & Infrastucture, Inc. CASE NARRATIVE

**Project:** Longhorn Army Ammunition Plant

Work Order: HS19110320

#### **Work Order Comments**

Anions were missed by the lab, revised to report Nitrate/Nitrite and Sulfate.
 Nitrate/Nitrite preserved on 11/26/2019 per client request.

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

## Wet Chemistry by Method SW9056

## Batch ID: R351466

#### Sample ID: 04WW05-191106 (HS19110320-07)

• The reporting limit is elevated due to dilution for high concentrations of non-target analytes

#### Batch ID: R351465

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

## WetChemistry by Method SM2320B

#### Batch ID: R350238

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

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320 04WW02-191105 Lab ID:HS19110320-01

**ANALYTICAL REPORT** 

Collection Date: 05-Nov-2019 08:30 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

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

Revision: 1

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320 04WW02-191105-FD Lab ID:HS19110320-02

**ANALYTICAL REPORT** 

Collection Date: 05-Nov-2019 08:30 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

Revision: 1

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320 LHSMW02-191105 Lab ID:HS19110320-03

**ANALYTICAL REPORT** 

Collection Date: 05-Nov-2019 09:55 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320
04WW03-191106 Lab ID:HS19110320-04

**ANALYTICAL REPORT** 

Collection Date: 06-Nov-2019 08:20 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

**ANALYTICAL REPORT** 

Client: Aptim Environmental & Infrastucture, Inc.

Project: Longhorn Army Ammunition Plant WorkOrder:HS19110320
Sample ID: 04WW06-191106 Lab ID:HS19110320-05

Collection Date: 06-Nov-2019 09:10 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:	NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320 04WW11-191106 Lab ID:HS19110320-06

**ANALYTICAL REPORT** 

Collection Date: 06-Nov-2019 09:55 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:	NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

**ANALYTICAL REPORT** 

Client: Aptim Environmental & Infrastucture, Inc.

Project: Longhorn Army Ammunition Plant WorkOrder:HS19110320
Sample ID: 04WW05-191106 Lab ID:HS19110320-07

Collection Date: 06-Nov-2019 10:45 Matrix:Water

ANALYSES	RESULT	OUAL	DL	LOD	LOQ	UNITS	DILUTION	DATE
ANALISES	RESULT	QUAL	DL	LOD	LOQ	UNITS	FACTOR	ANALYZED
ALKALINITY BY SM2320B		Method:S	M2320B					Analyst: TH
Alkalinity, Total (As CaCO3)	438		5.00	5.00	5.00	mg/L	1	09-Nov-2019 18:54
ANIONS BY SW9056A		Method:	SW9056					Analyst: KML
Sulfate	72.8		0.200	0.500	0.500	mg/L	1	27-Nov-2019 10:54
NITRATE/NITRITE BY IC BY SW	V9056A	Method:	SW9056					Analyst: KML
Nitrogen, Nitrate-Nitrite	0.500	U	0.150	0.500	1.00	mg/L	5	27-Nov-2019 12:00
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		Metho	d:NA					Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	21-Nov-2019 16:31
SUBCONTRACT ANALYSIS - TO ANALYSIS	ос	Metho	d:NA					Analyst: SUBI
Subcontract Analysis	See Attached		0	0		NA	1	25-Nov-2019 09:52

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320 04WW08-191106 Lab ID:HS19110320-08

**ANALYTICAL REPORT** 

Collection Date: 06-Nov-2019 11:35 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320 04WW04-191106 Lab ID:HS19110320-09

**ANALYTICAL REPORT** 

Collection Date: 06-Nov-2019 12:20 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

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

12 of 197

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

Longhorn Army Ammunition Plant WorkOrder:HS19110320 LHSMW01-191106 Lab ID:HS19110320-10

**ANALYTICAL REPORT** 

Collection Date: 06-Nov-2019 13:15 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	I:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

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

**ANALYTICAL REPORT** 

Client: Aptim Environmental & Infrastucture, Inc.

Project: Longhorn Army Ammunition Plant WorkOrder:HS19110320
Sample ID: Fire Station Well-191106 Lab ID:HS19110320-11

Collection Date: 06-Nov-2019 13:35 Matrix:Water

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method	:NA					Analyst: SUB
Subcontract Analysis	See Attached	0	0		NA	1	21-Nov-2019 16:31

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

Client: Aptim Environmental & Infrastucture, Inc.

Project: Longhorn Army Ammunition Plant DATES REPORT

WorkOrder: HS19110320

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R35023	8 ( 0 ) <b>Test Name</b> :	ALKALINITY BY SM232	:0B		Matrix: Water	
HS19110320-07	04WW05-191106	06 Nov 2019 10:45			09 Nov 2019 18:54	1
Batch ID: R35104	6 ( 0 ) <b>Test Name</b> :	SUBCONTRACT ANALY	YSIS - PERCHLORA	TE (EPA 6850)	Matrix: Water	
HS19110320-01	04WW02-191105	05 Nov 2019 08:30			21 Nov 2019 16:31	1
HS19110320-02	04WW02-191105-FD	05 Nov 2019 08:30			21 Nov 2019 16:31	1
HS19110320-03	LHSMW02-191105	05 Nov 2019 09:55			21 Nov 2019 16:31	1
HS19110320-04	04WW03-191106	06 Nov 2019 08:20			21 Nov 2019 16:31	1
HS19110320-05	04WW06-191106	06 Nov 2019 09:10			21 Nov 2019 16:31	1
HS19110320-06	04WW11-191106	06 Nov 2019 09:55			21 Nov 2019 16:31	1
HS19110320-07	04WW05-191106	06 Nov 2019 10:45			21 Nov 2019 16:31	1
HS19110320-08	04WW08-191106	06 Nov 2019 11:35			21 Nov 2019 16:31	1
HS19110320-09	04WW04-191106	06 Nov 2019 12:20			21 Nov 2019 16:31	1
HS19110320-10	LHSMW01-191106	06 Nov 2019 13:15			21 Nov 2019 16:31	1
HS19110320-11	Fire Station Well-191106	06 Nov 2019 13:35			21 Nov 2019 16:31	1
Batch ID: R35119	6 ( 0 ) Test Name :	SUBCONTRACT ANALY	YSIS - TOC ANALYS	IS	Matrix: Water	
HS19110320-07	04WW05-191106	06 Nov 2019 10:45			25 Nov 2019 09:52	1
Batch ID: R35146	5 ( 0 ) <b>Test Name</b> :	ANIONS BY SW9056A			Matrix: Water	
HS19110320-07	04WW05-191106	06 Nov 2019 10:45			27 Nov 2019 10:54	1
Batch ID: R35146	6 ( 0 ) Test Name :	NITRATE/NITRITE BY I	C BY SW9056A		Matrix: Water	
HS19110320-07	04WW05-191106	06 Nov 2019 10:45			27 Nov 2019 12:00	5

**Client:** Aptim Environmental & Infrastucture, Inc.

**Project:** Longhorn Army Ammunition Plant

WorkOrder: HS19110320

**QC BATCH REPORT** 

Batch ID: R3502	38 ( 0 )	Instrum	ent:	ManTech01	M	lethod:	ALKALINITY	' BY SM23201	3
MBLK	Sample ID:	WBLKW1-191109		Units:	mg/L	Ar	nalysis Date:	09-Nov-2019	16:34
Client ID:		Run ID	: Mar	nTech01_350238	SeqNo:	5339051	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qua
Alkalinity, Total (As	CaCO3)	5.00	5.00						
LCS	Sample ID:	LCS1-1911029		Units:	mg/L	Ar	nalysis Date:	09-Nov-2019	16:43
Client ID:		Run ID	: Mar	nTech01_350238	SeqNo:	5339052	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qua
Alkalinity, Total (As	CaCO3)	1014	5.00	1000	0	101	85 - 115		
LCSD	Sample ID:	LCSD1-191109		Units:	mg/L	Ar	nalysis Date:	09-Nov-2019	16:51
Client ID:		Run IE	: Mar	nTech01_350238	SeqNo:	5339053	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qua
Alkalinity, Total (As	CaCO3)	1013	5.00	1000	0	101	85 - 115	1014	0.116 20
DUP	Sample ID:	HS19110347-01DUP		Units:	mg/L	Ar	nalysis Date:	09-Nov-2019	17:04
Client ID:		Run IE	: Mar	nTech01_350238	SeqNo:	5339055	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qua

**Client:** Aptim Environmental & Infrastucture, Inc.

**Project:** Longhorn Army Ammunition Plant

WorkOrder: HS19110320

**QC BATCH REPORT** 

Batch ID:	R351465 ( 0 )	Instru	ment: I	CS-Integrion	Me	ethod: A	NIONS BY	SW9056A	
MBLK	Sample ID:	WBLKW1-112619		Units: ı	mg/L	Ana	llysis Date:	26-Nov-2019	18:46
Client ID:		Run	ID: ICS-II	ntegrion_35146	5 SeqNo: 5	365056	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
Sulfate		0.500	0.500						l
LCS	Sample ID:	WLCSW1-112619		Units: ı	mg/L	Ana	llysis Date:	26-Nov-2019	19:02
Client ID:		Run	ID: ICS-II	ntegrion_35146	5 SeqNo: 5	365057	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
Sulfate		19.3	0.500	20	0	96.5	80 - 120		
LCSD	Sample ID:	WLCSDW1-112619		Units: ı	mg/L	Ana	llysis Date:	26-Nov-2019	19:19
Client ID:		Run	ID: ICS-II	ntegrion_35146	5 SeqNo: 5	365058	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
Sulfate		19.24	0.500	20	0	96.2	80 - 120	19.3	0.31 20
MS	Sample ID:	HS19111343-06MS		Units: ı	mg/L	Ana	llysis Date:	26-Nov-2019	21:08
Client ID:		Run	ID: ICS-II	ntegrion_35146	5 SeqNo: 5	365062	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
Sulfate		45.49	0.500	10	37.09	84.0	80 - 120		
MS	Sample ID:	HS19111189-03MS		Units: ı	mg/L	Ana	llysis Date:	26-Nov-2019	22:48
Client ID:		Run	ID: ICS-II	ntegrion_35146	5 SeqNo: 5	365068	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
Sulfate		9.474	0.500	10	0.1582	93.2	80 - 120		
MSD	Sample ID:	HS19111343-06MSD		Units: ı	mg/L	Ana	llysis Date:	26-Nov-2019	21:25
Client ID:		Run	ID: ICS-II	ntegrion_35146	5 SeqNo: 5	365063	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual
		45.88	0.500	10					

**QC BATCH REPORT** 

Client: Aptim Environmental & Infrastucture, Inc.

**Project:** Longhorn Army Ammunition Plant

WorkOrder: HS19110320

Batch ID: R351465 ( 0 ) Instrument: ICS-Integrion Method: ANIONS BY SW9056A

MSD Sample ID: HS19111189-03MSD Units: mg/L Analysis Date: 26-Nov-2019 23:04

Client ID: Run ID: ICS-Integrion\_351465 SeqNo: 5365069 PrepDate: DF: 1

SPK Ref Control RPD Ref RPD
Analyte Result PQL SPK Val Value %REC Limit Value %RPD Limit Qual

Sulfate 9.812 0.500 10 0.1582 96.5 80 - 120 9.474 3.51 20

The following samples were analyzed in this batch: [HS19110320-07]

Client: Aptim Environmental & Infrastucture, Inc.

**Project:** Longhorn Army Ammunition Plant

WorkOrder: HS19110320

**QC BATCH REPORT** 

Batch ID:	R351466 ( 0 )	Instrum	nent:	CS-Integrion	Me	ethod: N	IITRATE/NIT	TRITE BY IC	BY SW9056A
MBLK	Sample ID:	WBLKW1-112719		Units: <b>n</b>	ng/L	Ana	alysis Date:	27-Nov-2019	11:10
Client ID:		Run I	D: ICS-I	ntegrion_351466	SeqNo: 5	365082	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qu
Nitrogen, N	itrate-Nitrite	0.100	0.200						
LCS	Sample ID:	WLCSW1-112719		Units: n	ng/L	Ana	alysis Date:	27-Nov-2019	11:27
Client ID:		Run I	D: ICS-I	ntegrion_351466	SeqNo: 5	365083	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qu
Nitrogen, N	itrate-Nitrite	8.566	0.200	8	0	107	90 - 110		
LCSD	Sample ID:	WLCSDW1-112719		Units: n	ng/L	Ana	alysis Date:	27-Nov-2019	11:44
Client ID:		Run I	D: ICS-I	ntegrion_351466	SeqNo: 5	365084	PrepDate:		DF: <b>1</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qu
Nitrogen, N	itrate-Nitrite	8.585	0.200	8	0	107	90 - 110	8.566	0.224 20
MS	Sample ID:	HS19110320-07MS		Units: m	ng/L	Ana	alysis Date:	27-Nov-2019	12:17
Client ID:	04WW05-191106	Run I	D: ICS-I	ntegrion_351466	SeqNo: 5	365086	PrepDate:		DF: <b>5</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qu
Nitrogen, N	itrate-Nitrite	20.85	1.00	20	0	104	80 - 120		
MSD	Sample ID:	HS19110320-07MSD		Units: n	ng/L	Ana	alysis Date:	27-Nov-2019	12:33
Client ID:	04WW05-191106	Run I	D: ICS-I	ntegrion_351466	SeqNo: 5	365087	PrepDate:		DF: <b>5</b>
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qu
Nitrogen, N	itrate-Nitrite	20.82	1.00	20	0	104	80 - 120	20.85	0.161 20
The following	g samples were analyze	d in this batch: HS19110	320-07		·		<u> </u>		

Aptim Environmental & Infrastucture, Inc. Client: QUALIFIERS,

Project: Longhorn Army Ammunition Plant **ACRONYMS, UNITS** 

HS19110320 WorkOrder:

Qualifier	Description
*	Value exceeds Regulatory Limit
а	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	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
0	Sample amount is > 4 times amount spiked
Р	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

Laboratory Control Sample Duplicate LCSD

MBLK Method Blank

Method Detection Limit MDL MQL Method Quantitation Limit

MS Matrix Spike

Matrix Spike Duplicate MSD PDS Post Digestion Spike **PQL** Practical Quantitaion Limit

SD Serial Dilution

SDL Sample Detection Limit

**TRRP** Texas Risk Reduction Program

#### Description **Unit Reported**

Milligrams per Liter mg/L

### **CERTIFICATIONS, ACCREDITATIONS & LICENSES**

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist Client Name: **CBI-Houston** Date/Time Received: 07-Nov-2019 14:00 Work Order: HS19110320 Received by: **PMG** Checklist completed by: Reviewed by: Jared R. Makan 7-Nov-2019 RJ Modashia 7-Nov-2019 eSignature Date eSignature Date Matrices: <u>Water</u> Carrier name: FedEx Priority Overnight Not Present 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 VOA/TX1005/TX1006 Solids in hermetically sealed vials? No Yes 1 Page(s) Chain of custody present? Yes No COC IDs:N/A Chain of custody signed when relinquished and received? Yes No Yes No Samplers name present on COC? Yes No Chain of custody agrees with sample labels? Yes No Samples in proper container/bottle? Yes No Sample containers intact? Yes No Sufficient sample volume for indicated test? Yes No All samples received within holding time? Yes 🗸 No Container/Temp Blank temperature in compliance? 0.7°C / 0.7°C UC/C Temperature(s)/Thermometer(s): IR25 42926 Cooler(s)/Kit(s): Date/Time sample(s) sent to storage: 11/07/2019 14:40 Yes Water - VOA vials have zero headspace? No VOA vials submitted No V Water - pH acceptable upon receipt? Yes No N/A ~ pH adjusted? N/A Yes No pH adjusted by: Login Notes: Client Contacted: Date Contacted: Person Contacted: Contacted By: Regarding: Comments:

Corrective Action:

<b>≯</b> APTIM														Page	1 of	
COC ID:			Baselir	e Nov 20	19	<del>,</del>	TURN	ROUND TIM			RUSH: No					
Facility Name 1	PROJECT/CLIENT	INFO				ļ	ah Marna	LABORATOR						HER INFO		
Project Number						Lab Name ALS Laboratorics Lab Contact RJ Modashia				<del> </del>	Er	nail Invoice To	Fedinvoices@aptim.com	·		
	LHAAP-50		.—			i		RJ.Modashia@al	Isglobal.com		<del>                                     </del>		mail Report To	Susan.Huang@aptim.cor		
	1203-B East Grand Avenue						Address	10450 Standliff	Rd., Suite 210	,			fail Reports To		, ,	
	PMB 202			1						·				4005 Port Chicago High	way, Suite 20	10
Postal Code	Marshall 15620			State T				Houston	State	TX	1		<u>-</u>	Concord	State	CA
Postal Code   75670   Country   USA   Phone Number   713.243.7264				stal Code	77099 281.575.2279 or	Country	USA	<del> -</del>		Postal Code	94520	Countr	y US			
Project Manager I						1 11011	e (viumber	261.373.2279 00	281, 30 3030	- <del>-</del>	1	Shir	ping Company			
		PLE DET	AILS						-		ANALYS	IS REQUESTE		···		
					-		1	Semple Contain	1-125ml	1-250ml	1-250ml /Cool	2-40ml	· · · · · · · · · · · · · · · · · · ·			Τ
į							ļ	and Prestvati		rg /Cool to 6 deg C	to 6 deg C	Amber/H2SO4	.,			$\perp$
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS Perchlorate by SW6850	Anions (sulfate/nitrate/Nitrite) by SW9056	Alkalinity by SM2320B	TOC by SMS310C				
wwo2-191105	Utante of		Depin	1		11/5/19	6830		<del>-</del>	732	<del></del>	<del></del>				+
Humo 2-141105-FD		<u> </u>	<del> </del>	<del> </del>			$\overline{}$			<u> </u>	<del> </del>				<del>-  </del> -	
			1		1 WG	11/5/19	0830		<del>- X-</del>	<del> </del>						+
SMW02-191105	CHAMP OF			ļ <u>-</u>	w6	11/2/19	2200		X	<u>. </u>	<u> </u>					1_
ww03-191106	CHAMP 04				wa	11/6/14	0850		, X	<u> </u>	j					į
wwob-191166_	CHAMP OF				w6	11/6/19	9410		χ	į	į				1	)
ww.11-191106	CHARP OF				W6	11/6/19	0 455		Ϋ́							
www.1-191106-MS		!			WG	11/6/19			V							$\top$
ww11-191106-MSD	LITAAP O 4	ĺ			we	11/6/19			\\$\tag{\sqrt{\sqrt{\sqrt{\chi}}}	†	<u> </u>	†			<u> </u>	+
ww05-191106	LHAAPOY		<u> </u>	1.2.2.	W6	11/6/19		4		×	×	×		-		+
ww08-191106			i		W6	11/4/19		<del> </del>	\ <del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>	<del>  ^</del> -	<del>                                     </del>	<del></del>			<del></del>	+
Hwwo4-191106	LHAAP OF	<u>!</u>	<u> </u>	<del>                                     </del>	w6				\ <del>X</del>		<del> </del>	<del></del>		<u> </u>	<u> </u>	$\dot{+}$
· · · · · · · · · · · · · · · · · · ·	LHAAP OU	L	<u>:</u>	<del> </del>		11/6/19	1250		X-					<u> </u>	—— <del> </del>	+
tsmw 01-191186				!	mè	11],6]19	1312		X		<u> </u>					
ar Station well-19	1106 LHAMPOY		-	ļ	we	11/6/19	1335	Į.	<u> - X</u>							+
				i 		1					1					
ADDITIONAL CO	MMENTS/SPECIAL INSTRU	UCTIONS		RELEN	QUISHED	BY/AFFILIAT	TION	QATE/TIME		Age	/ PTED BY/A)	FEILIATION		, DATI	VTIME	
HS	19110320			KILL B	8	BHATE		11/2/19/14	<b>0</b> D	4		ζ,		9115111	<u>08:4</u>	₹.
otim Environme	ental & Infrastuc	ture	Inc													
	rmy Ammunition Pl					ن زر .			1						·	
											······································					—
				429	₹2€.	1 25°		•								









November 21, 2019

**ALS Laboratory Group** 10450 Stancliff Road

Houston, TX 77099-4338

RJ Modashia

ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso. WA 98626

T:+1 360 577 7222

F:+1 360 636 1068 www.alsglobal.com

**Analytical Report for Service Request No: K1910576** 

RE: HS19110320

Dear RJ.

Suite 210

Enclosed are the results of the sample(s) submitted to our laboratory November 08, 2019 For your reference, these analyses have been assigned our service request number K1910576.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

**Project Manager** 

Kelley Lovejoy



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T: +1 360 577 7222 F: +1 360 636 1068 www.alsglobal.com

### **Table of Contents**

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

**General Chemistry** 

Raw Data

**General Chemistry** 

### Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LOD Limit of Detection
LOQ Limit of Quantitation

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a substance

allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater than or

equal to the MDL.

#### **Inorganic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- I The result is an estimated value
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

#### **Metals Data Qualifiers**

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### **Organic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- $\boldsymbol{Q}$   $\;\;$  See case narrative. One or more quality control criteria was outside the limits.

#### **Additional Petroleum Hydrocarbon Specific Qualifiers**

- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

## ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-	
North Carolina DEQ	certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



### Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



Client: ALS Environmental - US Service Request: K1910576

Project: HS19110320 Date Received: 11/08/2019

Sample Matrix: Water

### **CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

#### Sample Receipt:

One water sample was received for analysis at ALS Environmental on 11/08/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

### **General Chemistry:**

No significant anomalies were noted with this analysis.

Approved by Killey Abveyory

Date 11/21/2019



## **Chain of Custody**

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



10450 Stancliff Rd, Ste 21

Houston, TX 77099

T: +1 281 530 5656 F: +1 281 530 5887 www.alsglobal.com

### **Subcontract Chain of Custody**

**SAMPLING STATE: Texas**  COC ID: 12583

**SUBCONTRACT TO:** 

ALS Environmental Kelso 1317 S. 13th Avenue

Kelso, WA 98626

+1 360 501 3312 Phone:

**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:

Reference:

+1 281 530 5656

TSR:

HS19110320 Sonia West

LAB SAMPLE ID CLIENT SAMPLE ID

**ANALYSIS REQUESTED** 

MATRIX

**COLLECT DATE** 

**DUE DATE** 

1. HS19110320-07 04WW05-191106

Water

06 Nov 2019 10:45

TOC Analysis with DOD Level IV/EQuIS APTIM EDD

21 Nov 2019

Comments: Please analyze for the analysis listed above.

Send report to the emails shown above.

QC Level:

DOD IV (DoD Data Package)

K19105Ha

Relinquished By:

Received By:

Cooler ID(s):

Date/Time:

Date/Time:

Temperature(s):



PC\_LV

	Cooler	Receipt a	and Pre	eservati	on Form			i	
Client HD - HWST	700		S	Service F	Request <i>K1</i>	9	1057	0	<u>a_</u>
Received: Opens	ed: ]][8]]	9	Ву-Д	K_	Unloade	d: \	(119 <u> </u>	y By	
1. Samples were received via? USP	S Fed Ex	) UPS	DHI	L PD	X Couri	er Ha	nd Delivered		
2. Samples were received in: (circle)	Cooler	Box	Envelo	pe	Other		$-\alpha \Omega$	n. MA	
3. Were <u>custody seals</u> on coolers?	NA	N (Y	If yo	es, how n	nany and wh	ere?	-1/17	Urn	
If present, were custody seals intact?	( Y	N N	I	f present,	, were they s	igned and			N
Raw Corrected. Raw Corrected. Cooler Temp Cooler Temp Flank Temp E		Thermon	neter	Cooler/CC	DC ID		Tracking Nun	rbei	NA Filed
-0.3 0.1	+0.3	37	1		Viz	2510	139151	9D	
4. Packing material: Inserts Baggie	Bubble W	rap Gel F	Packs (V	Vet Ice	Dry Ice S	Sleeves			
5. Were custody papers properly filled	<u> </u>					_	1	NA Y	N
6. Were samples received in good cond	=	,	cen)? In	dicate in	the table be	low.		$\sqrt{A}$	N
	e, tissue sample			Frozen	Partially	Thawed	Thawed		
7. Were all sample labels complete (i.e	•	•	-		,			VA Y	N
8. Did all sample labels and tags agree		•	_	_	pancies in th	e table or	n page 2.	NA CY	) N
9. Were appropriate bottles/containers	and volumes n			. 1 10	0		7	TA 7 37	X 3.7
•						and and		NA X	N
10. Were the pH-preserved bottles (see	SMO GEN SOP	) received a	t the appr	opriate p		in the ta	ble below	M (T	) N
<ul><li>10. Were the pH-preserved bottles (see</li><li>11. Were VOA vials received without h</li></ul>	SMO GEN SOP	) received a	t the appr	opriate p		e in the ta	ble below	YA Y	N N
10. Were the pH-preserved bottles (see	SMO GEN SOP	) received a	t the appr	opriate p		in the ta	ble below	M (T	) N
<ul><li>10. Were the pH-preserved bottles (see</li><li>11. Were VOA vials received without h</li></ul>	SMO GEN SOP	) received a	t the appr	opriate p		in the tai	ble below	YA Y	N N
<ul><li>10. Were the pH-preserved bottles (see</li><li>11. Were VOA vials received without h</li><li>12. Was C12/Res negative?</li></ul>	SMO GEN SOP	) received a	t the appr	opriate p		e in the ta	ble below	YA Y	N N
<ul><li>10. Were the pH-preserved bottles (see</li><li>11. Were VOA vials received without h</li><li>12. Was C12/Res negative?</li></ul>	SMO GEN SOP	) received a	t the appr	opriate p		e in the tai	ble below	YA Y	N N
<ul><li>10. Were the pH-preserved bottles (see</li><li>11. Were VOA vials received without h</li><li>12. Was C12/Res negative?</li></ul>	SMO GEN SOP	) received a	t the appr	opriate p		in the tai	ble below	YA Y	N N
10. Were the pH-preserved bottles (see 11. Were VOA vials received without h 12. Was C12/Res negative?  Sample ID on Bottle	smo GEN SOP	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle	smo GEN SOP	) received a dicate in the	t the approximation to the transfer of the approximation to the approxim	opriate p			ble below	YA Y	N N
10. Were the pH-preserved bottles (see 11. Were VOA vials received without h 12. Was C12/Res negative?  Sample ID on Bottle	smo GEN SOP	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle  Sample ID	smo GEN SOP	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle  Sample ID	smo GEN SOP	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle  Sample ID	smo GEN SOP	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle  Sample ID	smo GEN SOP	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle  Sample ID	smo GEN SOP neadspace? Ind	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle  Sample ID	smo GEN SOP neadspace? Ind	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N
10. Were the pH-preserved bottles (see  11. Were VOA vials received without h  12. Was C12/Res negative?  Sample ID on Bottle  Sample ID	smo GEN SOP neadspace? Ind	) received a dicate in the Sample ID o	t the approximation to the transfer of the approximation to the approxim	opriate p	H? Indicate	Volume	Identified by:	NA Y NA Y NA Y	N N N N

7/25/16

Page\_\_\_\_of\_\_\_\_



# General Chemistry

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

### ALS Group USA, Corp. dba ALS Environmental

Analytical Report

**Client:** ALS Environmental - US

**Project:** HS19110320

**Sample Matrix:** Water

**Analysis Method:** SM 5310 C

**Prep Method:** None

Service Request: K1910576

**Date Collected:** 11/6/19

**Date Received:** 11/8/19

Units: mg/L

Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
04WW05-191106	K1910576-001	20.0	0.50	0.20	0.07	1	11/16/19 05:06	
Method Blank	K1910576-MB	ND U	0.50	0.20	0.07	1	11/15/19 23:54	

### ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US Service Request: K1910576

**Project** HS19110320 **Date Collected:** 11/06/19 **Date Received:** 11/08/19

Sample Matrix: Water

**Date Analyzed:** 11/16/19

**Replicate Sample Summary General Chemistry Parameters** 

Sample Name:

04WW05-191106

Units: mg/L

Lab Code:

K1910576-001

Basis: NA

**Duplicate** Sample

K1910576-

**Analysis** 

Sample Result

**001DUP** 

Method Analyte Name

LOQ

**MDL** 

Result

Average

**RPD Limit** 

Carbon, Total Organic

SM 5310 C

0.50

LOD 0.20

0.07

20.0

20.0

20.0

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/20/19 2:18:31 PM

Superset Reference:19-0000530801 rev 00

37 of 197

### ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** ALS Environmental - US

HS19110320

Sample Matrix:

Water

**Service Request:** 

K1910576

**Date Analyzed:** 

11/16/19

**Date Extracted:** 

NA

**Lab Control Sample Summary** Carbon, Total Organic

**Analysis Method:** 

SM 5310 C

**Prep Method:** 

**Project:** 

None

**Units:** 

mg/L

**Basis:** 

NA

**Analysis Lot:** 

660113

			Spike		% Rec
Sample Name	Lab Code	Result	Amount	% Rec	Limits
Lab Control Sample	K1910576-LCS	24.8	25.0	99	83-117

### ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US Service Request: K1910576

**Project:** HS19110320

### **Continuing Calibration Verification (CCV) Summary**

### Carbon, Total Organic

Analysis Method: SM 5310 C Units: mg/L

	Analysis		Date	Date True		Percent	Acceptance Limits
	Lot	Lab Code	Analyzed	Value	Value	Recovery	Acceptance Linnis
CCV1	660113	KQ1916989-01	11/15/19 23:25	25.0	24.3	97	90-110
CCV2	660113	KQ1916989-02	11/16/19 04:08	25.0	24.6	99	90-110
CCV3	660113	KQ1916989-03	11/16/19 09:05	25.0	24.2	97	90-110
CCV4	660113	KQ1916989-04	11/16/19 13:50	25.0	23.7	95	90-110

### ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US Service Request:K1910576

**Project:** HS19110320

## Continuing Calibration Blank (CCB) Summary Carbon, Total Organic

Analysis Method: SM 5310 C Units:mg/L

	Analysis		Date						
	Lot	Lab Code	Analyzed	LOQ	LOD	MDL	Result	Q	
CCB1	660113	KQ1916989-05	11/15/19 23:39	0.50	0.20	0.07	ND	U	
CCB2	660113	KQ1916989-06	11/16/19 04:23	0.50	0.20	0.07	ND	U	
CCB3	660113	KQ1916989-07	11/16/19 09:19	0.50	0.20	0.07	ND	U	
CCB4	660113	KQ1916989-08	11/16/19 14:04	0.50	0.20	0.07	ND	U	



## Raw Data

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



### General Chemistry

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Work	Request#	Original	X19108	95, KO	169,18	7,28	332 .	415.47	73 545,19	47.331	473.48	3
Tier:			I	Iv'	II I	II	I 'S		工	IV I	TI	7
Date A	Analyzed:	11/15/19 BCD/1	9 BCP for	H I M				1		700	660117, 660117, 660114,	
Analys	st:	75/10	nc	11 6/1	-				Run #		560115	
Analys	sis:	104,0	<u> </u>		-							
	/				INO	ALITY PRGANI	CS			,		
Explair	n any "no"	responses	to questio	ns below,	and any	correctiv	e actions	in the o	comments	section	below.	
1.	Is the m	ethod nam	e and num	ber correc	t and app	oropriate	?			ves/no	NA	
2.	Holding	times met	t for all ana	lyses and	for all sa	mples?				<b>@</b> s/no∕	NΑ	
3.	Are calc	culations co	orrect?							<b>yes</b> /no/	'nA	
4.	Is the re	porting ba	sis correct?	(Dry We	eight)					√es/no/	'nΑ	
5.	All qual	ity control	criteria me	et?	•					<b>€</b> s/no		
6.			urve correl							Øs/no/	NA	
7.	MBs, Co		s, LCSs, D	ups, and S	Spikes, ar	nalyzed a	t proper			(es/no/	NA	
8.	Are ICV	s, CCVs, a	and CCBs	all within	acceptan	ce limits?	?			€s/no/	NA	
9.	Are resu	lts for met	hods blank	s all ND?					•	€s/no/	NA	
10.			s within ac MS % rec			S RPDs, e	etc.)			yes/ng/	NA	
11.	Are all e	xceptions (	explained?							<b>Ø</b> s/no/l	NA	
12.	Have all	applicable	service re	quests bee	en review	ed?				€s/no/1	NA	
13.	Are all sa	amples lab	eled correc	tly?						<b>y</b> €\$/no/1	NA	
14.			ns on the se s, QC on a				!?			<b>y€\$</b> /no/1	<b>NA</b>	
15.	Are detec	ction limits	and units	reported o	correctly	?				yes/no/1	NΑ	
16.	Is the uni	ısed space	on the ben	chsheet c	rossed ou	ıt?				<b>ye</b> s/no/1	<b>JA</b>	
17.	Was anal	ysis turned	d in by the	due date?	(n-2) (If	not recor	d SR#)			yes/ng/N	<b>JA</b>	
СОММ	IENTS: K	"1910160- witux 1910197-3 high	3MS V Interfer 1/2d, 278 % RSD. 1	eports ence. -2/2d <sub>1</sub> towara,	a 16 w 173-5 /s these	Pel 1956 Sounder	2/2di	, due 15431 e les	: to s 13d, 254 is Thou	eusped -7/7d Sx t	ed report he MRL.	
Final Ap	proved by	:	, W	Ju	V.	Date	e: <i>  /</i> /	19/1	9	DQREPORT		

Instrument Name: K-TOC-03 Analyst: BDITZLER Analysis Lot: 660112 Method/Testcode: SM 5310 C/TOC T

Carbon, Total Organic         NA         Water Water         2.52 mg/L 3.52 mg/L 4. 25         10 ml. 2.52 mg/L 3.52 mg/L 4. 25         12 ml. News         12 ml. News <th>11/15/19 15:25:00</th> <th>•</th> <th></th>	11/15/19 15:25:00	•											
Carbota, Total Organic         WA         Water         4.92 mg/L         Outland         Carbota, Total Organic         WA         Water         4.92 mg/L         Outland         Carbota, Total Organic         WA         Water         4.92 mg/L         Outland         2.94 mg/L         Outland         2.94 mg/L         Outland         1.24 mg/L         Outland         2.94 mg/L         Outland         2.94 mg/L         Outland         2.94 mg/L         Outland         4.92 mg/L         Outland         4.92 mg/L         Outland         4.92 mg/L         Outland         4.92 mg/L         Outland         4.92 mg/L         Outland         4.92 mg/L         Outland         1.138 mg/L         Outland         0.077         0.50           Carbon, Total Organic         WA         Water         1.23 mg/L         1.0 ml         1.23 mg/L         1.0 0.07         0.50         0.50           Carbon, Total Organic         WA         Water         2.41 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml         3.55 mg/L         1.0 ml <td></td> <td>-</td> <td>5</td> <td></td> <td>4</td> <td>249 mg/L 50</td> <td>10 mL</td> <td>4.97 mg/L</td> <td>Water</td> <td>K1910095-017</td> <td>DUP</td> <td>Carbon, Total Organic</td> <td>KQ1916988-12</td>		-	5		4	249 mg/L 50	10 mL	4.97 mg/L	Water	K1910095-017	DUP	Carbon, Total Organic	KQ1916988-12
Carbon, Total Organic NA, Carbon, Total Organic NA, Carbon, Total Organic NA, Carbon, Total Organic NA, Carbon, Total Organic NA, Carbon, Total Organic NA, Carbon, Total Organic NA, Carbon, Total Organic NA, Water 1.23 mg/L 10 ml. 12 mg/L 10 ml. 10 ml. 12 mg/L 10 ml. 10 ml. 12 mg/L 10 ml. 10 ml. 12 mg/L 10 ml. 10 ml. 12 mg/L 10 ml. 10 ml. 12 mg/L 10 ml. 10 ml. 10 mg/L 10 ml. 10 ml. 10 ml. 10 mg/L 10 ml. 10 ml. 10 mg/L 10 ml. 10 ml. 10 ml. 10 mg/L 10 ml. 10 ml. 10 mg/L 10 ml. 10 mg/L 10 ml. 10 ml. 10 mg/L 10 ml. 10 mg/L 10 ml. 10 ml. 10 mg/L 10 ml. 10 mg/L 10 ml. 10 mg/L 10 ml. 10 mg/L 10 ml. 10 mg/L 10 ml. 10 ml. 10 mg/L 10 mg/L 10 ml. 10 mg/L 10 ml. 10 mg/L 10 mg/L 10 ml. 10 mg/L 10 ml. 10 mg/L 10 ml. 10 mg/L 10 mg/L 10 mg/L 10 mg/L 10 ml. 10 mg/L 10 mg/L 10 ml. 10 mg/L 10	11/15/19 18:00	*			0.07	21.5 mg/L 1	10 mL	21.53 mg/L	Water	K1910160-003	SW	Carbon, Total Organic	KQ1916988-11
Carbon, Total Organic         NA         Water         4.32 mg/L         10 ml         24 mg/L         25 mg/L         20 mg/L         10 mL         23 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L         10 mg/L	11/15/19 14:56	_			0.07	25.3  mg/L 1	10 mL	25.27 mg/L	Water		LCS	Carbon, Total Organic	KQ1916988-10
Carbon, Total Organic NA	11/15/19 14:41				0.07	0.50 mg/L U 1	10 mL	0.00 mg/L	Water		MB	Carbon, Total Organic	KQ1916988-09
Carbon, Total Organic NA   Water   4.52 mg/L   10 mL   246 mg/L   2007   0.50	11/16/19 04:23		0		0.07	0.50 mg/L U 1	10 mL	0.00 mg/L	Water		ССВ	Carbon, Total Organic	KQ1916988-08
Carbon, Total Organic         NA         Water         4.92 mp/L         10 mL         24 mg/L         20         24 mg/L         20         24 mg/L         20         4         225         24 mg/L         50         4         225         24 mg/L         50         4         225         25 mg/L         10 mL         24 mg/L         50         4         225         24 mg/L         50         4         225         25 mg/L         10 mL         1.18 mg/L         10 mL         28 mg/L         10 mL         1.28 mg/L         10 mL         1.28 mg/L         10 mL         1.28 mg/L         10 mL         1.28 mg/L         10 mL         1.23 mg/L         10 mL         1.23 mg/L         10 mL         1.23 mg/L         10 mL         1.23 mg/L         10 mL         1.23 mg/L         10 mL         1.23 mg/L         10 mL         1.23 mg/L         10 mL         1.23 mg/L         10 mL         2.35 mg/L         10 mL         3.55 mg/L         10 mL         3.55 mg/L         10 mL         3.55 mg/L         10 mL         3.55 mg/L         10 mL         3.24 mg/L         10 mL         3.24 mg/L         10 mL         2.44 mg/L         10 mL         3.24 mg/L         10 mL         3.24 mg/L         10 mL         2.44 mg/L         10 mL         3.24 mg/L         10 mL	11/15/19 23:39		0		0.07	$0.50~\mathrm{mg/L}~\mathrm{U}~\mathrm{1}$	10 mL	$0.00~\mathrm{mg/L}$	Water		ССВ	Carbon, Total Organic	KQ1916988-07
Carbon, Total Organic         NAA         Water         4.92 mpgL         10 mL         24 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         10 mL         248 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         10 mL         1.28 mg/L         10 m/L         228 mg/L         10 m/L         228 mg/L         10 m/L         228 mg/L         10 m/L         228 mg/L         10 m/L         228 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         2.28 mg/L         10 m/L         1.28 mg/L         10 m/L         2.28 mg/L         10 m/L         1.28 mg/L         10 m/L         1.28 mg/L         10 m/L         2.28 mg/L         10 m/L         2.28 mg/L         10 m/L         2.28 mg/L         10 m/L         2.24 mg/L         10 m/L         2.24 mg/L         10 m/L         2.24 mg/L         <	11/15/19 18:29				0.07	0.50 mg/L U 1	10 mL	0.00 mg/L	Water		ССВ	Carbon, Total Organic	KQ1916988-06
Carbon, Total Organic NA   Water   4.9.2 mg/L   10 mL   246 mg/L   50   4   25	11/15/19 14:26		0		0.07	$0.50~\mathrm{mg/L}~\mathrm{U}~\mathrm{1}$	10 mL	$0.00~\mathrm{mg/L}$	Water		ССВ	Carbon, Total Organic	KQ1916988-05
Carbon, Total Organic   N/A   Water   4.2 mg/L   10 mL   246 mg/L   50   4   25   28   28   28   28   28   28   28	11/16/19 04:08					24.6 mg/L 1	10 mL	24.63 mg/L	Water		CCV	Carbon, Total Organic	KQ1916988-04
Carbon, Total Organic NA	11/15/19 23:25					24.3 mg/L 1	10 mL	24.27 mg/L	Water		CCV	Carbon, Total Organic	KQ1916988-03
Carbon, Total Organic N/A   Water   A.9.2 mg/L   10 mL   298 mg/L   20.07   0.50	11/15/19 18:14					24.7 mg/L 1	10 mL	24.74 mg/L	Water		CCV	Carbon, Total Organic	KQ1916988-02
Carbon, Total Organic NA   Water   1.29 mg/L   10 mL   246 mg/L   0.07   0.50	11/15/19 14:11					24.5 mg/L 1	10 mL	24.50 mg/L	Water		CCV	Carbon, Total Organic	KQ1916988-01
Carbon, Total Organic N/A   Water Carb	11/15/19 22:28:		0		0.07	1.83 mg/L 1	10 mL	1.83 mg/L	Water		N/A	Carbon, Total Organic	K1910545-001
Carbon, Total Organic NA Water   1.38 mg/L   10 mL   1.38 mg/L   10 mL   2.38 mg/L   0.07   0.50	11/16/19 01:48:		0		0.07	0.34 mg/L J 1	10 mL	0.34 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910473-003
Carbon, Total Organic         N/A         Automatic	11/16/19 01:19:		0		0.07	6.32 mg/L 1	10 mL	6.32 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910473-002
Carbon, Total Organic   N/A   Water   4.92 mg/L   10 mL   246 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   228 mg/L   10 mL   1.69 mg/L   10 mL   1.69 mg/L   10 mL   1.69 mg/L   10 mL   1.69 mg/L   10 mL   1.69 mg/L   10 mL   1.38 mg/L   10 m	11/16/19 00:51:		0		0.07	6.20 mg/L 1	10 mL	6.20 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910473-001
Carbon, Total Organic   N/A   Water   A.92 mg/L   10 mL   244 mg/L 50   4   25   4	11/15/19 22:00:		0		0.07	0.50 mg/L U 1	10 mL	0.00 mg/L	Ocean Water		N/A	Carbon, Total Organic	K1910415-001
Carbon, Total Organic         N/A         Water Carbon, Total Organic         N/A         Water Water Water         5.97 mg/L (10 mL)         10 mL         2.98 mg/L (10 mL)         50 mg/L (10 mL)         10 mL         2.98 mg/L (10 mL)         50 mg/L (10 mL)         40 mg/L (10 mL)         50 mg/L (10 mL)         40 mg/L (10 mL)         50 mg/L (10 mL)         40 mg/L (10 mL)	11/15/19 21:32:		0		0.07	0.50 mg/L U 1	10 mL	0.37  mg/L	Drinking Water		N/A	Carbon, Total Organic	K1910332-001
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         2.94 mg/L         50 mg/L         10 mL         2.94 mg/L         50         4         2.5         4 m/L         2.5         4 mg/L         50         4 mg/L         2.5         4 mg/L         2.5         4 mg/L         50         4 mg/L         2.5         2	11/16/19 00:23:		0		0.07	0.34 mg/L J 1	10 mL	0.34 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910278-002
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4.92 mg/L         20 mg/L         10 mL         246 mg/L         50         4         2.5         4 may         4.92 mg/L         10 mL         246 mg/L         50         4         2.5         4 may         2.5 </td <td>11/15/19 22:57:</td> <td></td> <td>0</td> <td></td> <td>0.07</td> <td>3.33 mg/L 1</td> <td>10 mL</td> <td>3.33 mg/L</td> <td>Ground Water</td> <td></td> <td>N/A</td> <td>Carbon, Total Organic</td> <td>K1910278-001</td>	11/15/19 22:57:		0		0.07	3.33 mg/L 1	10 mL	3.33 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910278-001
Carbon, Total Organic         NA         Water         4.92 mg/L         10 mL         248 mg/L         10 mL         248 mg/L         50 mg/L         40 mg/L         20 mg/L         40 mg/L         50 mg/L         40 mg/L         50 mg/L         40 mg/L         50 mg/L         40 mg/L         50 mg/L         40 mg/L         50 mg/L         40 mg/L	11/15/19 21:04:		0		0.07	0.51  mg/L 1	10 mL	0.51  mg/L	Water		N/A	Carbon, Total Organic	K1910187-003
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         248 mg/L         10 mL         248 mg/L         10 mL         248 mg/L         50 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         20 mg/L         4 mg/L         25 mg/L         20 mg/L         4 mg/L         25 mg/L         20 mg/L         4 mg/L         20 mg/L         4 mg/L         20 mg/L         4 mg/L         20 mg/L         4 mg/L         20 mg/L         4 mg/L         20 mg/L         4 mg/L         20 mg/L         10 mL         23 mg/L         10 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         20 mg/L         4 mg/L         20 mg/L         4 mg/L         20 mg/L         4 mg/L         20 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         1 mg/L         2 mg/L         2 mg/L         2 mg/L         2 mg/L         2 mg/L         2 mg/L         1 mg/L         2 mg/L         2 mg/L         2 mg/L         2 mg/L	11/15/19 20:36:			- 1	0.07	0.51 mg/L 1	10 mL	0.51 mg/L	Water		N/A	Carbon, Total Organic	K1910187-002
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         5.97 mg/L         10 mL         298 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         1.69 mg/L         10 mL         1.69 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.38 mg/L         10 mL         1.38 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.23 mg/L         10 mL         1.23 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         3.51 mg/L         10 mL         1.77 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         3.51 mg/L         10 mL         3.51 mg/L         1         0.07         0.50	11/15/19 20:08:		0		0.07	2.41 mg/L 1	10 mL	2.41 mg/L	Water		N/A	Carbon, Total Organic	K1910187-001
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25         1           Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25         1           Carbon, Total Organic         N/A         Water         1.69 mg/L         10 mL         1.69 mg/L         1         0.07         0.50         1           Carbon, Total Organic         N/A         Water         1.38 mg/L         10 mL         1.38 mg/L         1         0.07         0.50         1           Carbon, Total Organic         N/A         Water         1.23 mg/L         10 mL         1.38 mg/L         1         0.07         0.50         1           Carbon, Total Organic         N/A         Water         1.23 mg/L         10 mL         1.23 mg/L         1         0.07         0.50         1           Water         1.77 mg/L         10 mL         1.77 mg/L         1         0.07         0.50         1           Water         1.77 mg/L         10 mL         3.51 mg/L         1         0.07         0.50         1           Water         1.77 mg/L         10 mL	11/15/19 19:40:		0		0.07	3.55 mg/L 1	10 mL	3.55 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910169-003
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         1.69 mg/L         10 mL         1.69 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.38 mg/L         10 mL         1.38 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.23 mg/L         10 mL         1.23 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.23 mg/L         10 mL         1.23 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.27 mg/L         10 mL         1.27 mg/L         1         0.07         0.50           Water         1.77 mg/L         10 mL         1.77 mg/L         1         0.07         0.50	11/15/19 19:12:		0		0.07	3.51 mg/L 1	10 mL	3.51 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910169-002
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         5.97 mg/L         10 mL         298 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         1.69 mg/L         10 mL         1.69 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.38 mg/L         10 mL         1.38 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.23 mg/L         10 mL         1.23 mg/L         1         0.07         0.50	11/15/19 18:44:		Ö		0.07	1.77 mg/L 1	10 mL	1.77 mg/L	Ground Water		N/A	Carbon, Total Organic	K1910169-001
Carbon, Total Organic         N/A         Water         4.92 mg/L         10 mL         246 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         5.97 mg/L         10 mL         298 mg/L         50         4         25           Carbon, Total Organic         N/A         Water         1.69 mg/L         10 mL         1.69 mg/L         1         0.07         0.50           Carbon, Total Organic         N/A         Water         1.38 mg/L         10 mL         1.38 mg/L         1         0.07         0.50	11/15/19 17:32:		0		0.07	1.23  mg/L 1	10 mL	1.23 mg/L	Water		N/A	Carbon, Total Organic	K1910160-003
Carbon, Total Organic N/A Water 4.92 mg/L 10 mL 246 mg/L 50 4 25  Carbon, Total Organic N/A Water 5.97 mg/L 10 mL 298 mg/L 50 4 25  Carbon, Total Organic N/A Water 1.69 mg/L 10 mL 1.69 mg/L 1 0.07 0.50	11/15/19 17:04		0	1	0.07	1.38 mg/L 1	10 mL	1.38 mg/L	Water		N/A	Carbon, Total Organic	K1910160-002
Carbon, Total Organic N/A Water 4.92 mg/L 10 mL 246 mg/L 50 4 25  Carbon, Total Organic N/A Water 5.97 mg/L 10 mL 298 mg/L 50 4 25	11/15/19 16:36		0		0.07	1.69 mg/L 1	10 mL	$1.69~\mathrm{mg/L}$	Water		N/A	Carbon, Total Organic	K1910160-001
Carbon, Total Organic N/A Water 4.92 mg/L 10 mL 246 mg/L 50 4 25	11/15/19 15:53		ý	1 2	4	-	10 mL	5.97 mg/L	Water		N/A	Carbon, Total Organic	K1910095-018
	_				4 4	246 mg/L 50	10 mL		Water	i ai ciit Saiii bic	N/A	Carbon, Total Organic	K1910095-017

Printed 11/19/19 15:15

Results Summary

Page 1 of 2

Instrument Name: K-TOC-03 Analyst: BDITZLER **Analysis Lot:** 660112 Method/Testcode: SM 5310 C/TOC T

KQ1916988-32	KQ1916988-31	KQ1916988-30	KQ1916988-29	KQ1916988-28	KQ1916988-26	KQ1916988-25	KQ1916988-24	KQ1916988-23	KQ1916988-22	KQ1916988-21	KQ1916988-20	KQ1916988-19	KQ1916988-18	KQ1916988-17	KQ1916988-16	KQ1916988-15	<u>Lab Code</u> KQ1916988-13
32	31	30	29	28	26	25	24	23	22	21	20	19	~	17	16	15	13
Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Target Analytes Carbon, Total Organic
DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	DUP	<b>90</b>
K1910415-001	K1910545-001	K1910473-003	K1910473-002	K1910473-001	K1910332-001	K1910278-002	K1910278-001	K1910187-003	K1910187-002	K1910187-001	K1910169-003	K1910169-002	K1910169-001	K1910160-003	K1910160-001	K1910160-002	Parent Sample K1910095-018
Ocean Water	Water	Ground Water	Ground Water	Ground Water	Drinking Water	Ground Water	Ground Water	Water	Water	Water	Ground Water	Ground Water	Ground Water	Water	Water	Water	Matrix Water
0.02 mg/L	1.88 mg/L	$0.37~\mathrm{mg/L}$	6.33 mg/L	6.24 mg/L	$0.42~\mathrm{mg/L}$	0.24 mg/L	3.20 mg/L	0.57  mg/L	0.50  mg/L	2.39 mg/L	3.50 mg/L	3.57 mg/L	1.78 mg/L	1.20 mg/L	1.57 mg/L	1.32 mg/L	Raw Result 6.04 mg/L
10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	Sample Amt. 10 mL
0.50 mg/L U 1	1.88 mg/L 1	0.37  mg/L  J = 1	6.33 mg/L 1	6.24 mg/L 1	0.42  mg/L  J  I	0.24 mg/L J 1	3.20 mg/L 1	0.57  mg/L 1	0.50 mg/L 1	2.39  mg/L 1	3.50 mg/L 1	3.57 mg/L 1	1.78 mg/L 1	1.20 mg/L 1	1.57 mg/L 1	1.32  mg/L	Final Result Dil 302 mg/L 50
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	<u>MDL</u> 4
0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	POL % Rec 25
NC	ယ	7	<u>^</u>	Δ	N N	37*	4	1*	2	$\triangle$	2	2	^	2	7	5	% RSD 1
11/15/19 22:00:00 N II	11/15/19 22:28:00 N II	11/16/19 01:48:00 N II	11/16/19 01:19:00 N 45 II	11/16/19 00:51:00 N 97 II	11/15/19 21:32:00 N I	11/16/19 00:23:00 N II	11/15/19 22:57:00 N II	11/15/19 21:04:00 N I	11/15/19 20:36:00 N I	11/15/19 20:08:00 N I	11/15/19 19:40:00 N II	11/15/19 19:12:00 N II	11/15/19 18:44:00 N II	11/15/19 17:32:00 N IV	11/15/19 16:36:00 N IV	11/15/19 17:04:00 N IV	Date Analyzed OC? Tier 11/15/19 15:53:00 N II

<sup>#</sup> indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Instrument Name: K-TOC-03 Analyst: BDITZLER Analysis Lot: 660113 Method/Testcode: SM 5310 C/TOC T

# indicates Final Resul	KQ1916989-06	KQ1916989-05	KQ1916989-04	KQ1916989-03	KQ1916989-02	KQ1916989-01	K1910576-001	K1910572-008	K1910572-006	K1910572-005	K1910572-004	K1910572-003	K1910572-002	K1910572-001	K1910561-003	K1910561-002	K1910561-001	K1910483-003	K1910483-001	K1910473-006	K1910473-005	K1910473-004	K1910331-003	K1910331-002	K1910331-001	<u>Lab Code</u> K1910147-001	
# indicates Final Result is not yet adjusted for Solids because it has not yet been determined	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	
ls because it has not vet been	ССВ	ССВ	CCV	CCV	CCV	CCV		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	, N/A	N/A	N/A	N/A	, N/A	N/A		N/A		N/A Parent Sample	
n determined	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Water	Surface Water	Surface Water	Surface	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface	Surface Water	Water	Water	Ground Water	Ground Water	Ground Water	Water	Water	Water	le Matrix Water	
	$0.00~\mathrm{mg/L}$	0.00 mg/L	23.71 mg/L	24.21 mg/L	24.63 mg/L	24.27 mg/L	20.04 mg/L	0.00 mg/L	0.00 mg/L	$0.00~\mathrm{mg/L}$	0.00 mg/L	0.00 mg/L	$0.01~\mathrm{mg/L}$	0.00 mg/L	4.36 mg/L	1.49 mg/L	12.22 mg/L	2.42 mg/L	3.41 mg/L	0.00 mg/L	0.74 mg/L	0.00 mg/L	7.00 mg/L	9.22 mg/L	8.66 mg/L	Raw Result 2.61 mg/L	
	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	Sample Amt. 10 mL										
	0.50 mg/L U 1	0.50 mg/L U 1	23.7 mg/L 1	24.2 mg/L 1	24.6 mg/L 1	24.3 mg/L 1	20.0  mg/L 1	0.50 mg/L U 1	0.50 mg/L U 1	$0.50~\mathrm{mg/L}~\mathrm{U}$	0.50 mg/L U 1	0.50 mg/L U 1	$0.50~\mathrm{mg/L}~\mathrm{U}~\mathrm{I}$	0.50 mg/L U 1	8.7 mg/L 2	1.49 mg/L 1	122 mg/L 10	2.42 mg/L 1	3.41 mg/L 1	0.50 mg/L U 1	0.74 mg/L 1	0.50 mg/L U 1	700 mg/L 100		866 mg/L 100	Final Result Dil 2.61 mg/L 1	
1110/10	0.07	0.07					0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.2	0.07	0.7	0.07	0.07	0.07	0.07	0.07	7	7	7	<b>MDL</b> 0.07	
10	0.50	0.50					0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	1.0	0.50	5.0	0.50	0.50	0.50	0.50	0.50	50	50	50	POL % Rec % RSD 0.50	
	11/16/19 04:23:00 N	11/15/19 23:39:00 N	11/16/19 13:50:00 N	11/16/19 09:05:00 N	11/16/19 04:08:00 N	11/15/19 23:25:00 N	11/16/19 05:06:00 N	11/16/19 12:25:00 N	11/16/19 11:57:00 N	11/16/19 11:29:00 N	11/16/19 11:01:00 N	11/16/19 10:33:00 N	11/16/19 10:05:00 N	11/16/19 08:22:00 N	11/16/19 07:54:00 N	11/16/19 07:26:00 N	11/16/19 06:58:00 N	11/16/19 04:38:00 N	11/16/19 03:40:00 N	11/16/19 03:12:00 N	11/16/19 02:44:00 N		11/16/19 06:30:00 N			SD Date Analyzed OC?	
	II	=	П	=	=		IV	=	=	I	=		of 19		Ξ	II			=		II	=		I		C? Tier	

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Printed 11/19/19 15:26

Results Summary

Page 1 of 2

Instrument Name: K-TOC-03 Analyst: BDITZLER **Analysis Lot:** 660113 Method/Testcode: SM 5310 C/TOC T

I sh Codo		3										
KQ1916989-07	Carbon, Total Organic	800 1	<u>Parent Sample</u>	Ground Water	Raw Result S 0.00 mg/L	Sample Amt. 10 mL	Final Result Dil 0.50 mg/L U 1	0.07	POL % Rec % RSD 0.50	% RSD	Date Analyzed QC? Tier 11/16/19 09:19:00 N II	<u> </u>
KQ1916989-08	Carbon, Total Organic	ССВ		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U 1	0.07	0.50		11/16/19 14:04:00 N	=
KQ1916989-09	Carbon, Total Organic	MB		Ground Water	$0.00~\mathrm{mg/L}$	10 mL	0.50  mg/L U	0.07	0.50		11/15/19 23:54:00 N	Ξ
KQ1916989-10	Carbon, Total Organic	LCS		Ground Water	24.76 mg/L	10 mL	24.8 mg/L 1	0.07	0.50 99		11/16/19 00:09:00 N	<u> </u>
KQ1916989-11	Carbon, Total Organic	SW	K1910572-001	Surface Water	25.02 mg/L	10 mL	25.0 mg/L 1	0.07	0.50 100		11/16/19 08:50:00 N	
KQ1916989-12	Carbon, Total Organic	DUP	K1910147-001	Water	2.59 mg/L	10 mL	2.59 mg/L 1	0.07	0.50	<u>^</u>	11/16/19 12:53:00 N	IV
KQ1916989-13	Carbon, Total Organic	DUP	K1910331-001	Water	8.72 mg/L	10 mL	872 mg/L 100	7	50	<u>^</u>	11/16/19 05:34:00 N	
KQ1916989-14		DUP	K1910331-002	Water	9.19 mg/L	10 mL	919 mg/L 100	7	50	$\triangle$	11/16/19 06:02:00 N	=
KQ1916989-15	Carbon, Total Organic	DUP	K1910473-004	Ground Water	$0.00~\mathrm{mg/L}$	10 mL	0.50  mg/L  U  1	0.07	0.50	NC		
KQ1916989-16	Carbon, Total Organic	DUP	K1910473-005	Ground Water	0.62 mg/L	10 mL	0.62 mg/L 1	0.07	0.50	18*	11/16/19 02:44:00 N	П
KQ1916989-17	Carbon, Total Organic	DUP	K1910473-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U 1	0.07	0.50	NC	11/16/19 03:12:00 N	
KQ1916989-18		DUP	K1910483-003	Water	2.37  mg/L	10 mL	2.37 mg/L 1	0.07	0.50	2	11/16/19 04:38:00 N	
KQ1916989-19	Carbon, Total Organic	DUP	K1910483-001	Water	3.31 mg/L	10 mL	3.31 mg/L 1	0.07	0.50	ယ		f 19
KQ1916989-21	Carbon, Total Organic Carbon, Total Organic	DUP	K1910331-003 K1910561-001	Water Surface	6.84 mg/L 12.17 mg/L	10 mL 10 mL	684 mg/L 100 122 mg/L 10	0.7	5.0	2 <1	11/16/19 06:30:00 N	1
KQ1916989-22	Carbon, Total Organic	DUP	K1910561-002	Surface Water	1.28 mg/L	10 mL	1.28 mg/L 1	0.07	0.50	15*	11/16/19 07:26:00 N	=
KQ1916989-23	Carbon, Total Organic	DUP	K1910561-003	Surface Water	4.18 mg/L	10 mL	8.4 mg/L 2	0.2	1.0	4	11/16/19 07:54:00 N	=
KQ1916989-24	Carbon, Total Organic	DUP	K1910572-002	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U 1	0.07	0.50	NC	11/16/19 10:05:00 N	П
KQ1916989-25	Carbon, Total Organic	DUP	K1910572-003	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U 1	0.07	0.50	NC	11/16/19 10:33:00 N	
KQ1916989-26	Carbon, Total Organic	DUP	K1910572-004	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U 1	0.07	0.50	NC	11/16/19 11:01:00 N	=
KQ1916989-27	Carbon, Total Organic	DUP	K1910572-005	Surface Water	$0.00~\mathrm{mg/L}$	10 mL	$0.50~\mathrm{mg/L}~\mathrm{U}$	0.07	0.50	NC	11/16/19 11:29:00 N	
KQ1916989-28	Carbon, Total Organic	DUP	K1910572-006	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U 1	0.07	0.50	NC	11/16/19 11:57:00 N	=
KQ1916989-29	Carbon, Total Organic	DUP	K1910572-008	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U 1	0.07	0.50	NC	11/16/19 12:25:00 N	
KQ1916989-30	Carbon, Total Organic	DUP	K1910572-001	Surface Water	$0.00~\mathrm{mg/L}$	10 mL	$0.50~\mathrm{mg/L}~\mathrm{U}$ 1	0.07	0.50	NC	11/16/19 08:22:00 N	=
KQ1916989-31	Carbon, Total Organic	DUP	K1910576-001	Water	19.96 mg/L	10 mL	20.0 mg/L 1	0.07	0.50	<u>^</u>	11/16/19 05:06:00 N	V

<sup>#</sup> indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Instrument Name: K-TOC-03 Analyst: BDITZLER Analysis Lot: 660114 Method/Testcode: SM 5310 C/TOC T

Lab Code K1910147-002 K1910147-006 K1910147-007 K1910199-001 K1910199-002 K1910199-003 K1910199-007 K1910199-007 K1910199-008 K1910254-002 K1910254-003 K1910254-003 K1910254-006 K1910254-006
Target Analytes Carbon, Total Organic
nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A nic N/A
Parent Sample
Water Water
Raw Result 2.64 mg/L 3.06 mg/L 4.59 mg/L 1.80 mg/L 1.52 mg/L 1.23 mg/L 1.93 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 1.91 mg/L 2.33 mg/L 1.15 mg/L 1.15 mg/L 2.13 mg/L 2.13 mg/L 2.13 mg/L 2.13 mg/L
Sample Amt.  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL  10 mL
Final Result Dil 2.64 mg/L   1 3.06 mg/L   1 4.59 mg/L   1 1.80 mg/L   1 1.52 mg/L   1 1.23 mg/L   1 1.40 mg/L   1 1.93 mg/L   1 1.93 mg/L   1 1.91 mg/L   1 2.33 mg/L   1 1.73 mg/L   1 1.73 mg/L   1 2.33 mg/L   1 2.33 mg/L   1 2.31 mg/L   1 2.31 mg/L   1
0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07
PQL % Rec 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50
% RSD
Date Analyzed OC?  11/16/19 13:22:00 N  11/16/19 14:19:00 N  11/16/19 15:15:00 N  11/16/19 15:43:00 N  11/16/19 16:12:00 N  11/16/19 17:08:00 N  11/16/19 17:08:00 N  11/16/19 18:04:00 N  11/16/19 19:46:00 N  11/16/19 20:14:00 N  11/16/19 20:14:00 N  11/16/19 20:39:00 N  11/16/19 21:39:00 N  11/16/19 22:08:00 N

<sup>#</sup> indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Printed 11/19/19 15:37

Results Summary Page 1 of 2

Instrument Name: K-TOC-03 Analyst: BDITZLER Analysis Lot: 660114 Method/Testcode: SM 5310 C/TOC T

I<	z	11/16/19 21:10:00 N		0.50	0.07 0.50	27.8 mg/L 1	10 mL	27.79 mg/L	Water	K1910254-004 Water	SM	Carbon, Total Organic MS	KQ1916990-28
V	z	11/16/19 22:36:00	14*	0.50	0.07	1.84 mg/L 1	10 mL	1.84 mg/L	Water	K1910254-007	DUP	Carbon, Total Organic	KQ1916990-27
V	z	11/16/19 22:08:00	^	0.50	0.07	28.2 mg/L 1	10 mL	28.17 mg/L	Water	K1910254-006	DUP	Carbon, Total Organic	KQ1916990-26
<	z	11/16/19 21:39:00 N	3	0.50	0.07	1.11 mg/L 1	10 mL	1.11 mg/L	Water	K1910254-005	DUP	Carbon, Total Organic	KQ1916990-25
VI	z	11/16/19 20:42:00	1	0.50	0.07	2.30 mg/L 1	10 mL	2.30 mg/L	Water	K1910254-004	DUP	Carbon, Total Organic	KQ1916990-24
VI	z	11/16/19 20:14:00	=	0.50	0.07	1.11 mg/L 1	10 mL	1.11 mg/L	Water	K1910254-003	DUP	Carbon, Total Organic	KQ1916990-23
V	z	11/16/19 19:46:00	<b>∞</b>	0.50	0.07	1.59  mg/L 1	10 mL	1.59  mg/L	Water	K1910254-002	DUP	Carbon, Total Organic	KQ1916990-22
ier	<u> </u>	Date Analyzed	% RSD	POL % Rec	MDL	Final Result Dil	Sample Amt.	Raw Result	Matrix	Parent Sample	00	Target Analytes	Lab Code

Page 2 of 2

Instrument Name: K-TOC-03 Analyst: BDITZLER **Analysis Lot:** 660115 Method/Testcode: SM 5310 C/TOC T

KQ1916991-14	KQ1916991-13	KQ1916991-12	KQ1916991-11	KQ1916991-10	KQ1916991-09	KQ1916991-08	KQ1916991-07	KQ1916991-06	KQ1916991-05	KQ1916991-04	KQ1916991-03	KQ1916991-02	KQ1916991-01	K1910765-004	K1910765-003	K1910765-002	K1910765-001	K1910760-001	K1910299-001	<b><u>Lab Code</u></b> K1910254-008
Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Target Analytes Carbon, Total Organic
DUP	DUP	DUP	DUP	DUP	DUP	DUP	SM	LCS	MB	ССВ	ССВ	CCV	CCV	A/N	N/A	N/A	N/A	N/A	N/A	N/A
K1910765-004	K1910765-003	K1910765-001	K1910765-002	K1910760-001	K1910299-001	K1910254-008	K1910760-001													Parent Sample
Ground Water	Ground Water	Ground Water	Ground Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Ground Water	Ground Water	Ground Water	Ground Water	Water	Water	Matrix Water
9.87 mg/L	22.72 mg/L	8.90 mg/L	13.45 mg/L	1.12 mg/L	7.01 mg/L	1.42 mg/L	25.85 mg/L	24.59 mg/L	$0.00~\mathrm{mg/L}$	$0.00~\mathrm{mg/L}$	0.00 mg/L	23.67 mg/L	23.87 mg/L	10.31 mg/L	22.60 mg/L	13.64 mg/L	9.06 mg/L	1.23 mg/L	7.30  mg/L	Raw Result 1.45 mg/L
10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	Sample Amt. 10 mL
9.87 mg/L 1	22.7 mg/L 1	8.90 mg/L 1	13.4 mg/L 1	1.12 mg/L 1	7.01 mg/L 1	1.42 mg/L 1	25.8  mg/L 1	24.6 mg/L 1	$0.50~\mathrm{mg/L}~\mathrm{U}~\mathrm{I}$	0.50  mg/L U 1	0.50 mg/L U 1	23.7 mg/L 1	23.9 mg/L 1	10.3 mg/L 1	22.6 mg/L 1	13.6 mg/L 1	9.06 mg/L 1	1.23 mg/L 1	7.30  mg/L 1	Final Result Dil
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07			0.07	0.07	0.07	0.07	0.07	0.07	<b>MDL</b> 0.07
0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	<b>PQL</b> 0.50
							98	98												% Rec
4	^	2	_	10	4	2														% RSD
11/17/19 01:54:00 N	11/17/19 01:26:00 N	11/17/19 00:29:00 N	11/17/19 00:58:00 N	11/17/19 02:22:00 N <sup>5</sup>	11/17/19 00:01:00 N 5	11/16/19 23:33:00 N 97	11/17/19 02:50:00 N	11/16/19 19:31:00 N	11/16/19 19:16:00 N	11/17/19 03:48:00 N	11/16/19 23:18:00 N	11/17/19 03:33:00 N	11/16/19 23:04:00 N	11/17/19 01:54:00 N	11/17/19 01:26:00 N	11/17/19 00:58:00 N	11/17/19 00:29:00 N	11/17/19 02:22:00 N	11/17/19 00:01:00 N	Date Analyzed QC? 11/16/19 23:33:00 N
IV	V	\   	VI	VI VI	V	V	\ \	2	IV	VI	<	V	VI	V	V	V	I	IV	V	Tier IV



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



### **Schedule: 11152019**

Version: 15

Instrument: Fusion1

Last Saved by: Fusion1 (Fusion1)

**Last Saved on:** 2019/11/16 10:07 - Saturday

and the second s	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	management and a second	State
(Clean)	and the second s	Clean		1		Ready
(Clean)	Clean	Clean		1	and the second second	Ready
(Clean)	k reģiona in skaitam i in trioka taka ir ni cara vienini ir kara sa sa vienini ir kara vienini vienini vienini	Clean		1	Andrewson was recovered	Ready
(Blank)	Blank	Reagent/Acid Blank		1	San San San San San San San San San San	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	Contrarious contrator	Ready
В		[TOC] CCV 25 ppm [25 ppm]	and the contract of the contra	1		Ready
D	riging consequence of the conseq	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1		Ready
C	Check Standard		CAS_salt_010711 (CAS_salt_010711)	1	erretebenimensboreen	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1		Ready
3	Sample	K1910095-017.08 50x	CAS_salt_010711 (CAS_salt_010711)	2	AND PROPERTY OF THE PARTY OF TH	Ready
4	Sample	K1910095-018.08 50x	CAS_salt_010711 (CAS_salt_010711)	2		Ready
5	Sample	K1910157-001.02 25x	CAS_salt_010711 (CAS_salt_010711)	1	agreement agreement on	Ready
6	Sample	K1910160-001.02	CAS_salt_010711 (CAS_salt_010711)	2		Ready
7	Sample	K1910160-002.02	CAS_salt_010711 (CAS_salt_010711)	2	pripalanticologica est qua	Ready
8	Sample	K1910160-003.01	CAS_salt_010711 (CAS_salt_010711)	2	بالمنافعة المنافعة	Ready
9	Sample	K1910160-003.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	-	Ready
В		[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	and the second second second	Ready
D		[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	elemente de la composição de la composição de la composição de la composição de la composição de la composição	Ready
10	Sample	K1910169-001.08	CAS_salt_010711 (CAS_salt_010711)	2	MOTOR HOMEOGRAPHY STATE	Ready
11	Sample	K1910169-002.08	CAS_salt_010711 (CAS_salt_010711)	2	yraniyakaniyaharaniyana	Ready
12	Sample	K1910169-003.08	CAS_salt_010711 (CAS_salt_010711)	2	one the second second	Ready
13	Sample	K1910187-001.03	CAS_salt_010711 (CAS_salt_010711)	2	introduction and the second	Ready
14	Sample	K1910187-002.03	CAS_salt_010711 (CAS_salt_010711)	2	· · · · · · · · · · · · · · · · · · ·	Ready
15	Sample	K1910187-003.03	CAS_salt_010711 (CAS_salt_010711)	2	TOTAL MANAGEMENT AND A	Ready
16	Sample	K1910332-001.01	CAS_salt_010711 (CAS_salt_010711)	2		Ready
17	Sample	K1910415-001.01	CAS_salt_010711 (CAS_salt_010711)	2		Ready
18	Sample	K1910545-001.01	CAS_salt_010711 (CAS_salt_010711)	2	A PORT OF THE PROPERTY OF THE PARTY OF THE P	Ready
19	Sample	K1910278-001.08	CAS_salt_010711 (CAS_salt_010711)	2	Whatehile was also to the form	Ready
В		[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	and the second second second	Ready
D	P <b>Ř</b> ITO OPERATOR I NO SIGNA POSITIVA PROPERTU PO OSTAT POSITIVA PO	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C		[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
21	Sample	K1910278-002.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1910473-001.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1910473-002.12	CAS_salt_010711 (CAS_salt_010711)	2	erencen erence	Ready
24	Sample	K1910473-003.12_	CAS_salt_010711 (CAS_salt_010711)	2		Ready
25	Sample	K1910473-004.12	CAS_salt_010711 (CAS_salt_010711)	2		Ready
26	Sample	K1910473-005.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1910473-006.12	CAS_salt_010711 (CAS_salt_010711)	2	-	Ready
28	Sample	K1910483-001.01	CAS_salt_010711 (CAS_salt_010711)	2		Ready
3	Check Standard	[TOC] CCV 25 ppm [25 ppm]		1	True	Ready
)		[TOC] CCB [0 ppm]		and the second	909000-19000000000000000000	Ready
29	Sample	K1910483-003.01		market and the second		Ready
30	Sample	K1910576-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1910331-001.01 100x				Ready
32	Sample	K1910331-002.01 100x	CAS_salt_010711 (CAS_salt_010711)		True	Ready
33	Sample	K1910331-003.01 100x		Salvanterous property		Ready
34	Sample	K1910561-001.15 10x	i		remarker consessed	Ready
35	Sample	K1910561-002.15	Control of the Service Service Control of the Contr	and the second second second	and the second second	Ready
36	Sample	K1910561-003.14 2x				Ready
37	Sample	K1910572-001.16		personal relation and a street measure against	Constitution of the Consti	Ready
38	Sample	K1910572-001.16 ms		เกราะเกราะเกราะเกราะเกราะ	voi non in competenzament d	Ready
3	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

516497/19 Thuy

### **Schedule: 11152019**

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	n Britain an ann an Aireann an Ai	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	hamman meneral	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1910572-002.16	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1910572-003.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1910572-004.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1910572-005.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1910572-006.16	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1910572-008.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1910147-001.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1910147-002.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
В	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1910147-006.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1910147-007.04	CAS salt 010711 (CAS salt 010711)	2		Ready
50	Sample	K1910199-001.04	CAS_salt_010711 (CAS_salt_010711)	2		Ready
51	Sample	K1910199-002.04	CAS_salt_010711 (CAS_salt_010711)	2	a propriation de la communicación del la communicación de la commu	Ready
52	Sample	K1910199-003.04	CAS salt 010711 (CAS salt 010711)	2	berrandones observados	Ready
53	Sample	K1910199-004.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1910199-007.04	CAS_salt_010711 (CAS_salt_010711)	2	nagolai raposanana	Ready
55	Sample	K1910199-008.04	CAS salt 010711 (CAS salt 010711)	2		Ready
56	Sample	K1910199-010.04	CAS salt 010711 (CAS salt 010711)	2	eticholologopororagye	Ready
57	Sample	K1910254-001.04	CAS_salt_010711 (CAS_salt_010711)	1	والمعارضوما ومالها والمالية والمعاودون	Ready
В	Anna and a second and a second and a second and a second and a second and a second and a second and a second a	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	CONTRACTOR AND AND AND AND AND AND AND AND AND AND	Ready
D		[TOC] CCB [0 ppm]	CAS salt 010711 (CAS salt 010711)	1		Ready
58	Sample	MB4	CAS salt 010711 (CAS salt 010711)	1		Ready
C		[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	THE RESERVE OF THE PERSON NAMED IN	Ready
59	Sample	K1910254-002.04	CAS_salt_010711 (CAS_salt_010711)	2	sindaliniarini propriori	Ready
60	Sample	K1910254-003.04	CAS_salt_010711 (CAS_salt_010711)	2	aprice and the contract of the	Ready
61	Sample	K1910254-004.04	CAS salt 010711 (CAS salt 010711)	2	ocyanic response some response	Ready
62	Sample	K1910254-004.04 ms	CAS_salt_010711 (CAS_salt_010711)	1	and the second second	Ready
63	Sample	rb	CAS_salt_010711 (CAS_salt_010711)	1	erenten och trompter ten	Ready
64	Sample	K1910254-005.04	CAS_salt_010711 (CAS_salt_010711)	2		Ready
65	Sample	K1910254-006.04	CAS_salt_010711 (CAS_salt_010711)	2	567475747676765655576660	Ready
66	Sample	K1910254-007.04	CAS_salt_010711 (CAS_salt_010711)	2		Ready
В	no esta contrata con contrata con contrata con contrata con contrata con contrata con contrata con contrata con contrata con con contrata contrata con contrata con contrata con contrata c	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	versen ver mente en en	Ready
D	Statement Commission of the Co	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
67	Sample	K1910254-008.04	CAS_salt_010711 (CAS_salt_010711)	2	designation of the investment of the	Ready
68	Sample	K1910299-001.03	CAS_salt_010711 (CAS_salt_010711)	2		Ready
69	Sample	K1910765-001.01	CAS_salt_010711 (CAS_salt_010711)	2	enaceionos astronos an	Ready
70	Sample	K1910765-002.01	CAS_salt_010711 (CAS_salt_010711)	2		Ready
71	Sample	K1910765-003.01	CAS_salt_010711 (CAS_salt_010711)	2		Ready
72	Sample	K1910765-004.01	Burgara and the contract of th	2		Ready
73	Sample	K1910760-001.01	CAS_salt_010711 (CAS_salt_010711)	2	National Advanced in London Services	Ready
74	Sample	K1910760-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1		Ready
75	Sample	RB		2	no teories anno anno anno anno	Ready
В		[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
D		[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
				announce and	False	

### Fusion Report - 11152019 Friday, November 15, 2019 12:08 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History) Printed on 2019/11/19 09:11 -Tuesday

### **Report Summary Information**

Company Location:

Gen Chem Lab

Schedule Name:

11152019

Engine Version:

1.1.5.1

Instrument Name:

Fusion1

Firmware

1.2.0696

Report Version:

1 of 1

Version:

Connection: RS232 COM1

Report Creation by Operators (schedule

Sample Type: Clean

Pos

**Analysis** 

Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7)

Fusion1 (Fusion1) (v7)
Fusion1 (Fusion1) (v10)
Fusion1 (Fusion1) (v11)
Fusion1 (Fusion1) (v13)
Fusion1 (Fusion1) (v14)
Fusion1 (Fusion1) (v15)

Comment:

version):

### **Report Results**

From Schedule Version 4

**Start Time** 

		туре	•			
<b>♦</b> (c	clean)		Clean		2019/11	/15 12:08
Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.76	16.22	3.46	49.69	05:27
2	TC Clean	5.39	8.81	3.42	49.82	07:17
3	TC Clean	1.94	5.58	3.64	49.82	07:04
4	TC Clean	1.93	5.53	3.60	49 84	07:02

Sample ID

San	nple Type	e: Cle	ean			From	Schedule Version
	Pos	An	alysis Type	Sample II	)	Start	Time
•	(clean)			Clean		2019/11/	15 12:40
Re #		/sis	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Cle	ean	0.80	4.46	3.66	49.66	05:16

2	TC Clean	4.24	7.86	3.62	50.13	04:06
3	TC Clean	1.75	5.37	3.62	50.25	03:46
4	TC Clean	1.62	5.16	3.54	50.24	03:48

	POS I	nalysis Type	Sample II	)	Start	Time
* (	clean)		Clean		2019/11/	15 13:02
Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.95	4.19	3.25	49.74	05:11
2	TC Clean	4.91	8.40	3.49	50.60	04:00
3	TC Clean	2.28	5.87	3.59	50.40	03:47
4	TC Clean	1.86	5.44	3.58	50.34	03:44

THE PROPERTY OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN		nalysis Type	Sample II	)	Start	Time
<b>♦</b> (t	olank)		Reagent/Acid I	Blank	2019/11/	15 13:23
Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	7.01	10.68	3.68	49.53	05:10
2	TC Clean	3.98	7.63	3.65	50.07	03:58
3	TC Clean	1.76	5.38	3.62	50.26	03:47
4	TC Clean	1.43	5.09	3.66	50.10	03:52
5	Reagent Blank	6.99	10.63	3.64	50.08	05:07
6	Acid Blank	1.76	5.53	3.77	49.64	05:30

Sam	ple	Type: Sample							From	Schedule V	ersion
F	Pos	Analysis Type	Sample ID	Result (p	opmC)		Dev. mC)	RSI	<b>D</b>	Start Time	
•	D	TOC	RB	0.44	69 ppm	0.0	0000 ppm	0.000	0% 20	19/11/15 13	:57
Rep #	l K	Base nalysis Type	ppm	þg	Adjust (Abs		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		тос	0.4469	4.4691		12.02		15.81	3.79	50.10	10:30

**Blank Contribution** 

(TC) 8.9824 (IC)

**Dilution** 

1:10

(v1320)(v4)(v30)Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8 Concentration Min / Max Pos BAT Dil Result Sample ID Std. Dev. **RSD Start Time** (ppm) (% dev) TOC 25.0000 1:2 [TOC] CCV 25 0 / infinity В 0.0000 24.5004 0% 2019/11/15 14:11 ppm [25 ppm] (NA/NA)ppm ppm (PASS) **Base** Rep Run Pos ID **Analysis Adjusted NDIR Pressure** ppm μg Baseline Time Type В TOC 24.5004 245.0044 25 ppm 1 179.74 175.77 3.97 50.15 10:31 **Completion State Success Action Method** Calibration STD Conc - Pos B Success - Criteria Do Nothing CAS\_salt\_010711 CAS\_salt\_010711 50 ppmC met. (v4)(v30)

Method

CAS\_salt\_010711

Calibration

CAS\_salt 010711

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / (% d	1	Result	Std. Dev	. RSD	Start Ti	me							
•	D	TOC	тос	TOC	TOC		тос	тос	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / inf ( NA /	9 1	0.0000 ppn (PASS	n pp	00 0% om	2019/11/15 14:	
P		Base nalysis Type	i ID	Rep #	ppm	μg	Adjı	usted	NDIR	Baseline	Pressure	Run Time							
	)	TOC	0 ppm	1	0.0000	0.0000	***********************	8.77	12.50	3.73	50.15	10:33							
		oletion ess - Cr met.		ess A	Action ing CA	Method S_salt_01 (v4)	-		libration salt_010711 (v30)		Conc - Pos 0 ppmC	s D							

Sample Type: Sample From Schedule Version 10 **Analysis** Std. Dev. Pos Sample ID Result (ppmC) **RSD Start Time** Type (ppmC) 1 TOC MB1 0.0000 ppm 0.0000 ppm | 0.0000% 2019/11/15 14:41 Rep **Base Adjusted Baseline** Pressure Run ppm μg NDIR (Abs) (Abs) # Analysis Type (Abs) (psig) Time TOC 0.0000 0.0000 8.28 11.96 10:31 3.68 50.14 **Dilution Blank Contribution** Method **Calibration** 1:10 (TC) 8.9824 (IC) CAS\_salt\_010711 CAS salt 010711 (v1320) (v4) (v30)

Sample Type: Check Standard --> LCS From Schedule Version 11

***************************************	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / I (% de		Result		Std. Dev	ı. RSI	כ	Start Ti	me
•	С	тос	25.0000	1:1	[TOC] LCS [24 ppm]	0 / infi ( NA / I	, ,	25.27 pp (PAS	m	0.000 pp	00 09 om	%	2019/11/15	14:50
Pc	s A	Base nalysis Type	ID	Rep	ррт	þg	Adj	usted	•	NDIR	Baseliı	ne	Pressure	Run Time
С		TOC	25.0 ppm	1	25.2718	252.7180		181.01		184.83	3.8	33	50.15	10:29
_		<b>oletion</b> ess - Cr		ess /	Action ning C/	Method AS_salt_01	0711	_		<u>ration</u> t_010711			Conc - Pos 25 ppmC	s C
		met.				( <b>v</b> 4)			(v:	30)				

<u>Sa</u>	mple	Type: Sample	9						From S	chedule Ve	rsion
	Pos	Analysis Type	Sample ID	Result (	ppmC)		. Dev. omC)	RSD		Start Time	•
•	2	TOC	ICS	0.24	194 ppm	0.0	0000 ppm	0.0000	% 20	19/11/15 15	5:10
	ep # A	Base nalysis Type	ppm	þg	Adjus (Abs		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.2494	2.4936		10.68		14.48	3.81	50.15	10:34
<b>Manufacture</b>		1:10	(TC) 8.9824 (v1320)	(IC) CAS_s	salt_01071 (v4)		CAS_salt_ (v30				
	Pos	Analysis Type	Sample ID	Result (	ppmC)		. Dev. omC)	RSD	100000000000000000000000000000000000000	Start Time	
•	3	TOC	K1910095-017.08	3 50x 4.94	189 ppm	0.0	0367 ppm	0.7400	% 20	19/11/15 15	:25
R	ep ∮ A	Base nalysis Type	ppm	μg	Adjust (Abs		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time
1	- 1	TOC	4.9229	49.2294		42.40		46.05	3.65	50.14	10:27
			4.0740	49.7480		42.75		46.46	3.71	50.16	10:28
<b>1</b>	2	TOC	4.9748	43.7400							
<i>i</i>	2	TOC Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)	ution M	ethod alt_01071 (v4)	1	<u>Calibra</u> CAS_salt_ (v30	010711			

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	***************************************
•	4	TOC	K1910095-018.08 50x	6.0030 ppm	0.0514 ppm	0.8600%	2019/11/15 15:53	-

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9667	59.6670	49.48	53.06	3.57	50.17	10:29
2	TOC	6.0393	60.3933	49.98	53.65	3.67	50.17	10:24

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711	CAS_salt_010711
	(V1320)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	5	TOC	K1910157-001.02 25x	4.0567 ppm	0.0000 ppm	0.0000%	2019/11/15 16:21
-						***************************************	

Rep #	Base Analysis Type	ppm	þg	Adjus (Ab		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	4.0567	40.5670		36.52		40.26	3.74	50.21	10:3	
	<u>Dilution</u>	Blank Contrib	oution M	/lethod		Calibra	ation				
	1:10	(TC) 8.9824 (v1320)	(IC) CAS_	salt_0107 (v4)	11	CAS_salt_ (v3		1			
	os Analysis Type	Sample ID	Result	(ppmC)		I. Dev. pmC)	RSI	D	Start Time		
<b>♦</b> (	6 TOC	K1910160-001	.02 1.6	341 ppm	0.	0855 ppm	5.230	0% 20	19/11/15 16	3:36	
Rep #	Base Analysis Type	ppm	þg	Adjus (Ab		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	1.6946	16.9457		20.48		23.99	3.50	50.21	10:28	
2	TOC	1.5736	15.7362		19.66		23.40	3.74	50.22	10:2	
	<u>Dilution</u>	Blank Contrib	oution M	<u>lethod</u>		Calibra	ation				
	1:10	(TC) 8.9824 (v1320)	(IC) CAS_	salt_0107 <sup>-</sup> (v4)	11	CAS_salt_ (v30		1			
P	Analysis Type	Sample ID	Result	(ppmC)		l. Dev. omC)	RSI	o	Start Time		
• ]	7 TOC	K1910160-002	.02 1.39	500 ppm	0.	0433 ppm	3.210	0% 20	19/11/15 17	':04	
Rep #	Base Analysis Type	ppm	þg	Adjus (Ab		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	1.3806	13.8063		18.35		22.02	3.67	50.22	10:27	
2	TOC	1.3193	13.1934		17.94		21.58	3.64	50.22	10:26	
	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.9824 (v1320)		<b>lethod</b> salt_01071 (v4)	11	Calibra CAS_salt_ (v30	01071	1			
Po	rype	Sample ID		Result (ppmC) (pp		d. Dev. opmC) RSD		D Start Ti		me	
• 8	3 TOC	K1910160-003	01 1.2	163 ppm	0.0	0172 ppm	1.4100	0% 20°	19/11/15 17	:32	
Rep #	Base Analysis Type	ppm	hā	Adjus (Abs	s)	NDIR (A	(sd	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	1.2284	12.2845		17.32		20.91	3.59	50.23	10:31	
2	TOC	1.2041	12.0414		17.16		20.75	3.59	50.25	10:27	
	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.9824 (v1320)		lethod salt_01071 (v4)	1	<u>Calibra</u> CAS_salt_ (v30	01071	1			
Po	Analysis Type	Sample ID	Result (	ppmC)		Dev. mC)	RSE		Start Time		
» [ <u></u>	TOC	K1910160-003.0	1 ms 21.52	289 ppm	0.0	0000 ppm	0.0000	)% 201	19/11/15 18	:00	
Rep #	Base Analysis Type	ppm	þg	Adjus (Abs		NDIR (A	ıbs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	21.5289	215.2886		155.12	1	58.72	3.60	50.22	10:28	
	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.9824 ( (v1320)	(IC) CAS_s	<u>ethod</u> alt_01071 (v4)	1	<u>Calibra</u> CAS_salt_ (v30	010711				

### Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2	[ ]	0 / infinity ( NA / NA )	24.7429 ppm (PASS)	0.0000 ppm	0%	2019/11/15 18:14

***************************************	Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	Parameter Commence of the Comm
	В	TOC	25 ppm	1	24.7429	247.4293	177.42	181.03	3.61	50.24	10:31	-

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos B

50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/15 18:29

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	
D	TOC	0 ppm	1	0.0000	0.0000	7.97	11.50	3.53	50.27	10:31	

Completion State
Success - Criteria
met.

Success Action
Do Nothing

<u>Method</u> CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos D 0 ppmC

Sample Type: Sample

From Schedule Version 11

b		Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
	•	10	TOC	K1910169-001.08	1.7747 ppm	0.0073 ppm	0.4100%	2019/11/15 18:44

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7696	17.6955	20.99	24.65	3.66	50.27	10:25
2	TOC	1.7799	17.7987	21.06	24.79	3.73	50.24	10:25

Dilution 1:10 Blank Contribution (TC) 8.9824 (IC) (v1320) Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

· monte construction of		Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
- Barrelandara	•	11	TOC	K1910169-002.08	3.5395 ppm	0.0386 ppm	1.0900%	2019/11/15 19:12

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5122	35.1220	32.82	36.70	3.88	50.26	10:26
2	TOC	3.5669	35.6686	33.19	36.76	3.56	50.26	10:30

		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.9824 (v1320)		_	<u>flethod</u> salt_0107 (v4)	'11	Calibra CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID		Result	(ppmC)		l. Dev. pmC)	RSI	)	Start Time	
•	12	TOC	K1910169-003	.08	3.5	263 ppm	0.	0377 ppm	1.070	0% 20	19/11/15 19	9:40
Re #		Base Analysis Type	ppm		μg	Adju (At		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	1	TOC	3.5530		35.5301		33.10		36.72	3.62	50.26	10:27
2	2	TOC	3.4997		34.9968		32.74		36.33	3.59	50.26	10:27
		<u>Dilution</u>	Blank Contrib	ution	N	lethod		Calibra	ition			
		1:10	(TC) 8.9824 (v1320)		_	salt_0107 (v4)	11	CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSE	)	Start Time	
•	13	TOC	K1910187-001.	03	2.39	984 ppm	0.0	0130 ppm	0.5400	)% 20 <sup>-</sup>	19/11/15 20	:08
Re		Base analysis Type	ppm	l	μg	Adju:		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	2.4076		24.0760		25.32		29.11	3.78	50.30	10:30
2	2	TOC	2.3892		23.8918		25.20		28.77	3.57	50.28	10:28
	į	<u>Dilution</u>	Blank Contrib	<u>ution</u>	N	lethod		Calibra	tion			
		1:10	(TC) 8.9824 (v1320)	(IC)	CAS_s	salt_0107 (v4)	11	CAS_salt_ (v30		1		
	Pos	Analysis Type	Sample ID		Result (	ppmC)	(pp	. Dev. omC)	RSE		Start Time	
•	14	TOC	K1910187-002.	03	0.50	)55 ppm	0.0	0070 ppm	1.3800	)% 201	19/11/15 20	:36
Re #		Base nalysis Type	ppm	4	ng	Adjus (Ab		NDIR (A	bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.5104	*****************	5.1041	Manager 100 100 100 100 100 100 100 100 100 10	12.45		16.08	3.63	50.26	10:28
2	!	TOC	0.5005	*************************************	5.0054		12.38		16.05	3.67	50.27	10:26
	<u> </u>	<u>Dilution</u>	Blank Contrib	<u>ution</u>	M	ethod		<u>Calibra</u>	<u>tion</u>			
		1:10	(TC) 8.9824 ( (v1320)	(IC)	CAS_s	alt_0107 (v4)	11	CAS_salt_ (v30				
	Pos	Analysis Type	Sample ID		Result (	ppmC)		Dev. omC)	RSD		Start Time	
	15	TOC	K1910187-003.	03	0.54	22 22	0.0	1424 mmm	7.9500	% 201	9/11/15 21	:04
•	IJ	<del></del>	1/13/10/10/-003.		0.54	22 ppm	0.0	0431 ppm	7.0000		******************************	
e Re #	р	Base nalysis Type	ppm		Jg	Adjus (Ab	ted	NDIR (A			Pressure (psig)	Run Time
	p A	Base nalysis Type	<b>ppm</b> 0.5117		ıg 5.1173	Adjus	sted s) 12.46	NDIR (A	<b>bs)</b> 16.08	Baseline		
#	P A	Base nalysis Type	ppm		ıg	Adjus	ited s)	NDIR (A	bs)	Baseline (Abs)	(psig)	Time
# 1	P A	Base nalysis Type	<b>ppm</b> 0.5117	ļ	5.1173 5.7273	Adjus	sted s) 12.46	NDIR (A	<b>bs)</b> 16.08	Baseline (Abs) 3.62	(psig) 50.26	<b>Time</b> 10:31
# 1	P A	Base nalysis Type TOC TOC	<b>ppm</b> 0.5117 0.5727	ution !	5.1173 5.7273 <u>M</u> CAS_s	Adjus (Ab	12.46 12.87	NDIR (A	<b>bs)</b> 16.08 16.45 tion 010711	Baseline (Abs) 3.62 3.58	(psig) 50.26	<b>Time</b> 10:31
# 1 2	P A	Base nalysis Type TOC TOC	0.5117 0.5727 Blank Contribu (TC) 8.9824 (	ution !	5.1173 5.7273 <u>M</u> CAS_s	Adjus (Ab  ethod alt_0107 (v4)	12.46 12.87	NDIR (A  Calibra  CAS_salt_(	<b>bs)</b> 16.08 16.45 tion 010711	Baseline (Abs) 3.62 3.58	(psig) 50.26	<b>Time</b> 10:31

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	0.3668	3.6677	11.47	15.05	3.58	50.27	10:27
2	TOC	0.4211	4.2113	11.84	15.41	3.57	50.27	10:28

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1320)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	17	TOC	K1910415-001.01	0.0098 ppm	0.0106 ppm	108.2500%	2019/11/15 22:00

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	protest entransport
1	TOC	0.0023	0.0230	9.00	12.60	3.60	50.25	10:27	grade and and and and and and and and and and
2	TOC	0.0173	0.1733	9.10	12.69	3.59	50.29	10:27	Woodstand W. N.

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	18	TOC	K1910545-001.01	1.8523 ppm	0.0385 ppm	2.0800%	2019/11/15 22:28

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8251	18.2509	21.37	25.07	3.69	50.27	10:32
2	TOC	1.8796	18.7960	21.74	25.24	3.50		10:30

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v4)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	19	TOC	K1910278-001.08	3.2661 ppm	0.0957 ppm	2.9300%	2019/11/15 22:57

***************************************	Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	3.3338	33.3380	31.61	35.17	3.56	50.28	10:26
	2	TOC	3.1984	31.9841	30.69	34.18	3.49	50.25	10:29

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1320)
 (v4)
 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 11

		Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
-	•	В	TOC	25.0000	1:2		0 / infinity ( NA / NA )	24.2686 ppm	0.0000 mqq	0%	2019/11/15 23:25
							and the same of th	(PASS)			

Pos Base Analysis ID Rep ppm µg Adjusted NDIR Baseline Pressure Run

	Туре		#	Distributed by the second seco	Control of the Contro			PARTITION OF THE PARTIT		Time
В	TOC	25 ppm	1	24.2686	242.6855	174.20	177.87	3.67	50.24	10:32
	mpletion S ccess - Cri met.		ess A	ing C	Method AS_salt_01 (v4)		Calibration S_salt_010711 (v30)		Conc - Pos 0 ppmC	s B

	mple	Type: (	Check Standard -	> CC	:R		·····	# - 4.00.000 - 4.000 - 4.000 - 4.000 - 4.000 - 4.000 - 4.000	indian <b>V</b> ariatio <b>N</b> igo		Fror	n S	chedule Ve	rsion 1
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / (% d		Resul	t	Std. Dev	ı. Rs	D	Start Ti	me
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / inf ( NA /		0.00 pj (PAS	pm	0.000 pp	-	)%	2019/11/15	5 23:39
P	os A	Base nalysis Type	ID	Rep	ppm	μg	Adj	usted		NDIR	Basel	ine	Pressure	Run Time
	)	TOC	0 ppm	1	0.0000	0.0000		6.87		10.59	3	.72	50.23	10:32
		oletion ess - Cr met.		ess A	Action ing CA	Method S_salt_01 (v4)	-	_	 S_sa	oration lt_010711 /30)		TD	Conc - Pos 0 ppmC	<u>s D</u>

a	mple '	Type: Sample							From S	chedule Ve	rsion 1
	Pos	Analysis Type	Sample ID	Result (	ppmC)		l. Dev. pmC)	RSI		Start Time	
>	20	тос	MB2	0.00	00 ppm	0.	0000 ppm	0.000	0% 20	19/11/15 23	3:54
	ep # Aı	Base nalysis Type	ppm	hã	Adjus (Ab:		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.0000	0.0000		6.26		9.99	3.73	50.23	10:30
	<u>E</u>	<u> Dilution</u>	Blank Contribution	M	ethod		Calibra	tion			
		1:10	(TC) 8.9824 (IC) (v1320)		alt_01071 (v4)	1	CAS_salt_ (v30	•	1		

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / I (% de		Result	Std. Dev	. RSD	Start Ti	ime
•	С	тос	25.0000	1:1	[TOC] LCS [24 ppm]	.0 0 / infi ( NA /	, ,	24.758 ppr (PASS	n pp	00 0% om	2019/11/16	00:09
P	os A	Base nalysis Type	i ID	Rep	ppm	þg	Adj	usted	NDIR	Baseline	Pressure	Run Time
(	2	TOC	25.0 ppm	1	24.7580	247.5795		177.52	181.15	3.63	50.25	10:34
		<b>pletion</b> ess - C		ess /	Action ning CA	Method \S_salt_01	0711		alibration salt_010711		Conc - Pos 25 ppmC	s C

	Pos	Type: Sample Analysis	Sample ID		Result (	nnmC\		Dev.	RSE		Start Time	ersion 1
		Type					·····	mC)				
•	21	TOC	K1910278-002	.08	0.28	97 ppm	0.0	752 ppm	25.960	00% 20	)19/11/16 00	0:23
Re #		Base nalysis Type	ppm		μg	Adju (Ak		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.3429		3.4291		11.31		14.96	3.65	50.23	10:29
2	2	TOC	0.2365		2.3654		10.59		14.37	3.78	50.25	10:28
	<u>1</u>	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)	(IC)		<u>lethod</u> salt_0107 (v4)	11	<u>Calibr</u> CAS_salt (v3	_01071	1		
	Pos	Analysis Type	Sample ID	***************************************	Result (	ppmC)		. Dev. omC)	RSI	<b>D</b>	Start Time	
•	22	TOC	K1910473-001	.13	6.21	195 ppm	0.0	0283 ppm	0.460	0% 20	19/11/16 00	):51
Re #		Base nalysis Type	ppm		µg	Adju: (Ab		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	6.1995		61.9947		51.06		54.70	3.64	50.20	10:28
2		TOC	6.2395		62.3954		51.34		55.03	3.69	50.22	10:26
	<u>[</u>	Dilution	Blank Contrib	ution	М	lethod		Calibra	ation			
		1:10	(TC) 8.9824 (v1320)		CAS_s	alt_0107 (v4)	11	CAS_salt_ (v3	_01071	1		
	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSE	)	Start Time	
*	23	TOC	K1910473-002	.12	6.32	251 ppm	0.0	0117 ppm	0.1800	0% 20	19/11/16 01	:19
Re #		Base nalysis Type	ppm		µg	Adjus (Ab		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	6.3169		63.1688		51.86	***************************************	55.39	3.52	50.22	10:27
2		TOC	6.3334		63.3338	······································	51.97		55.71	3.74	50.27	10:27
	<u></u>	<u> Dilution</u>	Blank Contrib	ution	<u>M</u>	ethod		Calibra	ation			
		1:10	(TC) 8.9824 (v1320)	(IC)		alt_0107 (v4)	11	CAS_salt_ (v30		1		
I	Pos	Analysis Type	Sample ID		Result ( <sub> </sub>	ppmC)		Dev. mC)	RSE	)	Start Time	
	24	TOC	K1910473-003.	12	0.35	68 ppm	0.0	)176 ppm	4.9300	0% 20	19/11/16 01	:48
<u>*</u>		Base nalysis Type	ppm			Adjus		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
⊛ Re∣ #		yolo .ypo	PP'''		μg	(Ab	s)					
Re <sub> </sub> #	Ar	TOC	0.3444		µg 3.4438	(Ab	s) 11.32		15.12	3.80	50.20	10:28
Re <sub>l</sub>	Ar					(Ab			15.12 15.22		50.20 50.22	10:28 10:26
Re <sub> </sub> #	Ar	TOC	0.3444		3.4438	(Ab	11.32	Calibra	15.22	3.80		
Re <sub> </sub> #	Ar	TOC TOC	0.3444 0.3693	<u>ution</u>	3.4438 3.6928 M. CAS_s		11.32		15.22 ation _01071	3.80 3.74		
Rep # 1 2	Ar	TOC TOC	0.3444 0.3693 Blank Contrib (TC) 8.9824	<u>ution</u>	3.4438 3.6928 M. CAS_s	ethod alt_0107′ (v4)	11.32 11.49	<u>Calibra</u>	15.22 ation _01071	3.80 3.74		
Re <sub> </sub> # 1 2		TOC TOC  Pilution 1:10  Analysis	0.3444 0.3693 Blank Contrib (TC) 8.9824 (v1320)	ution (IC)	3.4438 3.6928 M CAS_s	ethod alt_0107′ (v4)	11.32 11.49 11 (std. (pp	Calibra CAS_salt_ (v30	15.22 ation 01071 0)	3.80 3.74	50.22	10:26

 1	TOC	0.0000	0.0000	7.93	11.60	3.67	50.20	10:28
2	TOC	0.0000	0.0000	7.22	10.80	3.58	50.21	10:25

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v4)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
(	26	TOC	K1910473-005.12	0.6764 ppm	0.0841 ppm	ļ	2019/11/16 02:44

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	0.7358	7.3581	13.98	17.62	3.64	50.18	10:30
2	TOC	0.6169	6.1692	13.17	16.93	3.76	50.18	10:25

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v4)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
4	27	TOC	K1910473-006.12	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 03:12

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.73	10.39	3.66	50.20	10:31
2	TOC	0.0000	0.0000	6.66	10.44	3.78	50.19	10:28

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1320)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	28	TOC	K1910483-001.01	3.3577 ppm	0.0669 ppm	1.9900%	2019/11/16 03:40

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4050	34.0495	32.10	35.66	3.56	50.21	10:31
2	TOC	3.3104	33.1037	31.45	35.28	3.83	50.22	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1320)
 (v4)
 (v30)

### Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 11

	F	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	>	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity ( NA / NA )	24.6323 ppm (PASS)	0.0000 ppm	0%	2019/11/16 04:08

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
В	TOC	25 ppm	1	24.6323	246.3229	176.66	180.34	3.68	50.21	10:30

		pletion cess - C met.		cess o Not	Action hing CAS	Method 5_salt_010711 (v4)	CAS_sa	oration alt_010711 /30)	STE	O Conc - Pos B 50 ppmC
 <u>Sa</u>	mple	Type:	Check Standard	> C(	СВ	****			From S	Schedule Version 11
		T	}*************************************	-						
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	Pos D	TOC	1	Dil 1:1	Sample ID  [TOC] CCB [0 ppm]	1	0.0000 ppm (PASS)	Std. Dev. 0.0000 ppm		<b>Start Time</b> 2019/11/16 04:23

Pos	Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.45	10.17	3.71	50.24	10:30

Completion StateSuccess ActionMethodCalibrationSTD Conc - Pos DSuccess - Criteria<br/>met.Do NothingCAS\_salt\_010711<br/>(v4)CAS\_salt\_010711<br/>(v30)0 ppmC

9	San	nple	<b>Type</b> : Sampl	е				From Schedule Version 1
	***************************************	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
	•	29	TOC	K1910483-003.01	2.3901 ppm	0.0355 ppm	1.4900%	2019/11/16 04:38

Rep	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4153	24.1526	25.38	28.86	3.48	50.20	10:28
2	TOC	2.3650	23.6502	25.04	28.74	3.70	50.23	10:24

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1320)	(v4)	(v30)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
30	TOC	K1910576-001.01	20.0038 ppm	0.0575 ppm	0.2900%	2019/11/16 05:06

	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	20.0445	200.4446	145.04	148.74	3.70	50.22	10:30
-	2	TOC	19.9631	199.6314	144.49	148.32	3.83	50.23	10:26

<b>Dilution</b>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1320)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	31	TOC	K1910331-001.01 100x	8.6865 ppm	0.0435 ppm	0.5000%	2019/11/16 05:34

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	8.6557	86.5574	67.74	71.55	3.81	50.23	10:27
00	-							**************************************

4	2	TOC	8.7173		87.1732		68.16		71.92	3.77	50.20	10:2
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.9824 (v1320)			lethod salt_0107 (v4)	711	Calibra CAS_salt_ (v30	01071	1		
	Po	s Analysis Type	Sample ID		Result (	ppmC)	1	l. Dev. pmC)	RSI	<b>D</b>	Start Time	
•	32	TOC	K1910331-002.01	100x	9.20	041 ppm	0.	0188 ppm	0.200	0% 20	19/11/16 06	3:02
Re	ep #	Base Analysis Type	ppm		μg	Adju (Al		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	1	TOC	9.2173		92.1732		71.55		75.19	3.64	50.19	10:28
2	2	тос	9.1908		91.9080		71.37		75.00	3.63	50.18	10:28
-	······································	Dilution 1:10 Analysis	(TC) 8.9824 (v1320)		CAS_s	lethod salt_0107 (v4)		Calibra CAS_salt_ (v30	01071 ()			on the survey of
	Pos	Type	Sample ID		Result (	ppmC)		omC)	RSI	)	Start Time	)
•	33	TOC	K1910331-003.01	100x	6.91	89 ppm	0.	1166 ppm	1.6800	0% 20	19/11/16 06	3:30
Re #	<b>⊋</b> p #	Base Analysis Type	ppm		µg	Adju (Al		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	7.0013	~	70.0133		56.51		60.25	3.74	50.23	10:26
2	2	TOC	6.8365	***********************	68.3648		55.39		59.06	3.67	50.22	10:27
		<u>Dilution</u>	Blank Contrib	<u>ution</u>	<u>M</u>	ethod		Calibra	tion			
		1:10	(TC) 8.9824 (v1320)	(IC)		alt_0107 (v4)	11	CAS_salt_ (v30		1		
	Pos	Analysis Type	Sample ID		Result ( <sub> </sub>	ppmC)		. Dev. omC)	RSE	)	Start Time	
<b>&gt;</b>	34	TOC	K1910561-001.15	10x	12.19	77 ppm	0.0	0334 ppm	0.2700	)% 20	19/11/16 06	:58
	p !	Base Analysis Type	ppm	ا	μg	Adju (Ab		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time
		TOC	12.2213		122.2132		91.94		95.61	3.67	50.22	10:30
₹e		***************************************			121.7403		91.62		95.40	3.78	50.21	10:24
Re #		TOC	12.1740	*************								*******************************

	Pos	Analysis Type	Sample ID	Result (p	pmC)	Std. Dev. (ppmC)	RSE	)	Start Time	•
•	35	TOC	K1910561-002.15	1.384	9 ppm	0.1446 ppm	10.440	0% 20	19/11/16 07	7:26
	ep # A	Base nalysis Type	ppm	hа	Adjusted (Abs)	NDIR	(Abs)	Baseline (Abs)	Pressure (psig)	Run Time
•	1	TOC	1.4871	14.8714	19	.08	22.85	3.78	50.22	10:26
2	2	TOC	1.2827	12.8266	17	.69	21.42	3.73	50.23	10:28

DilutionBlank ContributionMethodCalibration1:10(TC) 8.9824 (IC)CAS\_salt\_010711CAS\_salt\_010711

	(v1320)	(v4)	(v30)
A 1 1 -	**************************************	T T	

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	36	TOC	K1910561-003.14 2x	4.2701 ppm	0.1282 ppm	3.0000%	2019/11/16 07:54

Re #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3608	43.6077	38.58	42.30	3.72	50.20	10:28
2	TOC	4.1794	41.7942	37.35	40.99	3.63	50.21	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1320)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	37	TOC	K1910572-001.16	0.0000 ppm	0.0000 ppm		2019/11/16 08:22

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.22	10.80	3.57	50.25	10:28
2	TOC	0.0000	0.0000	6.60	10.17	3.57	50.28	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

 F	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	38	TOC	K1910572-001.16 ms	25.0218 ppm	0.0000 ppm	0.0000%	2019/11/16 08:50

Re #	p Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	25.0218	250.2182	178.83	182.43	3.60	50.26	10:32

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

### Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 13

		Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
ľ	•	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity ( NA / NA )	24.2149 ppm (PASS)	0.0000 ppm	0%	2019/11/16 09:05

Ро	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time	THE REPORT OF THE PROPERTY OF
В	TOC	25 ppm	1	24.2149	242.1493	173.83	177.36	3.53	50.24	10:31	- Management

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30) STD Conc - Pos B 50 ppmC

### Sample Type: Check Standard --> CCB

From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
*	D	тос	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity ( NA / NA )	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/16 09:19

Р	os	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time	paragramma a serial de la company de la comp
	D	TOC	0 ppm	1	0.0000	0.0000	6.62	10.33	3.71	50.28	10:31	aliminista de de la constanta

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos D 0 ppmC

### Sample Type: Sample

From Schedule Version 13

Notice consistency and	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 09:34

I	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.0000	0.0000	6.12	9.77	3.65	50.22	10:30

Dilution 1:10 Blank Contribution (TC) 8.9824 (IC) (v1320) <u>Method</u> CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

### Sample Type: Check Standard --> LCS

From Schedule Version 13

		Pos	ВАТ	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
	•	С	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity ( NA / NA )	24.4262	0.0000	0%	2019/11/16 09:49
L						ppinj	(INA/INA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
С	TOC	25.0 ppm	1	24.4262	244.2619	175.27	178.87	3.61	50.21	10:33	gass-security.

Completion State
Success - Criteria
met.

Success Action
Do Nothing

<u>Method</u> CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos C 25 ppmC

### Sample Type: Sample

From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
(	<b>4</b> 0	тос	K1910572-002.16	0.0031 ppm	0.0044 ppm	141.4200%	2019/11/16 10:05

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	Secretary March
									**************************************

1	тос	0.0063	0.0628 9	0.02 12.56	3.53	50.19	10:26
2	TOC	0.0000	0.0000 8	11.78	3.57	50.21	10:28
	<u>Dilution</u>	Blank Contribution	<u>Method</u>	Calibration			
	1:10	(TC) 8.9824 (IC)	CAS salt 010711	CAS_salt_010711			

			` (v1320)			(v4)		(v3	Ō)	•			
	mnle	<b>Type</b> : Sample			4500 500 600 600 600 600 600 600 600 600	P-1-10-10-10-10-10-10-10-10-10-10-10-10-1	. COMMAND WWW. www. www. www. www. www. www. www	**************************************					
<u> </u>	IIIDIE	•			7				·	⊢r	om S	chedule Ve	rsion
	Pos	Analysis Type	Sample ID		Result	(ppmC)	1	l. Dev. pmC)	RS	D		Start Time	,
•	41	TOC	K1910572-003	3.15	0.0	000 ppm	0.	0000 ppm	0.000	0%	20	19/11/16 10	):33
	ер # .	Base Analysis Type	ppm	-	µg	Adju (Al		NDIR (A	Abs)	Base (Al		Pressure (psig)	Rur Tim
	1	TOC	0.0000		0.0000		7.12		10.60		3.48	50.21	10:2
	2	TOC	0.0000		0.0000		7.16		10.64	····	3.49	50.21	10:2
		<u>Dilution</u> 1:10	Blank Contril (TC) 8.9824 (v1320)	(IC)	_	<u>flethod</u> salt_0107 (v4)	11	Calibra CAS_salt_ (v30	01071	1			
	Pos	Analysis Type	Sample ID		Result (	(ppmC)		. Dev. omC)	RSI	<b>o</b>	***************************************	Start Time	
•	42	TOC	K1910572-004	.15	0.00	000 ppm	0.	0000 ppm	0.000	0%	20 <sup>-</sup>	19/11/16 11	:01
	ep # A	Base Analysis Type	ppm		µg	Adju: (Ab		NDIR (A	Abs)	Base (Ab		Pressure (psig)	Run Time
	1	TOC	0.0000		0.0000		6.62		10.19	himman	3.57	50.23	10:28
2	2	TOC	0.0000		0.0000		6.68		10.42		3.74	50.24	10:2
		<u>Dilution</u>	Blank Contrib			lethod		Calibra					
		1:10	(TC) 8.9824 (v1320)	(IC)	CAS_s	salt_0107 (v4)	11	CAS_salt_ (v30		1			
	Pos	Analysis Type	Sample ID		Result (	ppmC)		Dev. mC)	RSE	)		Start Time	***************************************
•	43	тос	K1910572-005	.15	0.00	)00 ppm	0.0	0000 ppm	0.0000	0%	201	9/11/16 11	:29
Re #		Base Inalysis Type	ppm	4	лg	Adjus (Ab		NDIR (A	(sd.	Base (Ab		Pressure (psig)	Run Time
1		TOC	0.0000		0.0000		6.56		10.22		3.66	50.27	10:29

700	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
2 TOC 0.0000 0.0000 6.90 10.35 3.45 50.27 10:27	1	TOC	0.0000	0.0000	6.56	10.22	3.66	50.27	10:29
	2	TOC	0.0000	0.0000	6.90	10.35	3.45	50.27	10:27

<u>Dilution</u>	Blank Contribution	<u>metnoa</u>	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)
 ·	***************************************		

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
	44	TOC	K1910572-006.16	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 11:57
·							

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.22	11.93	3.70	50.25	10:30
2	тос	0.0000	0.0000	8.40	12.04	3.64	50.25	10:27

		<u>Dilution</u> 1:10	Blank Contril (TC) 8.9824 (v1320)	(IC)		<u>lethod</u> salt_0107 (v4)	11	Calibra CAS_salt_ (v30	_01071	1		
ı	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. pmC)	RSI	<b>D</b>	Start Time	)
<b>*</b>	45	TOC	K1910572-008	.15	0.00	000 ppm	0.	0000 ppm	0.000	0% 20	0% 2019/11/16 12:25	
Re <sub>l</sub> #		Base analysis Type	ppm		μg	Adju (Ab		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.0000		0.0000		8.44		11.97	3.53	50.25	10:2
2		TOC	0.0000		0.0000		8.27		11.78	3.51	50.25	10:2
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.9824 (v1320)		_	lethod salt_0107 (v4)		Calibra CAS_salt_ (v30	01071	1		
	os	Analysis Type	Sample ID	~=	Result (		(pp	. Dev. omC)	RSI	····	Start Time	
<u>•</u>	46	TOC	K1910147-001	.05	2.60	01 ppm	0.0	0141 ppm	0.5400	0% 20	19/11/16 12	2:53
Rep #		Base nalysis Type	ppm		µg	Adjus (Ab		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	_	TOC	2.6100		26.1001		26.70		30.36	3.66	50.25	10:31
2		TOC	2.5901		25.9013		26.56		30.27	3.71	50.25	10:27
	<u>I</u>	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)		CAS_s	<u>ethod</u> alt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v30	01071	1		
F	'os	Analysis Type	Sample ID	A DE LA CALLANDA DE L	Result (	ppmC)		Dev. omC)	RSE	)	Start Time	
• .	47	TOC	K1910147-002	05	2.63	26 ppm	0.0	0141 ppm	0.5300	)% 20°	19/11/16 13	:22
Rep		Base nalysis Type	ppm		hâ	Adjus (Ab		NDIR (A	bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	2.6426		26.4257		26.92		30.45	3.53	50.24	10:30
2		TOC	2.6227		26.2268		26.78		30.30	3.52	50.28	10:28
	<u> </u>	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)		CAS_s	<u>ethod</u> alt_0107′ (v4)	11	<u>Calibra</u> CAS_salt_ (v30	01071			

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / I (% de		Result	Std. De	v. RSD	Start Ti	me
•	В	TOC	25.0000	1:2	[TOC] CCV 2 ppm [25 ppm	3	,	23.7050 ppn (PASS	n pr	00 0% om	2019/11/16	3 13:50
Po	3	Base nalysis Type	ID	Rep #	ppm	þg	Adj	usted	NDIR	Baseline	Pressure	Run Time
E	3	TOC	25 ppm	1	23.7056	237.0564		170.38	173.90	3.53	50.25	10:32

69 of 197

CAS\_salt\_010711

CAS\_salt\_010711

Success - Criteria

Do Nothing

50 ppmC

an	nple	Type: (	Check Standard -	> CC	В					From S	schedule Ve	rsion 1
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / (% d	1	Result	Std. De	. RSD	Start Ti	me
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / inf ( NA /	- 1	0.000 ppr (PASS	n pr	00 0% om	2019/11/16	14:04
Ро	s A	Base nalysis Type	i ID	Rep	ppm	hā	Adjı	usted	NDIR	Baseline	Pressure	Run Time
D		TOC	0 ppm	1	0.0000	0.0000		6.11	9.76	3.65	50.27	10:35

<u>sa</u>	mpie	Type: Sample			·		······································	***************************************	·	From S	chedule Ve	rsion
	Pos	Analysis Type	Sample ID		Result (	ppmC)		l. Dev. omC)	RSI	)	Start Time	<b>;</b>
•	48	TOC	K1910147-006	.04	3.02	222 ppm	0.	0485 ppm	1.610	0% 20	19/11/16 14	l:19
Re	<b>∌</b> p <b>#</b> A⊦	Base nalysis Type	ppm		µg	Adju: (Ab		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
-	l	TOC	3.0565		30.5654		29.73		33.30	3.57	50.30	10:3
2	2	TOC	2.9879		29.8789		29.26		32.89	3.63	50.27	10:28
	<u></u>	<u>Dilution</u>	Blank Contrib	ution	<u>M</u>	lethod		Calibra	ation			
		1:10	(TC) 8.9824 (v1320)	(IC)	CAS_s	salt_0107 (v4)	11	CAS_salt_ (v30		1		
	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSE	)	Start Time	
•	49	тос	K1910147-007	.04	4.48	869 ppm	0.	1435 ppm	3.2000	0% 20°	19/11/16 14	:47
Re	p Aı	Base nalysis Type	ppm	***************************************	µg	Adjus (Ab		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
		<del>~~~~</del>	***************************************				······	**********************				

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5884	45.8838	40.13	43.86	3.74	50.25	10:26
2	TOC	4.3854	43.8537	38.75	42.61	3.86	50.27	10:26

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711
	(V 1320)	(V4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	50	TOC	K1910199-001.04	1.8117 ppm	0.0221 ppm	1.2200%	2019/11/16 15:15

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7961	17.9607	21.17	24.95	3.77	50.27	10:26
2	TOC	1.8273	18.2730	21.39	25.08	3.70	50.32	10:25

	<u> </u>	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)	(IC)	-	<b>/lethod</b> salt_0107 (v4)	<sup>7</sup> 11	Calibra CAS_salt_ (v3	_01071	1		
	Pos	Analysis Type	Sample ID	***************************************	Result	(ppmC)	1	I. Dev. pmC)	RSI	D	Start Time	······································
•	51	TOC	K1910199-002	.04	1.5	258 ppm	0.	0105 ppm	0.690	0% 20	19/11/16 1	5:43
Re #		Base nalysis Type	ppm	•	hâ	Adju (At		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	1.5184		15.1837		19.29		22.78	3.49	50.25	10:29
2		TOC	1.5333		15.3325	<u></u>	19.39		22.89	3.50	50.24	10:27
	<u></u>	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)			<u>fethod</u> salt_0107 (v4)	'11	Calibra CAS_salt_ (v30	01071	1		
1	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSI	<b>D</b>	Start Time	)
•	52	тос	K1910199-003	.04	1.23	318 ppm	0.	0.0092 ppm 0.7400		0% 20	19/11/16 16	3:12
Re #		Base nalysis Type	ppm		hā	Adju: (Ab		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	1.2254		12.2535		17.30		20.69	3.39	50.26	10:27
2		TOC	1.2383		12.3832		17.39		20.92	3.53	50.29	10:26
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.9824 (v1320)			lethod salt_0107 (v4)	11	Calibra CAS_salt_ (v30	01071	1		
F	Pos	Analysis Type	Sample ID	7.00	Result (	ppmC)		. Dev. omC)	RSE	)	Start Time	
•	53	TOC	K1910199-004.	.04			0.0	.0127 ppm 0.9200		0% 20 <sup>-</sup>	19/11/16 16:40	
Re <sub>l</sub> #		Base nalysis Type	ppm	l	μg Adjuste (Abs)			NDIR (Abs)		Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	1.3970	***************	13.9698		18.46		22.10	3.63	50.25	10:25
2		TOC	1.3790	***********************	13.7901		18.34		21.88	3.54	50.24	10:27
	₫	0ilution 1:10	Blank Contrib (TC) 8.9824 ( (v1320)		CAS_s	ethod alt_0107 (v4)	11	Calibra CAS_salt_ (v30	01071 <i>′</i>	1		
_	Pos	Analysis Type	Sample ID		Result (			Dev. mC)	RSD		Start Time	
•	54	TOC	K1910199-007.	04	1.89	76 ppm	0.0	)515 ppm	2.7100	)% 201	9/11/16 17	:08
		Base nalysis Type	ppm	ļ	ıg	Adjus (Ab		NDIR (A	bs)	Baseline (Abs)	Pressure (psig)	Run Time
Rep #	Ar	TOO	1.9340		19.3396		22.11		25.67	3.56	50.25	10:30
# 1	Ar	TOC					21.62		25.11	3.50	50.22	10:26
#	Ar	TOC	1.8612	***************************************	18.6119				L	······································		
# 1		····			Mac CAS_s	<u>ethod</u> alt_01071 (v4)		Calibra CAS_salt_( (v30)	010711			
# 1 2		TOC ilution	1.8612 Blank Contribu (TC) 8.9824 (		Mac CAS_s	alt_01071 (v4)	11 (	CAS_salt_0	010711		Start Time	

Rep #	Base Analysis Type	Analysis Type ppm µg (Abs)		NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	1.8943	18.9433	21.84	25.41	3.57	50.24	10:28
2	TOC	1.8912	18.9124	21.82	25.38	3.56	50.23	10:26

<b>Dilution</b>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1320)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	56	TOC	K1910199-010.04	1.5466 ppm	0.0566 ppm	3.6600%	2019/11/16 18:04

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5066	15.0659	19.21	22.81	3.60	50.25	10:29
2	TOC	1.5866	15.8658	19.75	23.11	3.36	50.25	10:28

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1320)	(v4)	(v30)

		Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
-	•	57	TOC	K1910254-001.04	2.0643 ppm	0.0000 ppm	0.0000%	2019/11/16 18:32

	Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	
-	1	TOC	2.0643		22.99	26.69	3.70	50.28	10:34	Alfonianie

<b>Dilution</b>	Blank Contribution	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt 010711
	(v1320)	(v4)	(v30)

### Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2	[ ] ·	0 / infinity (NA / NA)	23.9330 ppm (PASS)	0.0000 ppm	0%	2019/11/16 18:47

Pos	Base Analysis Type	ID	Rep #	ppm	hа	Adjusted	NDIR	Baseline	Pressure	Run Time
В	TOC	25 ppm	1	23.9330	239.3296	171.92	175.42	3.50	50.25	10:32

<b>Completion State</b>	<b>Success Action</b>	<u>Method</u>	<u>Calibration</u>	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

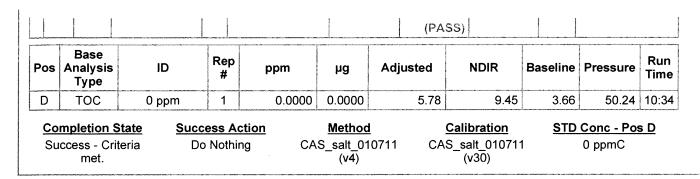
### Sample Type: Check Standard --> CCB From Schedule Version 15 Concentration Min / Max Pos Dil **BAT** Sample ID Result Std. Dev. **RSD Start Time** (ppm) (% dev) D TOC 0.0000 1:1 [TOC] CCB [0 0 / infinity 0.0000 0.0000 0% 2019/11/16 19:02

ppm]

(NA/NA)

ppm

ppm



	Pos Analysis Type		Sample ID	Result (	nnm(:) i .	Std. Dev. (ppmC)			Start Time			
•			MB4	0.0000 ppm		0.0000 ppm   0.0000		% 2019/11/16 19:1		:16		
	ep A	Base Analysis Type	ppm	hã	Adjusted (Abs)	NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time		
	1	TOC	0.0000	0.0000	5.2	9	8.80	3.51	50.26	10:33		
		<u>Dilution</u>	Blank Contribution	<u>n M</u>	<u>ethod</u>	Calibra	ation					
		1:10	(TC) 8.9824 (IC) (v1320)		alt_010711 (v4)	CAS_salt_ (v30	-					

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / (% d		Result	Std. Dev	. RSD	Start Ti	me
•	С	тос	25.0000	1:1	[TOC] LCS [25 ppm]	.0 0 / inf ( NA /	- 1	24.5930 ppn (PASS	рр		2019/11/16	19:31
Po	s A	Base nalysis Type	i ID	Rep	ppm	þg	Adj	justed	NDIR	Baseline	Pressure	Run Time
C	;	TOC	25.0 ppm	1	24.5930	245.9295	1	176.40	179.86	3.46	50.26	10:31

	Pos Analysis Type  TOC	Sample ID	Result (p	pmC)		Std. Dev. (ppmC)		)	Start Time		
•	59	TOC	K1910254-002.04	1.658	35 ppm	0.0	964 ppm	5.810	0% 20	19/11/16 19	:46
Re #	• ;	Base nalysis Type	ppm	þg	Adjust (Abs		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	1.7267	17.2668	***************************************	20.70	nadan kerintah di pelak danah Kriston dan dan dan dan dan dan dan dan dan da	24.27	3.57	50.28	10:30
2		тос	1.5904	15.9041		19.78		23.42	3.64	50.25	10:27

**Dilution Blank Contribution** <u>Method</u> **Calibration** 1:10 (TC) 8.9824 (IC) CAS\_salt\_010711 CAS\_salt\_010711

			(v1320)	•		(v4)		(v3	0)			
	Pos	Analysis Type	Sample ID		Result	(ppmC)	i	l. Dev. pmC)	RS	D	Start Time	е
•	60	ТОС	K1910254-003	3.04	1.0	469 ppm	0.	0839 ppm	8.010	0% 20	19/11/16 2	0:14
Re #		Base Inalysis Type	ppm		µg	Adju (At		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.9876		9.8758		15.69		19.40	3.72	50.25	10:29
2		TOC	1.1062	<u></u>	11.0617	<u> </u>	16.49	<u> </u>	20.11	3.61	50.24	10:28
	<u>!</u>	<b>Dilution</b> 1:10	Blank Contril (TC) 8.9824 (v1320)	(IC)		<b>/lethod</b> salt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v3	_01071	1		
	Pos	Analysis Type	Sample ID		Result	(ppmC)		. Dev. omC)	RSI	<b>)</b>	Start Time	9
•	61	TOC	K1910254-004	.04	2.3	140 ppm	0.0	0238 ppm	1.030	0% 20	19/11/16 20	0:42
Re #		Base nalysis Type	ppm		hã	Adju (At		NDIR (/	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	2.3308		23.3084		24.80		28.50	3.69	50.24	10:30
2		TOC	2.2973		22.9725		24.58		27.88	3.30	50.26	10:25
		Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)			Method salt_0107 (v4)		Calibra CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID	***************************************	Result (			Dev. mC)	RSI	)	Start Time	)
•	62	TOC	K1910254-004.0	4 ms	ns 27.7911 ppn		0.0	0000 ppm	0.0000	0% 20	19/11/16 21	1:10
Re <sub>l</sub>		Base nalysis Type	ppm		μg	Adjusted (Abs)		NDIR (Abs		Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	27.7911		277.9114		197.63	2	201.14	3.51	50.25	10:34
	Ξ	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)			<u>lethod</u> salt_0107 <sup>.</sup> (v4)	11 (	<u>Calibra</u> CAS_salt_ (v30	01071	1		
F	Pos	Analysis Type	Sample ID		Result (	ppmC)		Dev. mC)	RSE	)	Start Time	
<u> </u>	63	TOC	rb		0.00	000 ppm	0.0	0000 ppm	0.0000	)% 20 <sup>-</sup>	19/11/16 21	:25
Rep #		Base nalysis Type	ppm		hâ	Adjus (Ab		NDIR (A	vps)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.0000		0.0000		5.64		9.30	3.66	50.26	10:30
	<u>D</u>	<u> Dilution</u>	Blank Contrib	<u>ution</u>	M	lethod		Calibra	tion			
		1:10	(TC) 8.9824 (v1320)	(IC)	CAS_s	alt_01071 (v4)	11 (	CAS_salt_ (v30		I		
F	Pos	Analysis Type	Sample ID		Result (	ppmC)		Dev. mC)	RSD		Start Time	
•	64	TOC	K1910254-005.	04	1.12	92 ppm	0.0	235 ppm	2.0800	)% 201	9/11/16 21	:39
Rep Base				ug Ad		tod	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Baseline	Pressure	Run	
Rep #		nalysis Type	ppm			(Abs		NDIR (A	bs)	(Abs)	(psig)	Time
			1.1458 1.1125		11.4580 11.1251				. <b>bs)</b> 20.42			

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	65	TOC	K1910254-006.04	28.1311 ppm	0.0561 ppm	0.2000%	2019/11/16 22:08
r	••••	· · · · · · · · · · · · · · · · · · ·				***************************************	

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0914	280.9138	199.67	203.23	3.56	50.25	10:25
2	TOC	28.1708	281.7079	200.20	204.08	3.88	50.24	10:28

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v4)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	66	TOC	K1910254-007.04	1.9818 ppm	0.2031 ppm	10.2500%	2019/11/16 22:36

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1255	21.2548	23.41	27.00	3.59	50.28	10:27
2	TOC	1.8382	18.3820	21.46	24.95	3.49	50.25	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1320)
 (v4)
 (v30)

### Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity ( NA / NA )	23.8729 ppm (PASS)	0.0000 ppm	0%	2019/11/16 23:04

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time
В	TOC	25 ppm	1	23.8729	238.7285	171.51	175.00	3.49	50.24	10:33

Completion StateSuccess ActionMethodCalibrationSTD Conc - Pos BSuccess - Criteria<br/>met.Do NothingCAS\_salt\_010711<br/>(v4)CAS\_salt\_010711<br/>(v30)50 ppmC

### Sample Type: Check Standard --> CCB

From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity ( NA / NA )	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/16 23:18

Pos	Base Analysis	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	September and section of the control
-----	------------------	----	----------	-----	----	----------	------	----------	----------	-------------	--

	Туре			ATTION AND AND AND AND AND AND AND AND AND AN			1.00			
D	TOC	0 ppm	1 1	0.0000	0.0000	6.38	9.91	3.53	50.26	10:30
	mpletion S ccess - Crit met.		ess Act Nothin		Method S_salt_010711 (v4)	1 CAS_s	<u>ibration</u> alt_010711 (v30)		onc - Pos ppmC	s D

<u>Sa</u>	mp	le Type: Sample								From S	chedule Ve	rsion
	Ро	Analysis Type	Sample ID		Result (ppm(:)		d. Dev. opmC)		D Start Time		ariak majani pemipupup <b>4999</b>	
•	67	7 TOC	K1910254-008	.04	04 1.4375 ppm		0.0	0.0190 ppm		0% 20	)19/11/16 23:33	
	ep #	Base Analysis Type	ppm		hā	Adju: (Ab		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Rur Time
	1	TOC	1.4509		14.5090		18.83		22.51	3.68	50.25	10:2
	2	TOC	1.4241		14.2409		18.65		22.21	3.56	50.31	10:2
		<u>Dilution</u>	Blank Contrib	ution	M	ethod		Calibra	ıtion			***************************************
		1:10	(TC) 8.9824 (v1320)	(IC)	CAS_s	alt_0107 ( <b>v4</b> )	11	CAS_salt_ (v30		1		
	Ро	Analysis Type	Sample ID		Result (	ppmC)		Dev. mC)	RSE	)	Start Time	
•	68	в тос	K1910299-001	.03	7.15	45 ppm	0.2	2045 ppm	2.8600	0% 20°	19/11/17 00	:01
	ep #	Base Analysis Type	ppm	***************************************	µg	Adjus (Ab		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run
7	- 1											
~~~~	1	TOC	7.2991		72.9907		58.53		62.07	3.54	50.24	10:30

<u>Dilution</u>	Blank Contribution	<u>Method</u>	Calibration
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1320)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	69	TOC	K1910765-001.01	8.9810 ppm	0.1088 ppm	1.2100%	2019/11/17 00:29

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.0579	90.5792	70.47	73.94	3.47	50.27	10:31
2	TOC	8.9041	89.0412	69.42	73.00	3.58	50.23	10:32

<u>Dilution</u>	Blank Contribution	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1320)	(v4)	(v30)

***************************************	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	70	TOC	K1910765-002.01	13.5412 ppm	0.1337 ppm	0.9900%	2019/11/17 00:58

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.6357	136.3574	101.54	105.14	3.60	50.23	10:28
2	TOC	13.4467	134.4673	100.26	104.04	3.78	50.25	10:28

	<u> </u>	Dilution 1:10	Blank Contril (TC) 8.9824 (v1320)	(IC)	_	<u>lethod</u> salt_0107 ( <b>v4</b> )	<b>7</b> 11	<u>Calibr</u> CAS_salt (v3	 _0107′	11		
	Pos	Analysis Type	Sample ID		Result (	ppmC)	i e	. Dev. omC)	RS	D	Start Time	е
•	71	TOC	K1910765-003	3.01	22.66	320 ppm	0.	0885 ppm	0.390	00% 20	19/11/17 0	1:26
Re #		Base nalysis Type	ppm		μg	Adju (Al		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	22.5994		225.9944		162.39		166.08	3.69	50.23	10:26
2		TOC	22.7247		227.2466		163.24		166.80	3.56	50.12	10:28
	<u>[</u>	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)			<u>lethod</u> salt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v30		1		
F	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RS	D	Start Time	•
•	72	TOC	K1910765-004	.01	10.09	01 ppm	0.3	3055 ppm	3.030	0% 20	19/11/17 0 <sup>-</sup>	1:54
Re <sub>l</sub>		Base nalysis Type	ppm		µg	Adju: (Ab	ž.	NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	10.3062		103.0616	***************************************	78.94		82.74	3.80	50.11	10:30
2		TOC	9.8741		98.7407	***************************************	76.01		79.77	3.76	50.16	10:27
	-	1:10	Blank Contrib (TC) 8.9824 (v1320)		CAS_s	ethod alt_0107 (v4)		Calibra CAS_salt_ (v30	01071	1		MAN OF THE STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STR
	<b>Pos</b> 73	Analysis Type TOC	Sample ID K1910760-001	01	Result (p	33 ppm	(pp	<b>Dev.</b> mC) 0796 ppm	<b>RSI</b>		Start Time 19/11/17 02	***************************************
Rep		Base	T 1	.01		Adjus		77 JO PPIN	0.700	Baseline	······································	····
#		nalysis Type	ppm	l	μg	Aujus (Ab		NDIR (A	Abs)	(Abs)	Pressure (psig)	Run Time
1	_	TOC	1.2296	······································	12.2963	larinin Arinduska (Arasininin arasinin arasinin arasinin arasinin arasinin arasinin arasinin arasinin arasini	17.33		20.90	3.57	50.08	10:28
2		TOC	1.1171	Marko angana managanga dan dan garan	11.1707	······································	16.57		20.17	3.61	50.20	10:24
	<u></u>	Dilution 1:10	Blank Contrib (TC) 8.9824 (v1320)		CAS_s	<u>ethod</u> alt_0107 (v4)	11 (	Calibra CAS_salt_ (v30	01071	1		
_	os	Analysis Type	Sample ID		Result (p	opmC)		Dev. mC)	RSE	<b>)</b>	Start Time	
<u> </u>	74	TOC	K1910760-001.01	1 ms	25.84	62 ppm	0.0	0000 ppm	0.000	0% 201	19/11/17 02	::50
Rep #		Base nalysis Type	ppm	4	1g	Adjus (Ab		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	25.8462	2	258.4622		184.42	1	87.91	3.49	50.11	10:34
	₽	Dilution 1:10	Blank Contrib (TC) 8.9824 ( (v1320)		CAS_sa	ethod alt_0107′ (v4)	l1 (	Calibra CAS_salt_ (v30	01071	1		
_	os	Analysis Type	Sample ID		Result (p		(pp	Dev. mC)	RSD		Start Time	
	75	TOC	RB	1	0.000	00 ppm	0.0	000 ppm	0.0000	0% 201	9/11/17 03	:05
•			·	·····					····		***************************************	***********************

	#	Analysis Type	ppm	μg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
L	1	TOC	0.0000	0.0000	6.30	9.69	3.39	50.09	10:28
L	2	TOC	0.0000	0.0000	5.64	9.26	3.62	50.11	10:28

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.9824 (IC) (v1320)
 CAS\_salt\_010711 (v4)
 CAS\_salt\_010711 (v30)

#### Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
*	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity ( NA / NA )	23.6725 ppm (PASS)	0.0000 ppm	0%	2019/11/17 03:33

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time	parameter and a second
В	TOC	25 ppm	1	23.6725	236.7250	170.15	173.77	3.62	50.15	10:35	all annual section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711

(v30)

STD Conc - Pos B

50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 15

	-	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity ( NA / NA )	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/17 03:48

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.73	9.31	3.58	50.18	10:30

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos D 0 ppmC

### Meta Data Used in this Report

#### **Blanks**

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1319	0.9217	1.0210	0.0000	0.0000	0.0000	2019/11/13 13:58	Fusion1 (Fusion1)
v1320	2.3307	1.7570	0.0000	0.0000	0.0000	2019/11/15 13:57	Fusion1 (Fusion1)

#### **Calibrations**

Name: CAS\_salt\_010711 (TOC)

Version:

v30

TOC

Calibration curve

TOC: y = 6.788x + 9.463

Ver Creation:

2019/03/05 17:42

formula: r<sup>2</sup> value:

TOC:  $r^2 = 0.99963$ 

Comment:

Operator:

Fusion1 (Fusion1)

Basic Analysis

Type

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Operator:

#### Methods

Name: CAS\_salt\_010711 (TOC)

Version:

ν4

Ver Creation:

2019/02/21 17:57

Comment:

Value
10.0 mL
1:10
0.5 ml
2.0 ml
Off
5.0
1
1.00 mins
500 ml/min
2.00 mins
500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min

Fusion1 (Fusion1)

SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

## Acceptance / Approval

## **Report History**

#### Report History

***************************************	Report Version	User Name	System Reason	User Reason	Date
***************************************	1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/17 04:03

#### ALS Environmental

StarLIMS Run:	660112, 660113, 660114, 660115
Analysis:	DOC/TOC
Method:	SM 5310 C, 9060A, 415.1, 9060
CCV: 11-GEN-05-82C 50	0 ppm
ICAL Date: 3/6/19	
ICAL ID: 11-GEN-05-76H	1
ICS ID: 11-GEN-05-78M	
ICS TV: 25.0 ppm	ICS % R < 1
Spike ID: 11-GEN-05-820	0.05 ml of 5000 ppm stock> 10.0 ml = 25.0 ppm x dilution factor
Sodium Persulfate: 11-GE	N-05-83A
21 % H3PO4: 11-GEN-05	-82G
Equipment ID: K-TOC-03	
PIPETTE ID: 124276B, 12	29001F, N11314F, Marge
FILTER ID: 16967789	

Analyzed By: 80	Date Analyzed: 11/15/19
Reviewed By: Hully	Date Reviewed: ////9//9
	<b>4</b>



### **Case Narrative**

Method: 6850 Client: ALS Laboratories (Houston, TX)

Analysis: Perchlorate Matrix: Water

**Analysis SOP:** LC-MS-CLO4 **ELMS Batch (HBN):** 2319 (252142) **ALS WO ID(s):** 1931753; 1932010

**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 <sup>18</sup>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.  $50\mu L$  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 0.45 $\mu$ m Syringe filters.

**Holding Times:** Holding times were met for all analyses.

**Dilutions:** NA

**Method QC data:** The method blank (LMB 684808) was less than 1/2 the CRDL. The recovery for the LCS (684805) was within acceptable parameters.



MS/MSD Analysis: MS/MSD was performed on samples 1931753007/08 (Client ID: 04WW11-191106).  $3.0\mu L$  of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was  $3.\mu g/L$ . The MS/MSD (684133/34) 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  $\mu$ g/L. Results were calculated in  $\mu$ g/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve ( $\mu g/L$ )

B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 684806) is reported from the analysis of the Laboratory Control Sample (LCS – 684805) at a level of 3.0μg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafile 19OCT19D02.

Thomas Bosch November 20, 2019
Analyst Date



RJ Modashia

Suite 210

ALS Environmental (Houston)

10450 Stancliff Road

Houston, TX 77099

#### **ANALYTICAL REPORT**

Report Date: November 21, 2019

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1931753** 

Project ID: HS19110320 Purchase Order: HS19110320 Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
04WW02-191105	1931753001	11/05/19	11/08/19	
04WW02-191105-FD	1931753002	11/05/19	11/08/19	
LHSMW02-191105	1931753003	11/05/19	11/08/19	
04WW03-191106	1931753004	11/06/19	11/08/19	
04WW06-191106	1931753005	11/06/19	11/08/19	
04WW11-191106	1931753006	11/06/19	11/08/19	
04WW05-191106	1931753009	11/06/19	11/08/19	
04WW08-191106	1931753010	11/06/19	11/08/19	
04WW04-191106	1931753011	11/06/19	11/08/19	
LHSMW01-191106	1931753012	11/06/19	11/08/19	
Fire Station Well-191106	1931753013	11/06/19	11/08/19	
Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
04WW11-191106MS	1931753007	11/06/19	11/08/19	
04WW11-191106MSD	1931753008	11/06/19	11/08/19	

\*Client QC is reported as part of the Quality Control results report, if requested.

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992 ALS GROUP USA, CORP. An ALS Limited Company

Environmental 🚂

www.alsglobal.com

RIGHT SOLUTIONS HIGHT PARTDER

Page 1 of 5 Thu, 11/21/19 7:10 AM ENVREP-V4.8



Workorder: 34-1931753

Client: ALS Environmental

(Houston)

Project Manager: Kevin W. Griffiths

#### **Analytical Results**

Sample ID: <b>04WW02-191105</b>	Sampling Site: NA	Collected: 11/05/2019
Lab ID: 1931753001	Media: 125 mL Nalgene	Received: 11/08/2019
	0 " 5 " 114	

Matrix: Water Sampling Parameter: NA

Analysis Method - EPA 6850, DoD 0	SM					
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04
			Batch: ELMS/23	319 (HBN: 252142)	%\$	Solids: NA
			<b>Analyzed:</b> 11/19/20	19 09:45	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: 04WW02-191105-FD

Lab ID: 1931753002

Matrix: Water

Sampling Site: NA

Collected: 11/05/2019

Received: 11/08/2019

Analysis Method - EPA 6850, DoD QSM **Preparation:** Not Applicable Analysis: EPA 6850, DoD QSM Water **Instrument ID: LCMS04** Batch: ELMS/2319 (HBN: 252142) %Solids: NA Analyzed: 11/19/2019 09:59 **Report Basis:** Wet **Analyte** Result (ug/L) DL (ug/L) LOD (ug/L) LOQ (ug/L) **Dilution** Qual Perchlorate 1.0 U

Sample ID: LHSMW02-191105

Lab ID: 1931753003

Media: 125 mL Nalgene
Matrix: Water

Sampling Site: NA

Collected: 11/05/2019
Received: 11/08/2019

Analysis Method - EPA 6850, DoD QSM Analysis: EPA 6850, DoD QSM Water **Instrument ID: LCMS04 Preparation:** Not Applicable Batch: ELMS/2319 (HBN: 252142) %Solids: NA Analyzed: 11/19/2019 10:13 **Report Basis: Wet Analyte** Result (ug/L) DL (uq/L) LOD (ug/L) LOQ (uq/L) **Dilution** Qual Perchlorate 1.0 2.0 1

 Sample ID: 04WW03-191106
 Sampling Site: NA
 Collected: 11/06/2019

 Lab ID: 1931753004
 Media: 125 mL Nalgene
 Received: 11/08/2019

Matrix: Water		Sampling Pa	arameter: NA	-		
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04
			Batch: ELMS/23	319 (HBN: 252142)	%	Solids: NA
			<b>Analyzed:</b> 11/19/20	19 10:27	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



Workorder: 34-1931753

Client: ALS Environmental

(Houston)

Project Manager: Kevin W. Griffiths

#### **Analytical Results**

Sample ID: <b>04WW06-191106</b>	Sampling Site: NA	Collected: 11/06/2019
Lab ID: 1931753005	Media: 125 mL Nalgene	Received: 11/08/2019
	0 " 5 " 114	

Sampling Parameter: NA Matrix: Water

Analysis Method - EPA 6850, DoD QSM									
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04			
			Batch: ELMS/23	19 (HBN: 252142)	%	Solids: NA			
			<b>Analyzed:</b> 11/19/20	19 10:41	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: 04WW11-191106 Sampling Site: NA Collected: 11/06/2019 Media: 125 mL Nalgene Received: 11/08/2019 Lab ID: 1931753006

Matrix: Water		Sampling Pa	arameter: NA			
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable			Analysis: EPA 6850	0, DoD QSM Water	Instrum	ent ID: LCMS04
			Batch: ELMS/23	19 (HBN: 252142)	%5	Solids: NA
			Analyzed: 11/19/201	19 10:55	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

Sampling Site: NA Sample ID: 04WW05-191106 Collected: 11/06/2019 Media: 125 mL Nalgene Received: 11/08/2019 Lab ID: 1931753009

Sampling Parameter: NA Matrix: Water

	Matrix. Water		Camping i	arameter. IVA				
ĺ	Analysis Method - EPA 6850, DoD QS	SM						
	Preparation: Not Applicable			Analysis: EPA	6850, DoD QSM Water	Instrum	nent ID: LCMS	04
				Batch: ELMS	S/2319 (HBN: 252142)	%	Solids: NA	
				Analyzed: 11/19	)/2019 11:36	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	

Sampling Site: NA Sample ID: 04WW08-191106 Collected: 11/06/2019 Received: 11/08/2019 Lab ID: 1931753010 Media: 125 mL Nalgene

Matrix: Water		Sampling Pa	arameter: NA	_		
Analysis Method - EPA 6850, DoD	QSM					
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04
			Batch: ELMS/23	19 (HBN: 252142)	%	Solids: NA
			<b>Analyzed:</b> 11/19/20	19 11:50	Report	Basis: Wet
Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	13	1.0	2.0	4.0	1	



Workorder: 34-1931753

Client: ALS Environmental

(Houston)

Project Manager: Kevin W. Griffiths

#### **Analytical Results**

Sample ID: 04WW04-191106 Sampling Site: NA Collected: 11/06/2019 Lab ID: 1931753011 Media: 125 mL Nalgene Received: 11/08/2019

Sampling Parameter: NA Matrix: Water

manna Trator						
Analysis Method - EPA 6850,	DoD QSM					
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04
			Batch: ELMS/23	319 (HBN: 252142)	%	Solids: NA
			<b>Analyzed:</b> 11/19/20	19 12:17	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

Sampling Site: NA Collected: 11/06/2019 Sample ID: **LHSMW01-191106** Lab ID: 1931753012 Media: 125 mL Nalgene Received: 11/08/2019

Matrix: Water		Sampling Page	arameter: NA				
Analysis Method - EPA 6850, D	OoD QSM						
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS04	
			Batch: ELMS/23	319 (HBN: 252142)	%	Solids: NA	
			Analyzed: 11/19/20	19 12:31	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	

Sampling Site: NA Sample ID: Fire Station Well-191106 Collected: 11/06/2019 Media: 125 mL Nalgene Received: 11/08/2019 Lab ID: 1931753013

Sampling Parameter: NA Matrix: Water

Watrix. Water		oampinig i	arameter in t				
Analysis Method - EPA 6850, DoD Q	SM						
Preparation: Not Applicable			Analysis: EPA 685	0, DoD QSM Water	Instrum	ent ID: LCMS	304
			Batch: ELMS/23	319 (HBN: 252142)	%	Solids: NA	
			<b>Analyzed:</b> 11/19/20	19 12:45	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	

#### 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	/S/ Stephen Brose
	11/19/2019 17:26	11/21/2019 07:07

#### **Laboratory Contact Information**

ALS Environmental Phone: (801) 266-7700

960 W Levoy Drive Email: alslt.lab@ALSGlobal.com

Salt Lake City, Utah 84123 Web: www.alsslc.com



Workorder: 34-1931753

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 (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	lowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Lab oratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

#### **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.

- < Means 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: 1931753

Limits: Client SOW/Contract Specified Preparation: NA Analysis: EPA 6850, DoD QSM

Basis: DoD QSM

Batch: NA Batch: ELMS/2319 (HBN: 252142)

Property Day MA

Prepared By: NA Analyzed By: Thomas Bosch

#### **Blank**

LMB: 684808

Analyzed: 11/19/2019 09:32

Units: ug/L

Offits. ug/L			
Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

#### **Laboratory Control Sample**

LCS: 684805

Analyzed: 11/19/2019 09:04

Dilution: 1 Units: ug/l

9.5					
Analyte	Result	Target	% Rec	QC L	imits
Perchlorate	2.81	3.00	93.7	78.8	123.8

#### Matrix Spike - Matrix Spike Duplicate

 Sample:
 1931753006
 MS:
 1931753007
 MSD:
 1931753008

 Analyzed:
 11/19/2019
 11:08
 Analyzed:
 11/19/2019
 11:22

 Dilution: 1
 Dilution: 1
 Dilution: 1

 Units: ug/L
 Units: ug/L
 Units: ug/L

% Rec **QC** Limits Result % Rec **RPD QC** Limits **Analyte** Result Result **Target** Perchlorate ND 2.72 90.7 78.8 123.8 2.94 98.1 7.82 0.0 20.0

#### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
11/20/2019 12:46	11/21/2019 07:07

#### **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.aisglobal.com

#### **Subcontract Chain of Custody**

COC ID: 12582

1931753

**Texas SAMPLING STATE:** 

**SUBCONTRACT TO:** 

ALS Laboratory Group 960 LeVoy Dr

Salt Lake City, UT 84123

+1 801 266 7700 Phone:

**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:

Jumoke M. Lawal

jumoke.lawal@alsglobal.com

**INVOICE INFORMATION:** 

> Company: **ALS Houston** Contact: Accounts Payable

Address: 10450 Stancliff Rd, Ste 210

Phone: +1 281 530 5656

Reference: HS19110320

TSR: Sonia West

	LAB SAMPLE ID ANALYSIS R	CLIENT SAMPLE ID EQUESTED	MATRIX	COLLECT DATE DUE DATE
1.	HS19110320-01	04WW02-191105	Water	05 Nov 2019 08:30
	SUB_Perch-68	50		21 Nov 2019
2.	HS19110320-02	04WW02-191105-FD	Water	05 Nov 2019 08:30
	SUB_Perch-68	50		21 Nov 2019
з.	HS19110320-03	LHSMW02-191105	Water	05 Nov 2019 09:55
	SUB_Perch-68	50		21 Nov 2019
4.	HS19110320-04	04WW03-191106	Water	06 Nov 2019 08:20
	SUB_Perch-68	50		21 Nov 2019
5.	HS19110320-05	04WW06-191106	Water	06 Nov 2019 09:10
	SUB_Perch-68	50		21 Nov 2019
6.	HS19110320-06	04WW11-191106	Water	06 Nov 2019 09:55
,	SUB_Perch-68	50 MS/MSD		21 Nov 2019
7.	HS19110320-07	04WW05-191106	Water	06 Nov 2019 10:45
	SUB_Perch-68	50		21 Nov 2019
8.	HS19110320-08	04WW08-191106	Water	06 Nov 2019 11:35
	SUB_Perch-68	50		21 Nov 2019
9.	HS19110320-09	04WW04-191106	Water	06 Nov 2019 12:20

来到程度3.50%以为TOPEX(含色设置)于A.13%的设置

10 pg 2 of 2

mit



## **Subcontract Chain of Custody**

SAMI	PLING STATE: T	SAMPLE ID         CLIENT SAMPLE ID         MATRIX         COLLECT DATE           ANALYSIS REQUESTED         DUE DATE           SUB_Perch-6850         21 Nov 2019           SUB_Perch-6850         Water         06 Nov 2019           SUB_Perch-6850         21 Nov 2019           S110320-11         Fire Station Well-191106         Water         06 Nov 2019	12582		
	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DA	ATE
	ANALYSIS F	REQUESTED		DUE DATE	
	SUB_Perch-68	50		21 Nov 2019	
10.	HS19110320-10	LHSMW01-191106	Water	06 Nov 2019	13:15
	SUB_Perch-68	50		21 Nov 2019	
11.	HS19110320-11	Fire Station Well-191106	Water	06 Nov 2019	13:35
	SUB_Perch-68	50		21 Nov 2019	

**Comments:** Please analyze for the analysis listed above. Send report to the emails shown above.

HS19110320-06 MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By:

Received By:

Cooler ID(s):

Date/Time:

Date/Time:

Temperature(s):

37 May 2013

Bage Blot A

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR) COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle) Honston Client Name: Project/Task/Site: 8:40 Date/Time of Receipt: Number of Coolers Received: Condition of Coolers: Acceptable/Unacceptable. Temperature Control: Present Not Included Present/NA Cooler Custody Seals: Intact/Broken/NA Location Temp Taken: Control/Between Samples Present/Absen/NA Container Custody Seals: Intact/Broken/A Are all temperatures within Yes/No/NA No/NA Ice Present: project specific guidelines? rozen/Melted/NA VOA Headspace Present? Yes/No/NA pH Check Metals Total Phenolics Yes/No/NA NO3/NO2 Yes/No/NA Yes/No/NA Performed: Cyanide TPH - 418.1 Yes/No/NA Yes/No/NA Yes/No/NA Oil & Grease 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 Cooler Cooler Cooler Condition Received Temp. Received Cooler Condition Temp. Received Cooler Condition Temp.  $^{\circ}\mathrm{C}$ °C 2 °C 5 °C 8 °C °C 3 °C Taken By: **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 ☐ Missing Paperwork ☐ Incorrect Bottle Type Residual Chlorine Present Problems ☐ Missing/Incorrect Bottle Cooler Temperatures Out ☐ Head Space in Bottles Other: Labels of Range BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN: YES 🗌 Client Notified? No  $\square$ **Response Required Within 24 Hours** PROJECT MANAGEMENT **PROJECT MANAGER COMMENTS:** ALS Project Manager: Returned to Sample Receipt by: Date: Printed Name Signature

CRIR.doc

Revised 01/01/2018

Par \$ 150:00-434 Mii EJP 07/20 8

ORIGIN, ID: SGRA SHIPPING DEPT ALS LABORATORY (201) 530-5656 SHIP DATE: 07NOV19 ACTWGT: 23.35 LB CAD: 300130/CAFE3211 DIMS: 14x11x10 IN BILL THIRD PARTY

SAMPLE RECEIVING

SALT LAKE CITY UT 84123 (801) 286-7700 REF: HS19110320-RJ



**FedEx** 

TRK# 1251 0291 5179

FRI - 08 NOV 3:00F STANDARD OVERNIGHT

**AX BTFA** 

84123 SLC





10450 Stancliff Rd, Ste 210

Houston, TX 77099

T: +1 281 530 5656 F: +1 281 530 5887 www.alsglobal.com

#### **Purchase Order**

PO: HS19110320

**VENDOR:** 

ALS Laboratory Group

960 LeVoy Dr

Salt Lake City, UT 84123

**CUSTOMER INFORMATION:** 

Company: ALS Houston

**Contact:** RJ Modashia

10450 Stancliff Rd, Ste 210 Address:

Phone: +1 281 530 5656

Email: RJ.Modashia@alsqlobal.com

**Alternate** 

Jumoke M. Lawal Contact:

jumoke.lawal@alsglobal.com Email:

INVOICE **INFORMATION:** 

Company: ALS Houston

Phone: +1 801 266 7700

Contact: Accounts Payable

Address: 10450 Stancliff Rd, Ste 210

Phone: +1 281 530 5656

Reference: 12582

TSR: Sonia West

Item **Catalog No Unit Price** Quantity **Ext Price** \$56.25 11 \$618.75 1, SUB\_Perch-6850 NA

Order Total:

\$618.75

# ALSCOCV3.1

# ALS Environmental CHAIN-OF-CUSTODY

	(9)			ES CE	CHAIN-OF-CUSTODY					
Pr	Project / Job / Task: HS19110320		Split:	Workor	Workorder ID: 1931753	Level: ENV_LVL4	LVL4		Requested Analysis	
ਹੋ	Client: ALS Environmental (Houston)	mental (Houston)			Account: 8101	Type: 125Poly	у			
ပိ	Comments:					Preservatives		MSI		
						7000		0, DoD Q		 
						)				********
	Collect					Containers	ers	/d3		
Item	Item Date/Time	Sample ID	Lab ID	သူ	Matrix	ID(s)	Count			
_	11/05/2019 08:30	04WW02-191105	1931753001		Water	٨	۲	A		
2	11/05/2019 08:30	04WW02-191105-FD	1931753002	FLDDUP	Water	A	-	4		 \(\frac{1}{2}\)
3	11/05/2019 08:30	LHSMW02-191105	1931753003		Water	A	٢	<		
4	11/06/2019 08:20	04WW03-191106	1931753004		Water	A	-	⋖		
2	11/06/2019 09:10	04WW06-191106	1931753005		Water	A	1	A		
9	11/06/2019 09:55	04WW11-191106	1931753006		Water	A	-	4		
7	11/06/2019 09:55	04WW11-191106MS	1931753007	MS	Water	А	1	A		
8	11/06/2019 09:55	04WW11-191106MSD	1931753008	MSD	Water	А	1	A		
6	11/06/2019 10:45	04WW05-191106	1931753009		Water	А	1	А		
010	11/06/2019 11:35	04WW08-191106	1931753010		Water	٧	1	A		
5 of										

197				SAMPLE PREI	PARATION / AI	SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY	JSTODY
ORIGINA	AL FIELD SAM	ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY	DY	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	Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath,∯ulie r	11/08/2019 08:40	ALS Sample Receiving	Sample Login				
Why Uterath	णक्षील 1400	R.33.1	Stalage				
R.33.1	01:19/6/11.11	T. Baad	andusia			,	
		•	0				
						1	

# ALS Environmental CHAIN-OF-CUSTODY

Requested Analysis		WS	So dod '(	DS89 V	63		A	4	4							
Level: ENV_LVL4	Type: 125Poly	Preservatives	1000		Containers	ID(s) Count	4 -	4	A							
Workorder ID: 1931753	Account: 8101					Oc Matrix	Water	Water	Water							
Split:						Lab ID	1931753011	1931753012	1931753013	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7						
	nental (Houston)					Sample ID	04WW04-191106	LHSMW01-191106	Fire Station Well-191106							
Project / Job / Task: HS19110320	Client: ALS Environmental (Houston)	Comments:			Collect	Item Date/Time	11 11/06/2019 12:20	12 11/06/2019 13:15	13 11/06/2019 13:35	14	15	16	17	18	19	20

				SAMPLE PRE	PARATION / AN	SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY	JSTODY
ORIGINA	AL FIELD SAM	ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTOD)	DY	Sample Prep / Analysis for:		Lab Notebook No.:	
				Prepared / Analyzed by:	TANAMAN AND AND AND AND AND AND AND AND AND A	Date / Time:	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location	Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warajh), Julie	11/08/2019 08:40	ALS Sample Receiving	Sample Login				
the Wareth with no	WALLA HOD	R.33.1	Strage				
R.53.1	- 01:01/brbr11	L. Buril	anola pie	1			
			o				
				-			

# **Batch Worklist**

EPA 6850, DoD QSM Water Batch: ELMS/2319 Rule:

Workorder: 1931753 [ENV LVL4] Workorder: 1932010 [ENV\_LVL4]

Created: 11/19/2019 07:58 Analyst: T. Bosch

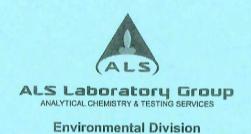
Instrument: LCMS04 Status:

252142

11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 11/19/2019 Run Date 11/21/2019 11/21/2019 11/25/2019 11/21/2019 11/21/2019 11/25/2019 11/25/2019 11/21/2019 11/21/2019 11/21/2019 11/21/2019 11/21/2019 11/21/2019 11/21/2019 1/21/2019 11/21/2019 11/21/2019 11/21/2019 11/21/2019 11/25/2019 11/25/2019 11/21/2019 11/21/2019 11/21/2019 11/25/2019 11/25/2019 11/21/2019 Due Date 12/4/2019 12/4/2019 12/6/2019 12/6/2019 12/6/2019 12/3/2019 12/3/2019 12/3/2019 12/4/2019 12/4/2019 12/4/2019 12/4/2019 12/4/2019 12/4/2019 12/6/2019 12/6/2019 12/6/2019 12/6/2019 Expire Date Mgr 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5480 5311 5311 5480 5480 5311 5311 5311 5311 **Procedure** E685041C3Q E6850Q413Q E6850Q413Q E6850Q413Q E6850Q413Q E685041C3Q E685041C3Q E685041C3Q E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850..D3Q E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850Q41.3 E6850041.3 E6850Q41.3 E6850Q41.3 1931753004-A 1931753005-A 1931753006-A 1931753008-A 1931753010-A 1931753011-A 1932010004-A 1931753002-A 1931753007-A 1931753012-A 1931753013-A 1932010001-A 1932010002-A 1932010003-A 1932010005-A 1932010007-A 1931753001-A 1931753003-A 1931753009-A 932010006-A Container ž က က က က SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE SAMPLE FLDDUP Type MSD LMB CCV RLVS CCV LCS ICS MS Dust Weight Prep Final Prep Initial RLVS for HBN 252142 [ELMS/2319 LMB for HBN 252142 [ELMS/2319] CCV for HBN 252142 [ELMS/2319] LCS for HBN 252142 [ELMS/2319] CCV for HBN 252142 [ELMS/2319] CCV for HBN 252142 [ELMS/2319] CS for HBN 252142 [ELMS/2319] Fire Station Well-191106 04WW11-191106MSD 04WW02-191105-FD 04WW11-191106MS LHSMW02-191105 LHSMW01-191106 04WW11-191106 04WW03-191106 04WW08-191106 04WW02-191105 04WW06-191106 04WW04-191106 50WW18-191108 04WW05-191106 50WW24-191108 50WW15-191108 50WW17-191108 50WW21-191108 50WW27-191108 50WW05-191108 Sample ID 1931753010 1931753012 1931753013 1931753002 1931753003 1931753004 1931753005 1931753006 1931753007 931753008 1931753009 1931753011 1932010002 1932010003 1932010004 1932010005 1932010006 1932010001 1932010007 193175300 Pos Lab ID 684808 584809 684805 684807 684806 684810 684804 12 13 14 15 16 17 19 25 10 1 20 22 23 24

97 of 197

Page 1 of 1



# Analytical Documentation

#### Analyst Write-up

ALS Work Order #'s & Sample #()'s: 1931753 (001-13); 1932010 (001-07)

ELMS Batch/HBN ID: 2319 (252142)

Prep Date: <u>11/14,19/2019</u> Analysis Date: <u>11/19/2019</u> Analyst: <u>Tom Bosch</u>

Analyte: Perchlorate Matrix: Water Method: 6850

#### SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by  $\underline{\text{Tom Bosch}}$ . 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and  $50\mu\text{L}$  of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45 $\mu$ m Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).

Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

<u>STANDARDS:</u> Internal Standard Spiking Solution <u>Horizon# 47863.</u> Dilutions of Working Standards (Horizon: <u>49947/48)</u> used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.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: <u>LCMS04</u> Online Acquisition Method: <u>CLO4-AQN.M</u> Fragmentor: <u>160</u> Output Gain: <u>7</u> Injection Volume: <u>30μL</u> Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

I-LOW	GIADIEI .
Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

 $\underline{\text{QC DATA:}}\ 3.0\mu\text{L}$  of QC Solution Horizon ID  $\underline{47516}$  was used for LCS  $\underline{684805}$ ; Target =  $3.0\mu\text{g/L}$ . ASTM type II water was used for LMB  $\underline{684808}$ .

<u>MS/MSD</u>: The Matrix Spike and duplicate (MS/MSD) was performed on samples 1931753007/08 (Client ID's: 04WW01-191106.  $3.0\mu$ l of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target =  $3.0\mu$ g/L.

#### **COMMENTS:**

- 1) Results reported in μg/L.
- 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\\2019\\NOV\\HBN# or through NuGenesis\\Tree\\PrintData\\LCMS\\DefaultView.
- 4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\252142-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
- 5) The Reporting Limit Verification Standard (RLVS 684806) is reported from the analysis of the Laboratory Control Sample (LCS 684805) at a level of 3.0μg/L.
- 6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafile 19OCT19D02.

#### 5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria	Analyst Initials	Reviewer Initials
Batch(es)/SDG: ELMS: 2319 HBN: 252142		
Sample Set IDs if Applicable: 1931753   1932010		
Sample positions on autosampler verified against instrument sequence	TB	<u>NA</u>
Calibration standards analyzed and meets criteria	TB	SV
Standards traceability checked and meets criteria	TB	SA
Standard curve coefficients evaluated and meet criteria	TB	SIS
ICVs analyzed and meet acceptance criteria	TB	3n
CCVs analyzed and meet acceptance criteria	TB	313
Retention Time Windows checked	73	210
For method 8081A, Endrin/DDT Breakdown is checked for compliance		
Surrogate recoveries checked and appropriately addressed		
Method Preparation Blanks analyzed and meet acceptance criteria	73	SA
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	\ \S\(\sigma\)
RLVS analyzed	713	SB
Preparation and analysis hold times met	TB	SK
Preparation deviations and re-preparations noted when performed	73	SŘ SŘ
Analysis deviations and re-analyses noted when performed	73	SB
Sample dilution factors noted on reports	TB	SIS
Electronic records in HBN transcription accuracy and completeness	TB	30
Preparation and analysis calculations checked	TB	SN
NCRs are completed as necessary NC/CAR#	TB	Sn
Report forms are complete and accurate	TB	Sis
Manual integrations checked	TB	SÓ



#### Working Standard - CLO4ISTDWRK

CLO4ISTDWRK Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 49946

Created By: Thomas Bosch

Amount: 25 mL

MFG: ALS/SLC

Create Date: 09/23/2019 03:09PM

Expires: 09/19/2020

MFG Lot: TNB: 09/20/2019

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

47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028
Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
Composi	uon		170		



#### Constituent

#### Stock Standard - CLO4ISTDSTK

CLO4/STDSTK Description - Perchlorate ISTD Stock

Standard: 47863Created By: Thomas BoschAmount: 1 mLMFG: Cambridge IsotopeCreate Date: 05/23/2019 10:05AMExpires: 12/05/2028

MFG Lot: SDIH-016 Verified By: Thomas Bosch Usable: Yes

Part ID: OLM-7310-S Verify Date: 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



#### Working Standard - CLO4 WRK

CLO4 WRK Description - 6850 WKG Std 100.ug/L

Standard: 49948

Created By: Thomas Bosch

Amount: 10 mL

MFG: ALS/SLC

Create Date: 09/20/2019 03:09PM

Expires: 07/25/2020

MFG Lot: TNB: 09/20/2019

Usable: Yes

Pipette ID: Not Provided

Lab Lot: CLO4 WRK

Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Con	Analyte	Name	Concentration
1 1	4797-73-0	Perchlorate	0.1 ug/mL
2 1	4797-73-0-8385	Perchlorate 83:85 Ratio	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		
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020		



#### Constituent

#### Stock Standard - CLO4 STOCK

CLO4 STOCK Description - 6850 Stock AccStd 1,000ug/mL

Standard: 43659

Created By: Thomas Bosch

Amount: 100 mL Expires: 07/25/2020

MFG: AccuStandard MFG Lot: 218065075

Create Date: 09/17/2018 09:09AM

Usable: Yes

Part ID: IC-PER-10X-1

Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL



#### Constituent

#### Solvent Standard - ASTM H2O

ASTM H2O Description - ASTM Type II Water

Standard: 109 Created By: ALS Support (Lims)

MFG: DCL In House Create Date: 10/06/2005 09:10AM

Amount: 1000 L Expires: 11/07/2025 Usable: Yes

MFG Lot: Not Provided
Part ID: Not Provided

Lab Lot: LAB 109

Pos. Analyte Name Concentration

Solvent - Analyte(s) not applicable



#### Constituent

#### Working Standard - CLO4 INT

CLO4 INT Description - 6850 Intermdt AccStd 10.ug/mL

 Standard: 49947
 Created By: Thomas Bosch
 Amount: 10 mL

 MFG: ALS/SLC
 Create Date: 09/23/2019 03:09PM
 Expires: 07/25/2020

MFG Lot: TNB: 09/20/2019

Usable: Yes
Pipette ID: Not Provided

Lab Lot: CLO4 INT

 Pos.
 Analyte
 Name
 Concentration

 1
 14797-73-0
 Perchlorate
 10 ug/mL

 2
 14797-73-0-8385
 Perchlorate 83:85 Ratio
 10 ug/mL

Composition Standard Standard ID Description Lab Lot ID Volume Expires 109 ASTM H2O ASTM Type II Water LAB 109 11/07/2025 9.9 mL 43659 **CLO4 STOCK** 6850 Stock AccStd 1,000ug/mL **CLO4 STOCK** 0.1 mL 07/25/2020



#### Working Standard - CLO4 QC WRK

CLO4 QC WRK

MFG: ALS/SLC

MFG Lot: TNB: 05/06/2019

Standard: 47516 Created By: Thomas Bosch

Amount: 10 mL Create Date: 05/06/2019 03:05PM

Expires: 03/31/2020

Description - 6850 QC WKG STD 100ug/L

Usable: Yes

Pipette ID: Not Provided Lab Lot: CLO4 QC WRK 100.ug.					
Pos.	Analyte	Name		Concen	tration
1	14797-73-0	Perchlorate			100 ug/L
Compos	ition				
Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020



#### Constituent

#### Solvent Standard - ASTM H2O

ASTM H2O

Standard: 109

MFG: DCL In House

MFG Lot: Not Provided

Part ID: Not Provided

Create Date: 10/06/2005 09:10AM

Description - ASTM Type II Water

Amount: 1000 L

Expires: 11/07/2025

Usable: Yes

Lab Lot: LAB 109

Pos. Analyte Name Concentration

Solvent - Analyte(s) not applicable



#### 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



#### Constituent

## Working Standard - CLO4 QC INT

CLO4 QC INT Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 47515

36748

Created By: Thomas Bosch

Amount: 10 mL

MFG: ALS/SLC

Create Date: 05/06/2019 03:05PM

Expires: 03/31/2020

MFG Lot: TNB: 05/06/2019

CLO4 QCSTOCK

Usable: Yes

CLO4 QC STOCK

Pipette ID: Not Provided

Lab Lot: CLO4 QC INT 10.ug/mL

0.1 mL

03/31/2020

Pos.	Analyte	Name		Concer	Concentration		
1	1479 <b>7</b> -73-0	Perchlorate	Perchlorate				
Compos	ition			L			
Standard	Standard ID	Description	Lab Lot ID	Volume	Expires		
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025		

6850 QC Stock STD 1,000ug/mL

125 Market Street New Haven, CT 06513

# AccuStandard® CERTIFICATE OF ANALYSIS

Tel (203)786-5290 Fax (203)786-5287 www.AccuStandard.com

#### AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1

Description: Perchlorate Standard

Element: Perchlorate (CIO<sub>4</sub>)

SRM: Ind. Std. Lot: 218065075 Matrix: Water

Hazards: Refer to SDS for complete safety information

Date Certified: Jun 25, 2018 Expiration: Jul 25, 2020 Sample Size: 100 mL Components: 1

Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes Included on ISO 17034 Scope of Accreditation: Yes

Signal Word: None

 Component
 SRM #
 Prepared Concentration (μg/mL)

 CIO<sub>4</sub>
 Perchlorate
 Ind. Std.
 1000

The gravimetric uncertainty for this product is ±0.24%.

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, Inorganic QC Manager

Page 1 of 1

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001



# **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 perchlorate Starting Material

Lot Number

Purity (%)

S

Calculated Value

True Value

Traceability & Method

potassium

perchlorate

RM07987

 $1001 \pm 5 \mu g/mL$ 

 $976 \pm 6 \,\mu g/mL$ 

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.

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.

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.





ISO 9001 Registered Quality System - TUV USA

Page 1 of 2



# **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.

Director of QA/RA







## Cambridge Isotope Laboratories, Inc.

# Certificate of Analysis

**Product Name:** 

(Isotopic Label & Enrichment Specification)

PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER

Lot Number:

SDIH-016

Catalog Number:

OLM-7310-S

**Product Information** 

Chemical Purity Specification:

> 98%

MW\*. For isotopically labeled compounds, MW listed is for the

130.44

Labeled CAS Number:

NA

NaCl<sup>18</sup>O<sub>4</sub>

S

Unlabeled CAS Number:

7601-89-0

Chemical Formula:

NaCl\*O4

Storage:

Store at room temperature away from light and moisture. See storage and expiration date.

Stability:

#### 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. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

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.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

**Quality Control Tests and Results** 

QC Release Date

12/05/2018

**Expiration Date** 

12/05/2028

Concentration Based on Gravimetry

 $100.0 \pm 1.0 \,\mu g/mL \,(k=2)$ 

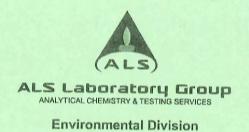
Chemical Purity of Neat Material(s)

98%

LC/MS for Concentration

 $105.4 \pm 1.1 \,\mu g/mL \,(k=2)$ 

CIL subscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.



# **Raw Data**

Batch Review Method:

C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'\*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType I	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
!						4 44540 6		05 70540
*	684804 CCV@25	Vial 71	1	Control	1	1.11549e6	7.375	25.70542
*	684805 QC@3.0	Vial 72	1	Control	2	1.57343e5	7.389	2.81132
*	684807 ICS@3.0	Vial 73	1	Control	3	9.81343e4	7.227	2.70044
*	684808 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1931753001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	1931753002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	1931753003	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	1931753004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	1931753005	Vial 79	1	Sample	9	0.00000	0.000	0.0000
*	1931753006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1931753007 MS	Vial 81	1	Sample	11	1.30769e5	7.199	2.72098
*	1931753008 MSD	Vial 82	1	Sample	12	1.27060e5	7.171	2.94244
*	1931753009	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1931753010	Vial 84	1	Sample	14	4.91726e5	7.095	13.36216
*	684809 CCV@25	Vial 71	1	Control	15	9.31289e5	7.389	24.67348
*	1931753011	Vial 85	1	Sample	16	0.00000	0.000	0.00000
*	1931753012	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	1931753012	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*				Sample	19	0.00000	0.000	0.00000
*	1932010001	Vial 88	1	_			0.000	0.00000
. *	1932010002	Vial 89	1	Sample	20	0.00000		0.00000
*	1932010003	Vial 90	1	Sample	21	0.00000	0.000	
	1932010004	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	1932010005	Vial 92	1	Sample	23	0.00000	0.000	0.00000
*	1932010006	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	1932010007	Vial 94	1	Sample	25	0.00000	0.000	0.00000
*	684810 CCV@25	Vial 71	1	Control	26	9.08551e5	7.429	24.23157
#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS	CLO4-89-ISTD Amount
# * 	Sample	Location	Inj 	SampleType	Run 	Area	RT	Amount
#*  *	Sample    684804 CCV@25	Location Vial 71	 1	SampleType	 1	Area  1.47847e5	RT    7.396	Amount 5.00000
						Area	RT    7.396 7.412	Amount  5.00000 5.00000
 *	 684804 CCV@25	 Vial 71	 1	   Control	 1	Area  1.47847e5	RT    7.396	Amount 5.00000 5.00000 5.00000
 *	 684804	 Vial 71 Vial 72	 1 1	 Control Control	 1 2	Area 1.47847e5 2.05736e5	RT    7.396 7.412 7.255 7.417	Amount 5.00000 5.00000 5.00000 5.00000
* * *	 684804 CCV@25 684805 QC@3.0 684807 ICS@3.0	Vial 71 Vial 72 Vial 73	1 1 1	 Control Control Control	 1 2 3	Area 1.47847e5 2.05736e5 1.33496e5	RT    7.396 7.412 7.255	Amount 5.00000 5.00000 5.00000
 * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74	 1 1 1 1	 Control Control Control Control	 1 2 3 4	Area  1.47847e5 2.05736e5 1.33496e5 1.53147e5	RT    7.396 7.412 7.255 7.417	Amount 5.00000 5.00000 5.00000 5.00000
* * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76	 1 1 1 1 1	 Control Control Control Control Sample Sample	 1 2 3 4	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5	RT    7.396 7.412 7.255 7.417 7.293	Amount 5.00000 5.00000 5.00000 5.00000 5.00000
 * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76	 1 1 1 1 1 1	 Control Control Control Control Sample	 1 2 3 4 5 6	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5	RT    7.396 7.412 7.255 7.417 7.293 7.294	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
 * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78	 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample	 1 2 3 4 5 6 7 8	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
* * * * * * * * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79	 1 1 1 1 1 1 1	Control Control Control Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
* * * * * * * * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80	 1 1 1 1 1 1 1 1 1	Control Control Control Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
* * * * * * * * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81	 1 1 1 1 1 1 1 1 1	Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
* * * * * * * * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82	 1 1 1 1 1 1 1 1 1	Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 12	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
* * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83	 1 1 1 1 1 1 1 1 1 1	Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 12 13	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
-* * * * * * * * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84	 1 1 1 1 1 1 1 1 1 1	Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
- * * * * * * * * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71	 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Control	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
- * * * * * * * * * * * * * * * * * * *	684804 CCV@25 684805 QC@3.0 684807 ICS@3.0 684808 LMB 1931753001 1931753002 1931753004 1931753005 1931753006 1931753007 MS 1931753008 MSD 1931753009 1931753010 684809 CCV@25 1931753011	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85	 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
- * * * * * * * * * * * * * * * * * * *	684804	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86	 1 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	Area	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
- * * * * * * * * * * * * * * * * * * *	684804 CCV@25 684805 QC@3.0 684807 ICS@3.0 684808 LMB 1931753001 1931753002 1931753003 1931753004 1931753006 1931753007 MS 1931753008 MSD 1931753009 1931753010 684809 CCV@25 1931753011 1931753012 1931753013	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87	 1 1 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5 1.56727e5 1.16312e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
_ * * * * * * * * * * * * * * * * * * *	684804 CCV@25 684805 QC@3.0 684807 ICS@3.0 684808 LMB 1931753001 1931753002 1931753003 1931753005 1931753007 MS 1931753008 MSD 1931753009 1931753010 684809 CCV@25 1931753011 1931753012 1931753013 1932010001	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87 Vial 88	 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Area	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227 6.887	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
_ * * * * * * * * * * * * * * * * * * *	684804 CCV@25 684805 QC@3.0 684807 ICS@3.0 684808 LMB 1931753001 1931753002 1931753003 1931753005 1931753007 MS 1931753008 MSD 1931753009 1931753010 684809 CCV@25 1931753011 1931753012 1931753013 1932010001 1932010002	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87 Vial 88 Vial 89	 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5 1.56727e5 1.16312e5 1.18044e5 1.30569e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227 6.887 7.171	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
_ * * * * * * * * * * * * * * * * * * *		Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87 Vial 88 Vial 89 Vial 90	 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 21	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5 1.56727e5 1.16312e5 1.18044e5 1.30569e5 1.33641e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227 6.887 7.171 7.163	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
_ * * * * * * * * * * * * * * * * * * *	684804 CCV@25 684805 QC@3.0 684807 ICS@3.0 684808 LMB 1931753001 1931753002 1931753004 1931753005 1931753007 MS 1931753008 MSD 1931753008 MSD 1931753010 684809 CCV@25 1931753011 1931753011 1931753012 1931753012 1931753013 1932010001 1932010002 1932010004	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87 Vial 88 Vial 89 Vial 90 Vial 91	 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 21 22	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5 1.56727e5 1.16312e5 1.18044e5 1.30569e5 1.33641e5 1.24695e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227 6.887 7.171 7.163 7.109	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
_ * * * * * * * * * * * * * * * * * * *	684804 CCV@25 684805 QC@3.0 684807 ICS@3.0 684808 LMB 1931753001 1931753002 1931753004 1931753005 1931753007 MS 1931753008 MSD 1931753008 MSD 1931753010 684809 CCV@25 1931753011 1931753011 1931753012 1931753012 1931753013 1932010001 1932010002 1932010004 1932010005	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87 Vial 88 Vial 89 Vial 90 Vial 91 Vial 92		Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 21 22 23	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5 1.56727e5 1.16312e5 1.18044e5 1.30569e5 1.33641e5 1.24695e5 1.43110e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227 6.887 7.171 7.163 7.109 7.154	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
_* * * * * * * * * * * * * * * * * * *		Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 79 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87 Vial 88 Vial 89 Vial 90 Vial 91 Vial 92 Vial 93		Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 21 22 23 24	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.7402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5 1.56727e5 1.16312e5 1.18044e5 1.30569e5 1.33641e5 1.24695e5 1.43110e5 1.12592e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227 6.887 7.171 7.163 7.109 7.154 7.082	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
_ * * * * * * * * * * * * * * * * * * *	684804 CCV@25 684805 QC@3.0 684807 ICS@3.0 684808 LMB 1931753001 1931753002 1931753004 1931753005 1931753007 MS 1931753008 MSD 1931753008 MSD 1931753010 684809 CCV@25 1931753011 1931753011 1931753012 1931753012 1931753013 1932010001 1932010002 1932010004 1932010005	Vial 71 Vial 72 Vial 73 Vial 74 Vial 75 Vial 76 Vial 77 Vial 78 Vial 80 Vial 81 Vial 82 Vial 83 Vial 84 Vial 71 Vial 85 Vial 86 Vial 87 Vial 88 Vial 89 Vial 90 Vial 91 Vial 92		Control Control Control Control Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample	 1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 18 19 20 21 22 23	Area 1.47847e5 2.05736e5 1.33496e5 1.53147e5 1.89772e5 1.71402e5 1.69955e5 1.72551e5 1.42815e5 1.77283e5 1.76570e5 1.58843e5 1.48965e5 1.31911e5 1.29143e5 1.57073e5 1.56727e5 1.16312e5 1.18044e5 1.30569e5 1.33641e5 1.24695e5 1.43110e5	RT    7.396 7.412 7.255 7.417 7.293 7.294 7.124 7.195 7.006 7.209 7.222 7.200 7.198 7.114 7.405 7.174 7.325 7.227 6.887 7.171 7.163 7.109 7.154	Amount 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000

#*	Sample	Location Inj	SampleType 1	Run	CLO4-85	CLO4-85	CLO4-85
	l <b></b>		ı	ı	Area	RT	Amount
*	684804 CCV@25	Vial 71 1	Control	1	3.31757e5	7.394	05 12156
*	684805 OC@3.0	Vial 71 1 Vial 72 1	Control	2	5.33816e4		25.13176
*	684807 ICS@3.0	Vial 72 1	Control	3	3.51191e4	7.396 7.259	3.04097
*	684808 LMB	Vial 73 1	Control	4	0.00000	0.000	3.08495
*	1931753001	Vial 74 1	Sample	5	0.00000	0.000	0.00000
*	1931753001	Vial 75 1	Sample	6	0.00000	0.000	0.00000
*	1931753002	Vial 77 1	Sample	7	0.00000	0.000	0.00000
*	1931753004	Vial 78 1	Sample	8	0.00000	0.000	0.00000
*	1931753005	Vial 79 1	Sample	9	0.00000	0.000	0.00000
*	1931753006	Vial 80 1	Sample	10	0.00000	0.000	0.00000
*	1931753007 MS	Vial 81 1	Sample	11	4.43687e4	7.202	2.94112
*	1931753008 MSD	Vial 82 1	Sample	12	4.43897e4	7.197	3.28446
*	1931753009	Vial 83 1	Sample	13	0.00000	0.000	0.00000
*	1931753010	Vial 84 1	Sample	14	1.59614e5	7.112	14.10318
*	684809 CCV@25	Vial 71 1	Control	15	2.87274e5	7.401	24.93224
*	1931753011	Vial 85 1	Sample	16	0.00000	0.000	0.00000
*	1931753012	Vial 86 1	Sample	17	0.00000	0.000	0.00000
*	1931753013	Vial 87 1	Sample	18	0.00000	0.000	0.00000
*	1932010001	Vial 88 1	Sample	19	0.00000	0.000	0.00000
*	1932010002	Vial 89 1	Sample	20	0.00000	0.000	0.00000
*	1932010003	Vial 90 1	Sample	21	0.00000	0.000	0.00000
*	1932010004	Vial 91 1	Sample	22	0.00000	0.000	0.00000
*	1932010005	Vial 92 1	Sample	23	0.00000	0.000	0.00000
*	1932010006	Vial 93 1	Sample	24	0.00000	0.000	0.00000
*	1932010007	Vial 94 1	Sample	25	0.00000	0.000	0.00000
*	684810 CCV@25	Vial 71 1	Control	26	2.85245e5	7.448	24.88059
		*** End	of Report ***	*			21.0000

#### Sequence Table:

Method and Injection Info Part:

Line	Location	SampleNar	me	Method	Inj	SampleType	InjVolume	DataFile
====	=======	======:	======	=======	===		========	
1	Vial 71	684804	CCV@25	CLO4-AON	1	Ctrl Samp		
2	Vial 72	684805	QC@3.0	CLO4-AON		Ctrl Samp		
3	Vial 73	684807	ICS@3.0	CLO4-AON		Ctrl Samp		
4	Vial 74	684808	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	19317530	01	CLO4-AQN	1	Sample		
6	Vial 76	19317530	02	CLO4-AQN	1	Sample		
7	Vial 77	19317530	03	CLO4-AQN	1	Sample		
8	Vial 78	19317530	04	CLO4-AQN	1	Sample		
9	Vial 79	19317530		CLO4-AQN	1	Sample		
10	Vial 80	19317530		CLO4-AQN	1	Sample		
11	Vial 81	19317530		CLO4-AQN	1	Sample		
12	Vial 82	19317530		CLO4-AQN	1	Sample		
13		19317530		CLO4-AQN	1	Sample		
14	Vial 84	19317530		CLO4-AQN	1	Sample		
15	Vial 71	684809	CCV@25	CLO4-AQN		Ctrl Samp		
16	Vial 85	19317530		CLO4-AQN		Sample		
17	Vial 86	19317530		CLO4-AQN	1	Sample		
18	Vial 87	19317530		CLO4-AQN	1	Sample		
19	Vial 88	19320100		CLO4-AQN	1	Sample		
20	Vial 89	19320100	-	CLO4-AQN	1	Sample		
21	Vial 90	19320100		CLO4-AQN	1	Sample		
22	Vial 91	19320100		CLO4-AQN	1	Sample		
23	Vial 92	19320100		CLO4-AQN		Sample		
2 4	Vial 93	19320100		CLO4-AQN		Sample		
25	Vial 94	19320100		CLO4-AQN	1	Sample		
26	Vial 71	684810	CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD01.D Sample Name: 684804

Injection Date: 11/19/2019 08:46:14 Seq Line: Vial 71

Sample Name: 684804 CCV@25 Location: Inj. No.: Acq Operator: TNB Inj. Vol.:  $30 \mu 1$ 

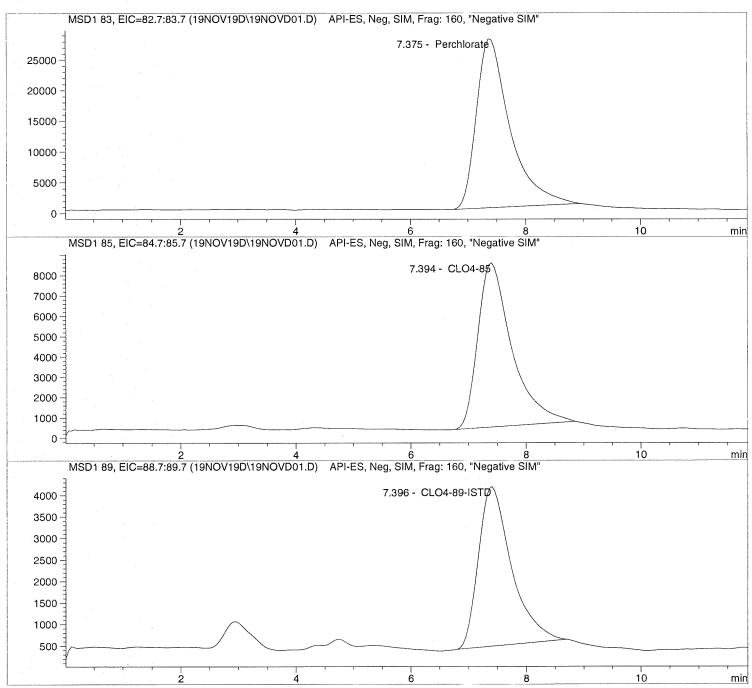
Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_



1

03:43:59 pm

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD01.D Sample Name: 684804 

Injection Date: 11/19/2019 08:46:14

Seq Line: 1

Sample Name: 684804 CCV@25
Acq Operator: TNB

Location: Vial 71
Inj. No.: 1

Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 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	
7.375	PBA	1115487.1	25.7054	Perchlorate	

#### Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.394	PBA	331756.7	25.1318	CLO4-85	

#### Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.396	PBA	 147846.5	5.0000	CLO4-89-ISTD	

Sample Name: 684805 Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD02.D

Injection Date:

11/19/2019 09:04:34

Seq Line:

Sample Name: Acq Operator:

684805 OC@3.0 Location: Inj. No.:

Inj. Vol.:

Vial 72

 $30 \mu l$ 

Acq. Method:

CLO4-AON.M

TNB

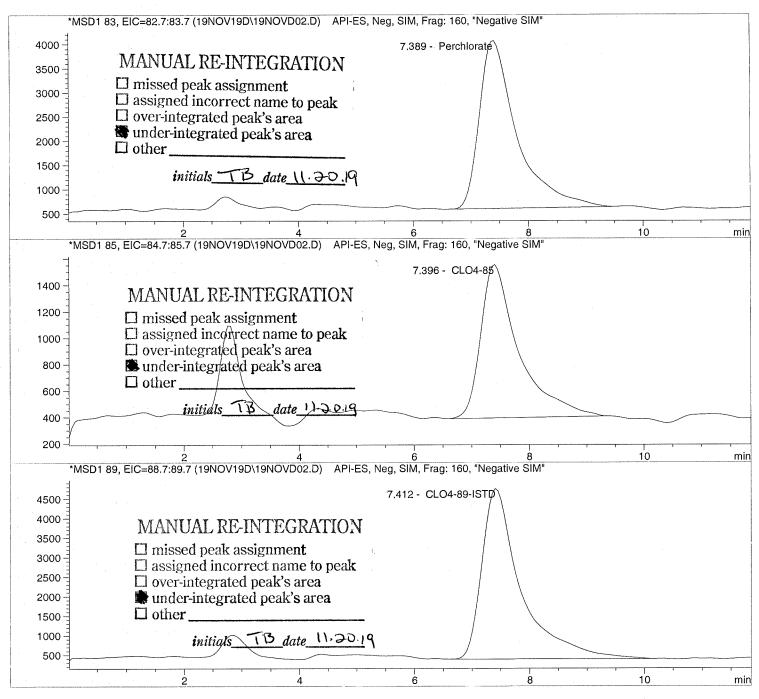
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_ \_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD02.D Sample Name: 684805 \_\_\_\_\_\_\_

Injection Date: 11/19/2019 09:04:34

 Seq Line:
 2

 Location:
 Vial 72

 Inj. No.:
 1

 Inj. Vol.:
 30 μl

Sample Name: 684805 QC@3.0 Acq Operator: TNB

Acq. Method:

CLO4-AON.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution: Sample Amount:

1.000000 3.000

\_\_\_\_\_\_

LCMS Results

\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.389	MM	157343.1	2.8113	  Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
	7.396	  MM	53381.6	3.0410	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
7.412	MM	205736.2	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD03.D Sample Name: 684807 ICS@3.(

Injection Date: 11/19/2019 09:18:20
Sample Name: 684807 ICS@3.0
Acq Operator: TNB

Seq Line: 3 Location: Vial 73 Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method:

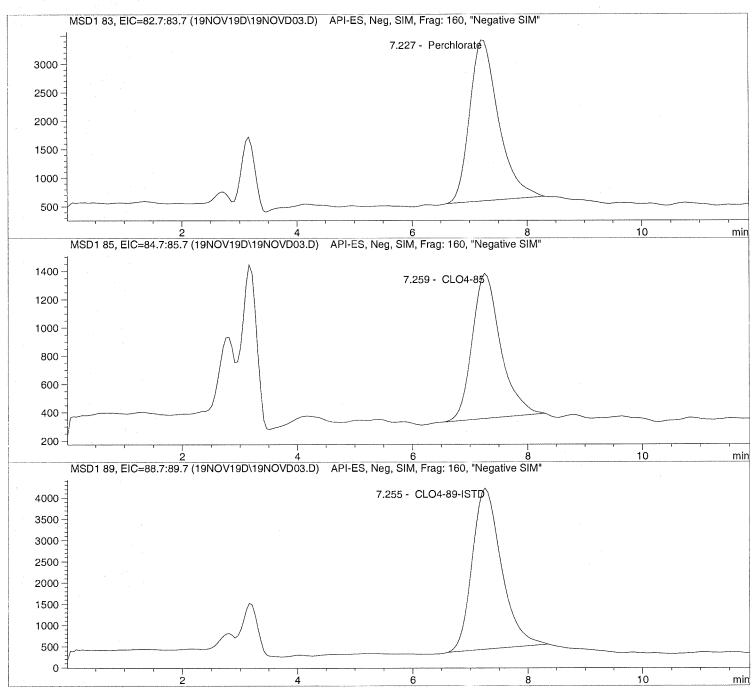
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/201

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD03.D Sample Name: 684807 ICS@3.0 \_\_\_\_\_\_

Injection Date: 11/19/2019 09:18:20

Sample Name: 684807 ICS@3.0 Acq Operator: TNB

Seq Line: 3
Location: Vial 73
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution:

1.000000 3.000

Sample Amount:

\_\_\_\_\_\_ 

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

Туре Amount Compound Area [ug/sample] [min] 7.227 BBA 98134.3 2.7004 Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.259	PBA	35119.1	3.0849	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.255	PBA	133495.5	5.0000	CLO4-89-ISTD	İ

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD04.D

Sample Name: 684808

Injection Date:

11/19/2019 09:32:09

Seq Line:

Vial 74

Sample Name: Acq Operator: 684808

Location:

Inj. No.: Inj. Vol.:

1  $30 \mu 1$ 

Acq. Method:

CLO4-AON.M

C:\HPCHEM\1\METHODS\CLO4-DP3.M Analysis Method:

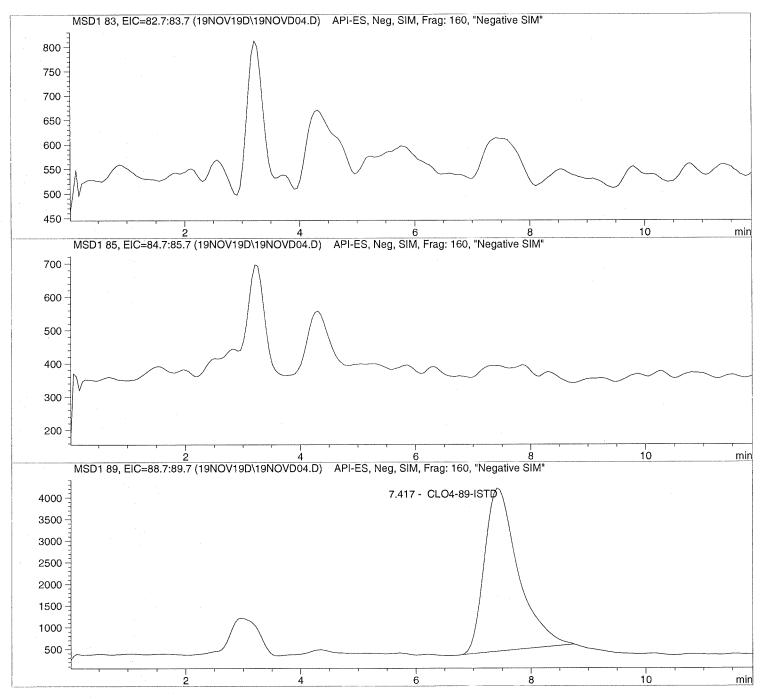
TNB

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_



Page 1 of 2

Sample Name: 684808 Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD04.D \_\_\_\_\_\_

Injection Date: 11/19/2019 09:32:09

Seq Line: 4

Sample Name: Acq Operator:

684808 LMB

Location: Vial 74
Inj. No.: 1

TNB

Inj. Vol.:

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000 0.000

Sample Amount:

\_\_\_\_\_\_ \_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

	RT	Туре	Area	Amount	Compound	
	[min]			[ug/sample]	Name	
						ı
	0.000		0.0	0.0000	Perchlorate	
_						

Signal2: MSD1 85, EIC=84.7:85.7

RT   [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	- 
7.417	PBA	153146.8	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD05.D Sample Name: 1931753001

11/19/2019 09:45:57 Injection Date: Sample Name: 1931753001

TNB

Seq Line: Vial 75 Location: Inj. No.: 1

30  $\mu$ 1

Inj. Vol.:

Acq. Method:

Acq Operator:

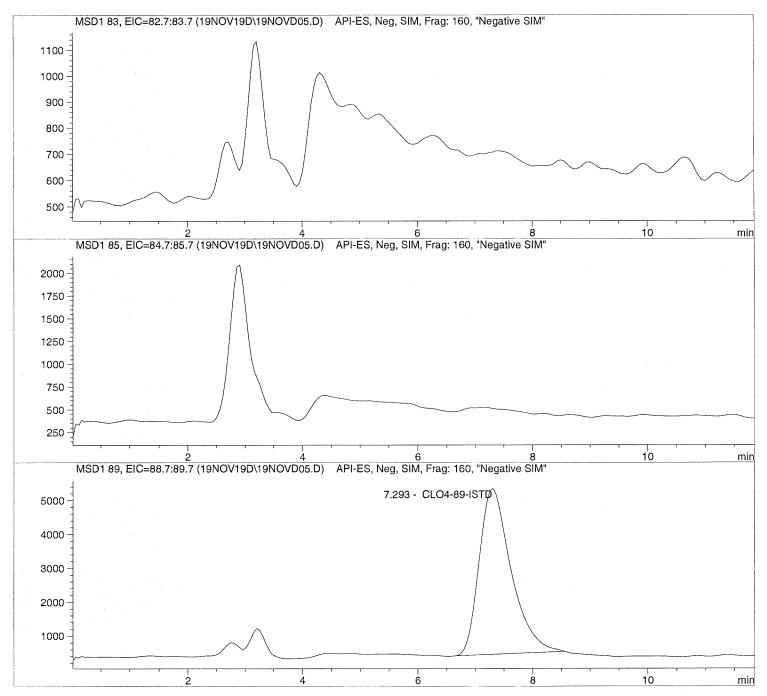
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_



03:44:31 pm

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD05.D Sample Name: 1931753001

\_\_\_\_\_\_

Injection Date: 11/19/2019 09:45:57

Seq Line:

Sample Name:

Location: Vial 75 Inj. No.: 1

Acq Operator:

1931753001 TNB

Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

\_\_\_\_\_\_\_ \_\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	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]	Туре	Area	Amount [ug/sample]	Compound Name	
7.293	PBA	189772.2	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

Page 2 of 2

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD06.D Sample Name: 1931753002

11/19/2019 09:59:43 Injection Date:

Seq Line: Location:

Vial 76

Sample Name: Acq Operator:

1931753002

Inj. No.: Inj. Vol.:

 $30 \mu l$ 

Acq. Method:

 ${\tt CLO4-AQN.M}$ 

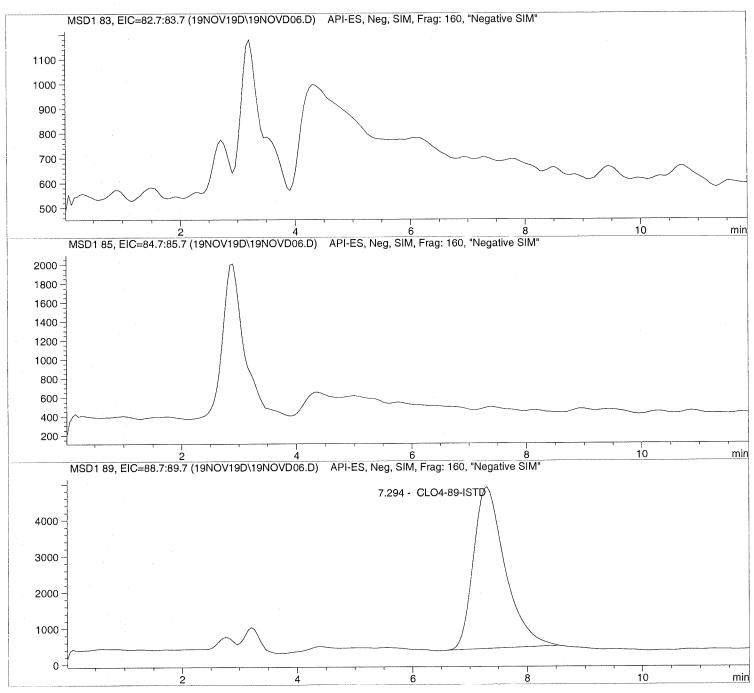
TNB

C:\HPCHEM\1\METHODS\CLO4-DP3.M Analysis Method:

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



03:44:39 pm

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD06.D Sample Name: 1931753002

\_\_\_\_\_\_

Injection Date: 11/19/2019 09:59:43

Seq Line:

Sample Name:

1931753002

Location:

Vial 76

Acq Operator:

Inj. No.:

1

TNB

Inj. Vol.:

 $30 \mu l$ 

Acq. Method:

CLO4-AON.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution: Sample Amount: 1.000000 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]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.294	PBA	171402.0	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD07.D Sample Name: 1931753003

Injection Date:

11/19/2019 10:13:33

Seg Line:

Sample Name:

1931753003

Location:

Vial 77

Acq Operator:

TNB

Inj. No.:

Acq. Method:

Inj. Vol.:

 $30~\mu l$ 

CLO4-AQN.M

Analysis Method:

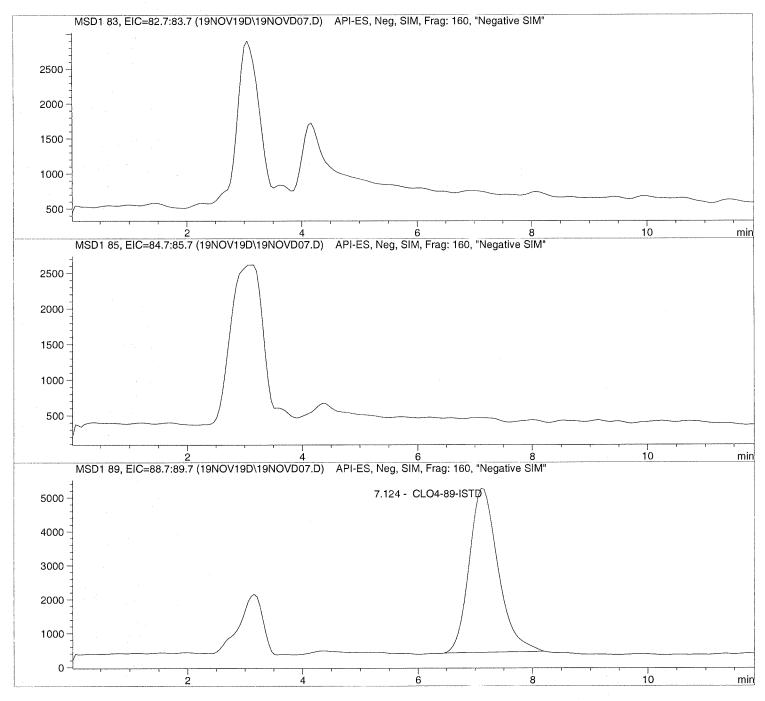
C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD07.D Sample Name: 1931753003

\_\_\_\_\_\_

Injection Date: 11/19/2019 10:13:33

Sample Name: 1931753003 Acq Operator: TNB

Seq Line: Location: Vial 77 Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information \_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000 0.000

Sample Amount:

\_\_\_\_\_\_ LCMS Results

### \_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT	Type	Area	Amount	Compound	,
[min]			[ug/sample]	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	
7.124	PBA	169954.7	5.0000	CLO4-89-ISTD	ı

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD08.D

Sample Name: 1931753004

\_\_\_\_\_\_\_

Injection Date:

11/19/2019 10:27:21

Seq Line:

Inj. Vol.:

Sample Name:

Location:

Vial 78

Acq Operator:

1931753004 TNB

Inj. No.:

1 30 µl

Acq. Method:

CLO4-AQN.M

Analysis Method:

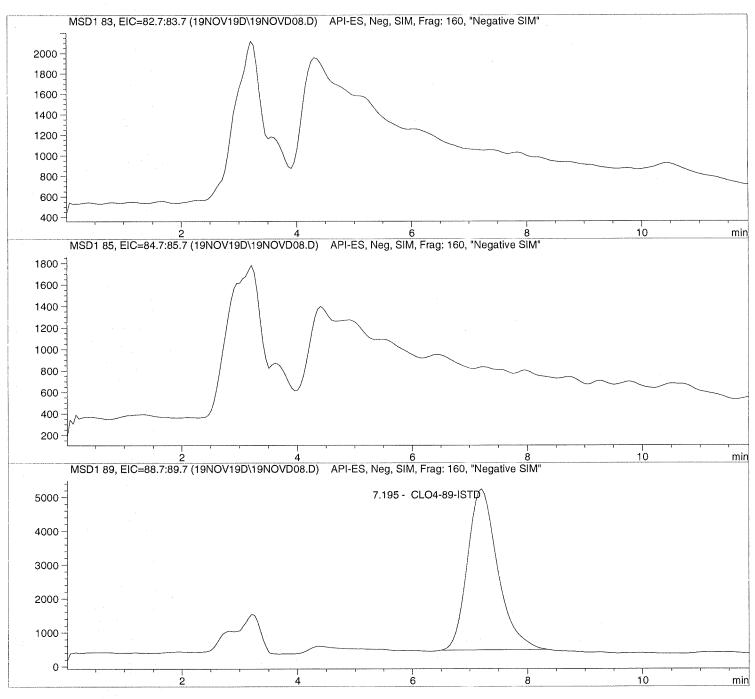
C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_ \_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD08.D Sample Name: 1931753004

\_\_\_\_\_\_

Injection Date: 11/19/2019 10:27:21

Seq Line:

Sample Name: 1931753004
Acq Operator: TNB

Inj. Vol.:  $30 \mu l$ 

Location: Vial 78 Inj. No.: 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

\_\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	  CLO4-85	Ì
0.000		0.0	0.000	0201 00	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.195	BBA	172551.3	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD09.D Sample Name: 1931753005

Injection Date: 11/19/2019 10:41:09 Seq Line: Location:

Sample Name: 1931753005

Inj. No.:

Vial 79 1

Acq Operator:

TNB

Inj. Vol.:

30  $\mu$ 1

Acq. Method:

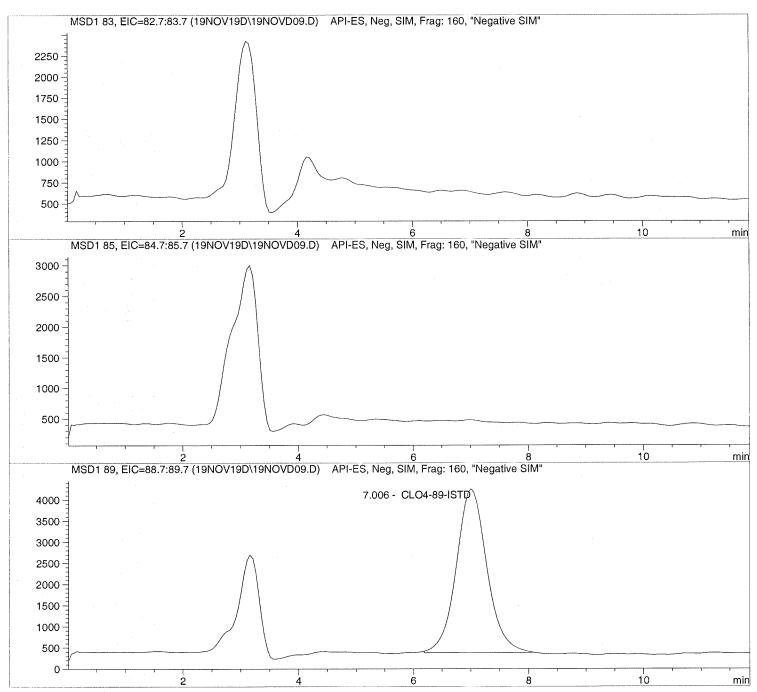
CLO4-AQN.M

C:\HPCHEM\1\METHODS\CLO4-DP3.M Analysis Method:

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Sample Name: 1931753005 Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD09.D

\_\_\_\_\_\_

Injection Date: 11/19/2019 10:41:09

Seq Line:

Sample Name: 1931753005

Location:

Vial 79

Acq Operator:

TNB

Inj. No.: Inj. Vol.:

1 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution:

1.000000 0.000

Sample Amount:

\_\_\_\_\_\_ LCMS Results \_\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	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	į
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	
7.006	BBA	142814.7	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD10.D

Sample Name: 1931753006 

Injection Date:

11/19/2019 10:55:02

Seq Line:

Inj. Vol.:

30  $\mu$ 1

Sample Name: Acq Operator:

1931753006

TNB

Location:

Vial 80 Inj. No.:

Acq. Method:

CLO4-AQN.M

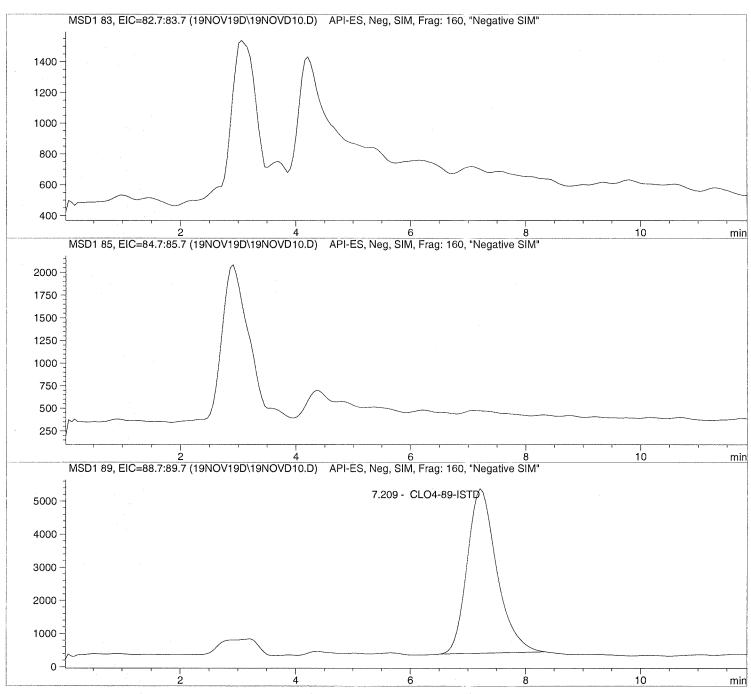
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD10.D Sample Name: 1931753006

Injection Date: 11/19/2019 10:55:02

Seq Line: 1.0 Location: Vial 80 Inj. No.: 1

Sample Name: 1931753006 Acq Operator: TNB

Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 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	Type	Area	Amount	Compound
-	[min]			[ug/sample]	Name
Ì	0.000		0.0	0.0000	CLO4-85
			1		

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.209	PBA	177283.0	5.0000	CLO4-89-ISTD	į

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD11.D Sample Name: 1931753007 MS

Injection Date: 11/19/2019 11:08:49 Seq Line: 11 Sample Name: 1931753007 MS Location: Vial 81 Acq Operator: TNB Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

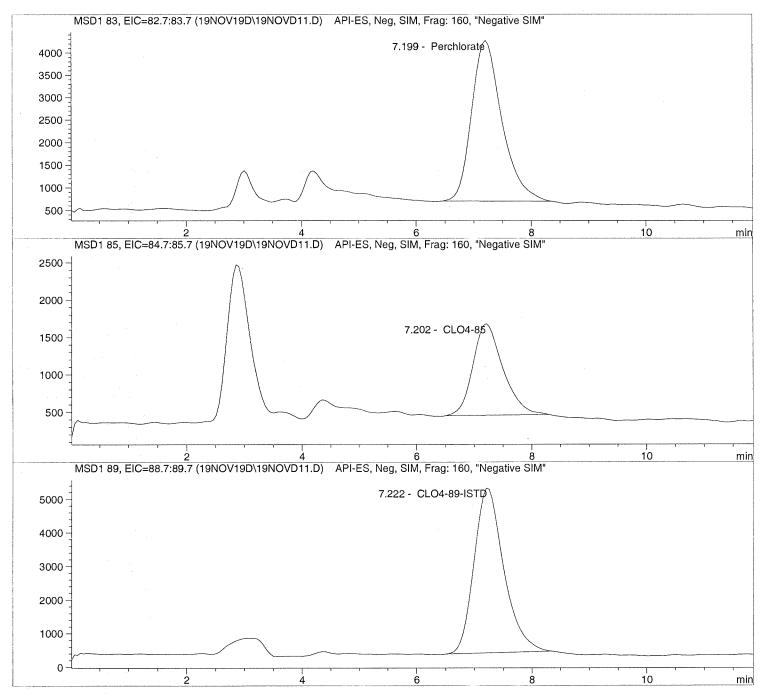
Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Sample Name: 1931753007 Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD11.D \_\_\_\_\_\_

Injection Date: 11/19/2019 11:08:49 Sample Name: 1931753007 MS

Seq Line: 11 Location: Vial 81 1

Acq Operator: TNB Inj. No.: Inj. Vol.:  $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

1.000000 Multiplier: 1.000000 Dilution: 0.000 Sample Amount:

\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.199	PBA	130769.1	2.7210	  Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.202	PBA	44368.7	2.9411	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.222	PBA	176570.0	5.0000	  CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

Page 2 of 2

03:45:18 pm

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD12.D Sample Name: 1931753008

11/19/2019 11:22:36 Injection Date: 1931753008 MSD Sample Name:

TNB

Seq Line: Vial 82 Location: Inj. No.: 1

30 µ1

Inj. Vol.:

Acq. Method:

Acq Operator:

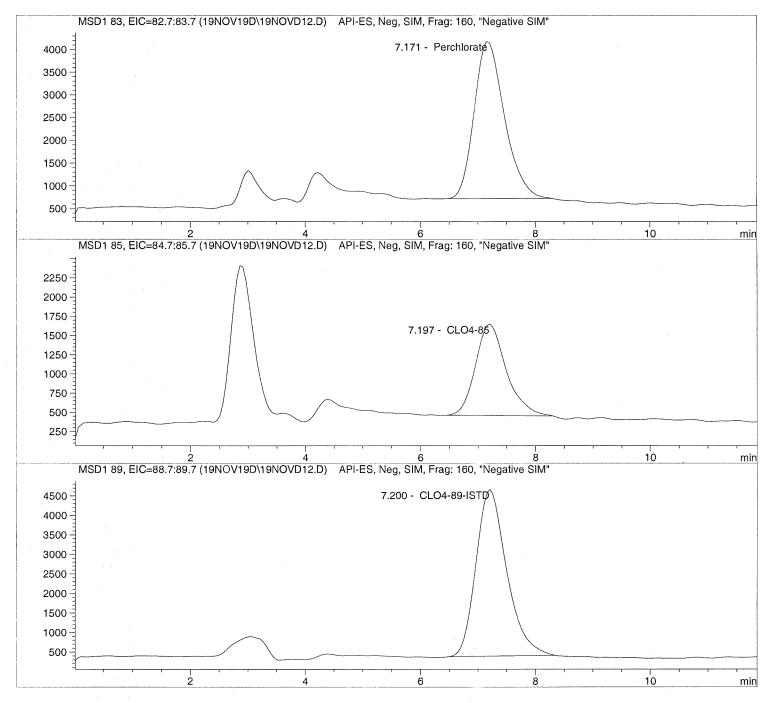
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



03:45:26 pm

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD12.D Sample Name: 1931753008 \_\_\_\_\_\_

Injection Date: 11/19/2019 11:22:36

Seg Line:

Location: Inj. No.:

Vial 82

Sample Name: 1931753008 MSD Acq Operator:

TNB

Inj. Vol.:  $30 \mu l$ 

1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.171	BBA	127059.9	2.9424	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.197	PBA	44389.7	3.2845	  CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.200	BBA	158843.2	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD13.D

Sample Name: 1931753009

Injection Date:

11/19/2019 11:36:21

Seq Line:

Sample Name:

1931753009

Location:

Acq Operator:

Inj. No.:

Vial 83

TNB

Inj. Vol.:

1 30 μ1

Acq. Method:

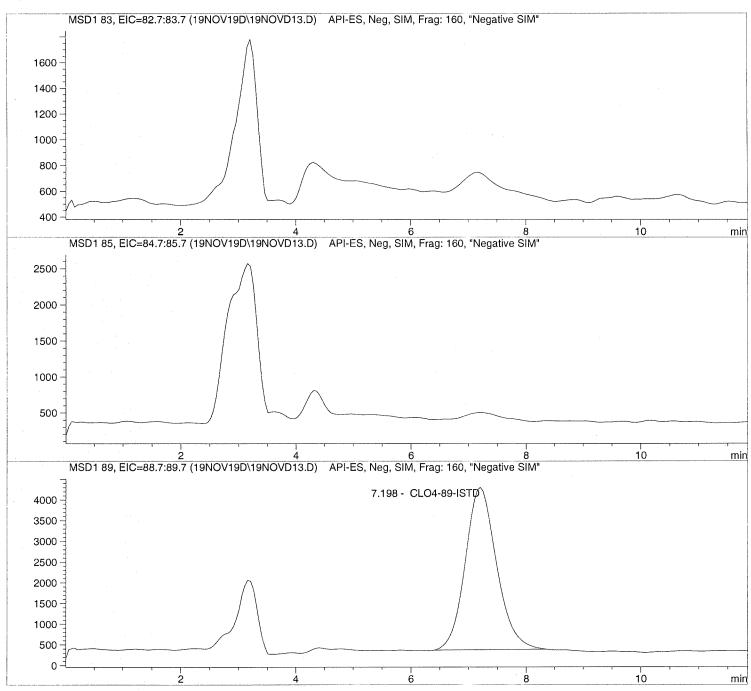
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



03:45:33 pm

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD13.D Sample Name: 1931753009

\_\_\_\_\_\_\_

Injection Date: 11/19/2019 11:36:21

Seg Line:

Inj. Vol.:

13

Sample Name:

1931753009

Vial 83

Acq Operator:

TNB

Location: Inj. No.:

1  $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution:

1.000000

Sample Amount:

0.000

\_\_\_\_\_\_\_ 

#### LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	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	
7.198	PBA	148964.8	5.0000	CLO4-89-ISTD	Ì

\_\_\_\_\_\_

Sample Name: 1931753010 Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD14.D

Injection Date:

11/19/2019 11:50:06

Seg Line:

Sample Name:

Location:

Vial 84

Acq Operator:

1931753010 TNB

Inj. No.: Inj. Vol.:

30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

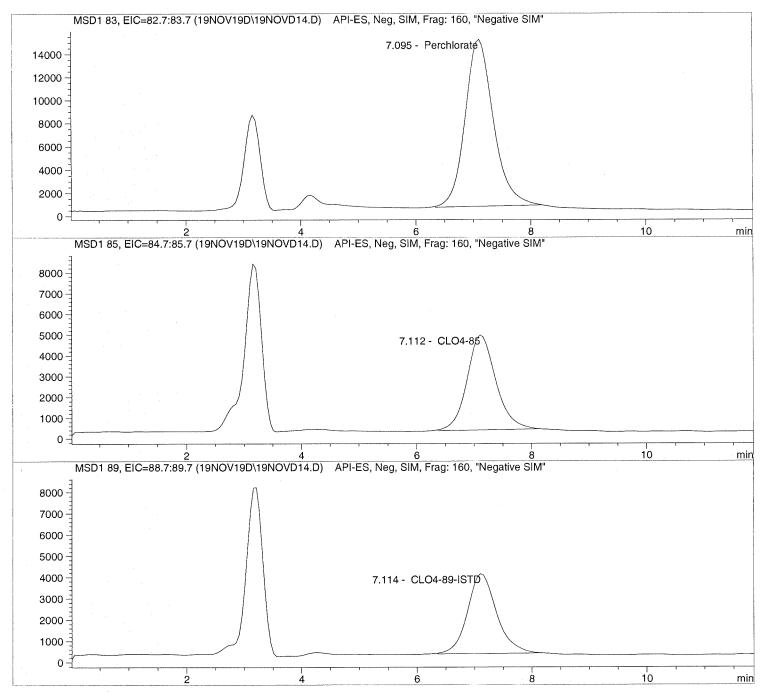
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD14.D Sample Name: 1931753010

Injection Date: 11/19/2019 11:50:06 Sample Name: 1931753010
Aca Operator: TNB

Seq Line:

Location: Vial 84
Inj. No.: 1

14

Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

LCMS Results \_\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.095	BBA	491725.6	13.3622	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.112	BBA	159613.7	14.1032	  CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.114	BBA	131911.3	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD15.D Sample Name: 684809 CCV@2

Injection Date: 11/19/2019 12:03:53 Se Sample Name: 684809 CCV@25 Lo

Seq Line: 15 Location: Vial 71

Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method:

Acq Operator:

CLO4-AQN.M

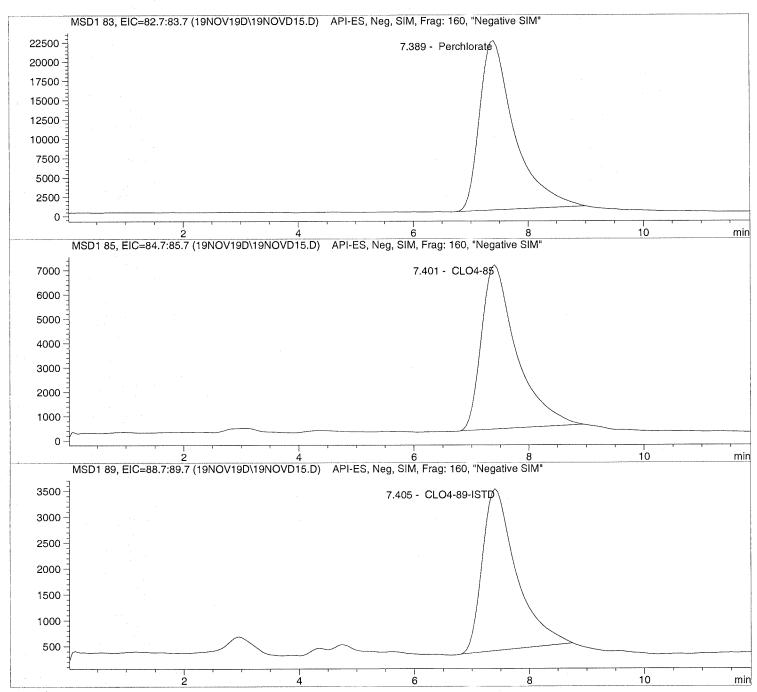
TNB

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD15.D Sample Name: 684809 \_\_\_\_\_\_\_

Sample Name: 684809 CCV025 Acq Operator:

Injection Date: 11/19/2019 12:03:53

Seq Line:

Location: Vial 71
Inj. No.: 1
Inj. Vol.: 30 µl

15

TNB

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000

Sample Amount:

1.000000 25.000

\_\_\_\_\_\_ \_\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

	RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
	7.389	PBA	931288.6	24.6735	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.401	PBA	287273.8	24.9322	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
7.405	PBA	129143.4	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD16.D Sample Name: 1931753011

Injection Date:

11/19/2019 12:17:41

Seq Line: Location:

Vial 85

Sample Name: Acq Operator: 1931753011

Inj. No.: Inj. Vol.:

30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

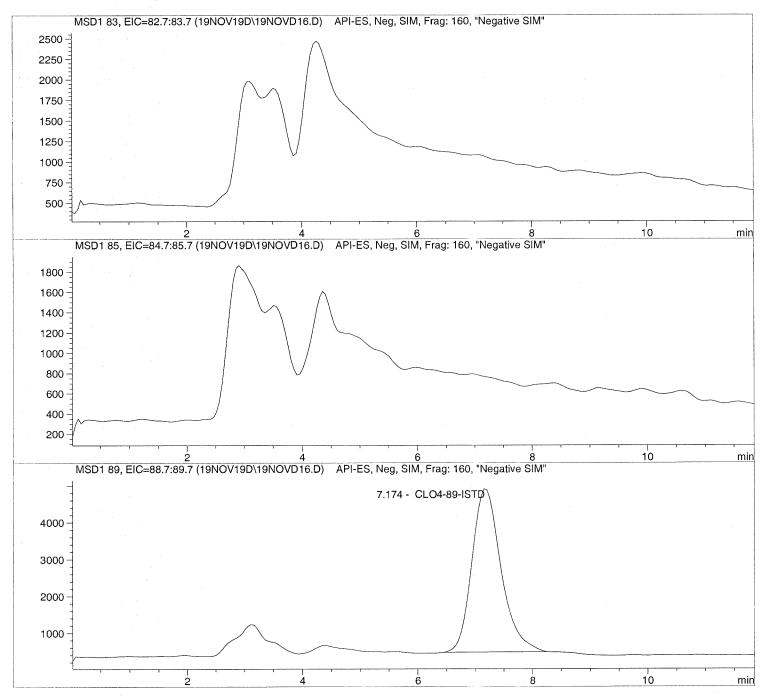
TNB

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD16.D Sample Name: 1931753011

\_\_\_\_\_\_\_\_

Injection Date: 11/19/2019 12:17:41

Seq Line:

16

Sample Name: 1931753011 Acq Operator: TNB

Location: Inj. No.:

Vial 85

Acq. Method: CLO4-AQN.M

Inj. Vol.:

30 µl

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1,000000

Sample Amount:

0.000

LCMS Results

\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	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]	Туре	Area	Amount [ug/sample]	Compound Name	
7.174	BBA	157072.7	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

03:45:57 pm

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD17.D

Sample Name: 1931753012

TNB

11/19/2019 12:31:25

Seq Line:

Sample Name: Acq Operator:

1931753012

Location: Vial 86 Inj. No.: Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

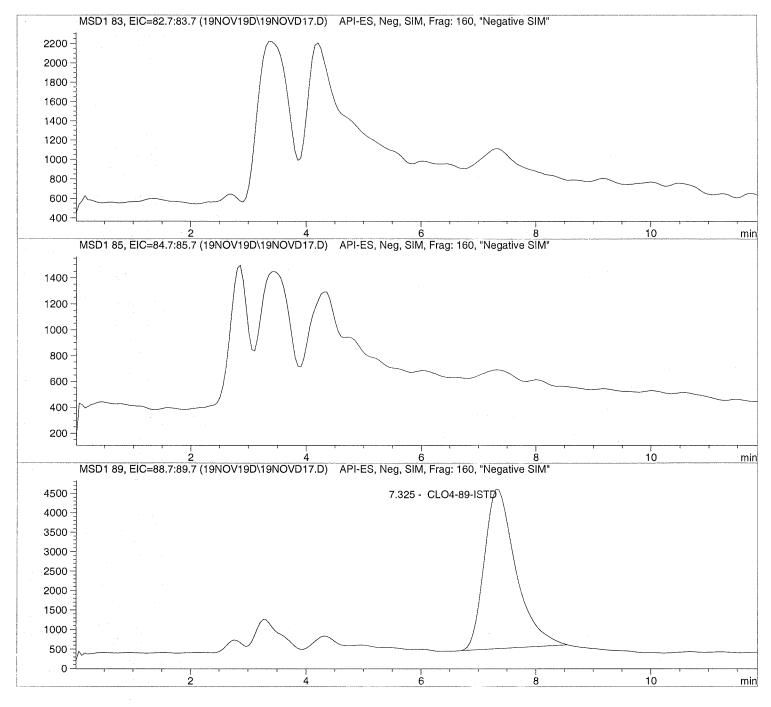
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD17.D Sample Name: 1931753012

Injection Date: 11/19/2019 12:31:25

Seq Line: 17 Location: Vial 86 Inj. No.: 1

Sample Name: 1931753012 Acq Operator: TNB

Inj. Vol.:

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution: Sample Amount:

1.000000 1.000000 0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	  Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0		CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.325	PBA	156727.4	5.0000	CLO4-89-ISTD	

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD18.D

Sample Name: 1931753013

11/19/2019 12:45:09

Seq Line:

Sample Name:

Acq Operator:

1931753013

Location: Inj. No.: Vial 87

TNB

Inj. Vol.:

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

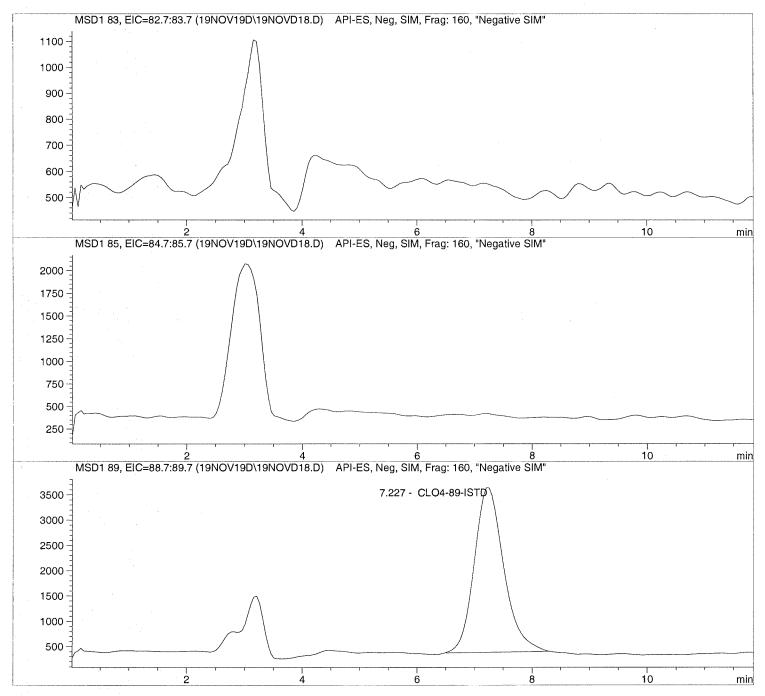
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD18.D Sample Name: 1931753013

Injection Date: 11/19/2019 12:45:09

18 Seg Line:

Sample Name:

1931753013

Vial 87

Acq Operator:

TNB

Location: Inj. No.: Inj. Vol.:

1

 $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 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	<sub>-</sub>	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	İ

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.227	BBA	116311.5	5.0000	CLO4-89-ISTD	

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD19.D Sample Name: 1932010001

11/19/2019 12:58:54

TNB

Seq Line:

Inj. Vol.:

Sample Name:

Location:

Vial 88

Acq Operator:

1932010001

Inj. No.:

30 µl

Acq. Method:

CLO4-AQN.M

Analysis Method:

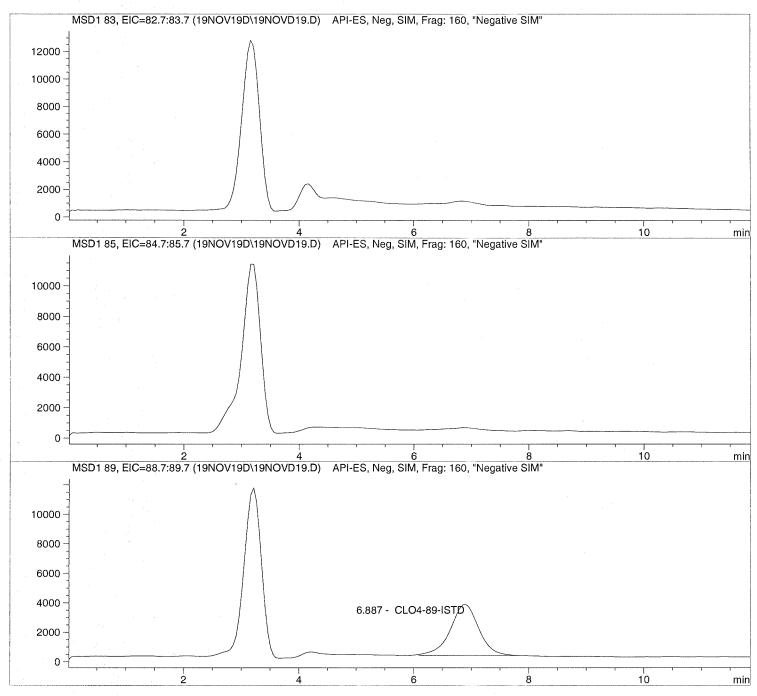
C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD19.D Sample Name: 1932010001

Injection Date: 11/19/2019 12:58:54

Seq Line: 19 Location: Vial 88 Inj. No.: 1

Sample Name: 1932010001 Acq Operator: TNB

Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution: Sample Amount:

1.000000 1.000000 0.000

\_\_\_\_\_\_\_

LCMS Results

\_\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
6.887	BBA	118043.7	5.0000	CLO4-89-ISTD	

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD20.D Sample Name: 1932010002

Injection Date: 11/19/2019 13:12:42 Seq Line: 20 Sample Name: 1932010002 Location: Vial 89 Acq Operator: TNB Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

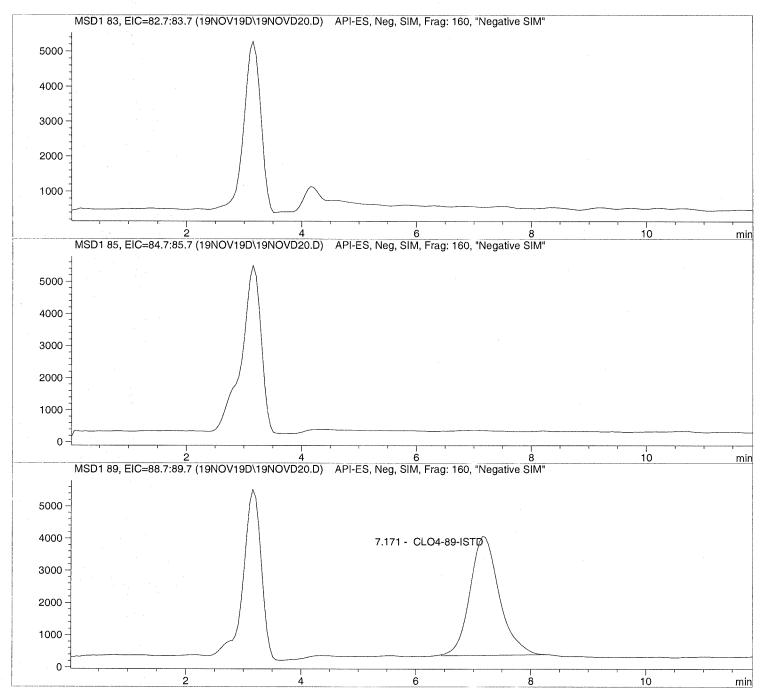
Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD20.D Sample Name: 1932010002

Injection Date: 11/19/2019 13:12:42

Seq Line:

20

Sample Name: 1932010002 Acq Operator: TNB

Location: Vial 89 Inj. No.: 1

Inj. No.: 1 Inj. Vol.: 30  $\mu$ l

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information -----

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 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]	Туре	Area	Amount [ug/sample]	Compound Name
7.171	BBA	130569.2	5.0000	  CLO4-89-ISTD

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD21.D Sample Name: 1932010003

Injection Date: 11/19/2019 13:26:30

Sample Name: Acq Operator: 1932010003

Location:

Vial 90

 $30 \mu 1$ 

TNB

Inj. No.: Inj. Vol.:

Acq. Method:

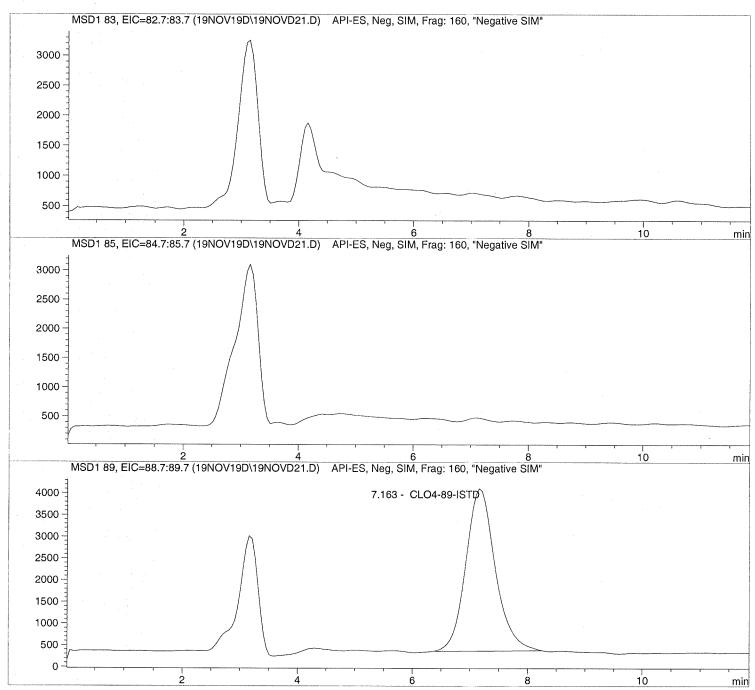
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD21.D Sample Name: 1932010003

Injection Date: 11/19/2019 13:26:30

Seq Line: 2.1 Location: Vial 90 Inj. No.: 1

Inj. Vol.: 30  $\mu$ 1

Sample Name: 1932010003 Acq Operator: TNB

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	!
0.000		0.0	0.0000	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.163	PBA	133641.2	5.0000	CLO4-89-ISTD	

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD22.D

Sample Name: 1932010004

Injection Date:

11/19/2019 13:40:18

Sample Name:

1932010004

22

Acq Operator:

Location: Inj. No.: Vial 91

TNB

Inj. Vol.:

1  $30 \mu 1$ 

Acq. Method:

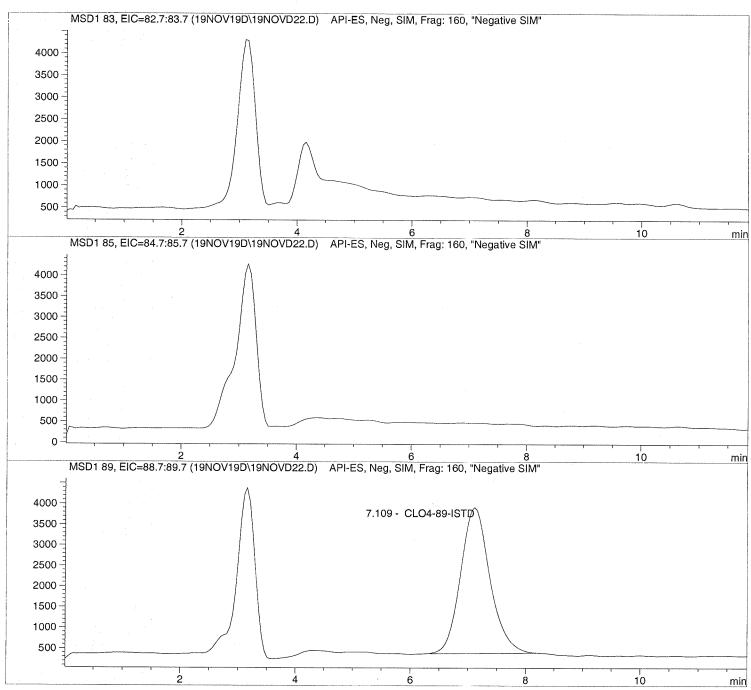
CLO4-AON.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD22.D Sample Name: 1932010004

Injection Date: 11/19/2019 13:40:18
Sample Name: 1932010004

Seq Line:

Inj. Vol.:

22

Acq Operator:

Location: Inj. No.:

Vial 91 1

 $30 \mu 1$ 

Acq. Method:

CLO4-AON.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified:

Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution:

1.000000

Sample Amount:

0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.109	BBA	124695.0	5.0000	CLO4-89-ISTD

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD23.D Sample Name: 1932010005

\_\_\_\_\_\_

Injection Date: 11/19/2019 13:54:05 Sample Name:

Seq Line: Location: Vial 92 Inj. No.:

1932010005 Acq Operator:

Inj. Vol.: 30 µ1

Acq. Method:

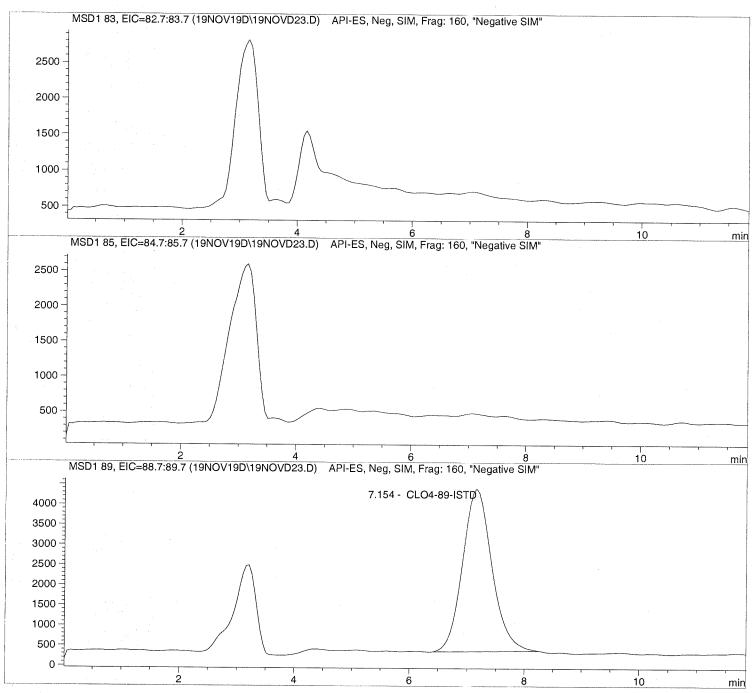
CLO4-AON.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD23.D Sample Name: 1932010005

Injection Date: 11/19/2019 13:54:05 1932010005 Sample Name: Acq Operator:

TNB

Seq Line: 23 Location: Vial 92 Inj. No.: 1 30 μl Inj. Vol.:

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_

Sample Information 

Sorted By:

Signal

Calib. Data Modified:

Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

0.000

LCMS Results 

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	  CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.154	PBA	143110.0	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

LCMS04

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD24.D

Sample Name: 1932010006

Injection Date:

11/19/2019 14:07:50

Seq Line:

Sample Name:

Location:

30 µl

Acq Operator:

1932010006

CLO4-AQN.M

Inj. No.:

Vial 93

Acq. Method:

TNB

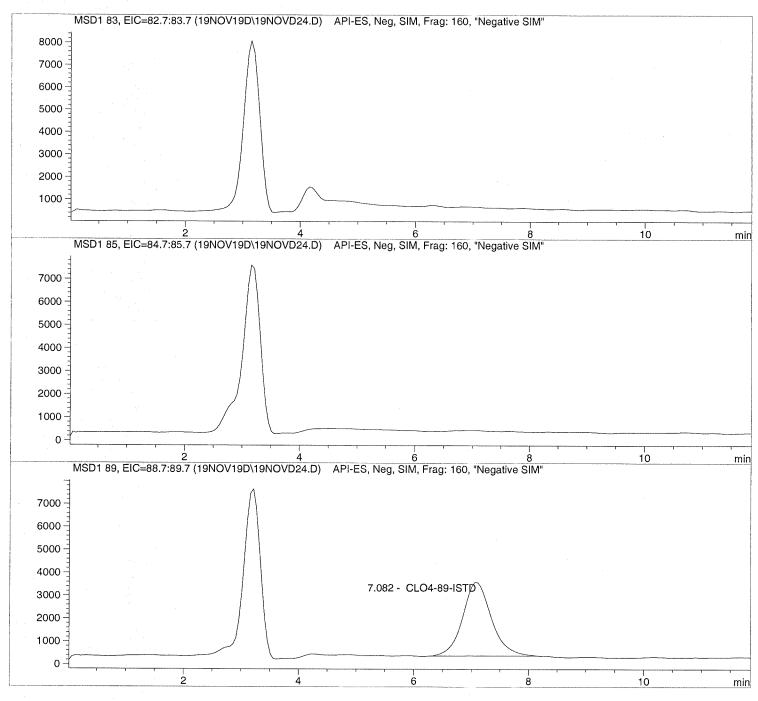
Inj. Vol.:

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD24.D Sample Name: 1932010006

Injection Date: 11/19/2019 14:07:50

Seg Line: 24

Sample Name: 1932010006

Location: Vial 93 Inj. No.: 1 Inj. Vol.:  $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Acq Operator: TNB

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution: Sample Amount:

1.000000 1.000000 0.000

LCMS Results

\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
0.000		0.0	0.0000	  Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.082	BBA	112592.4	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_\_

\*\*\* End of Report \*\*\*

LCMS04

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD25.D

Sample Name: 1932010007

Injection Date: 11/19/2019 14:21:39
Sample Name: 1932010007
Acq Operator: TNB

Seq Line: 25 Location: Vial 94 Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method:

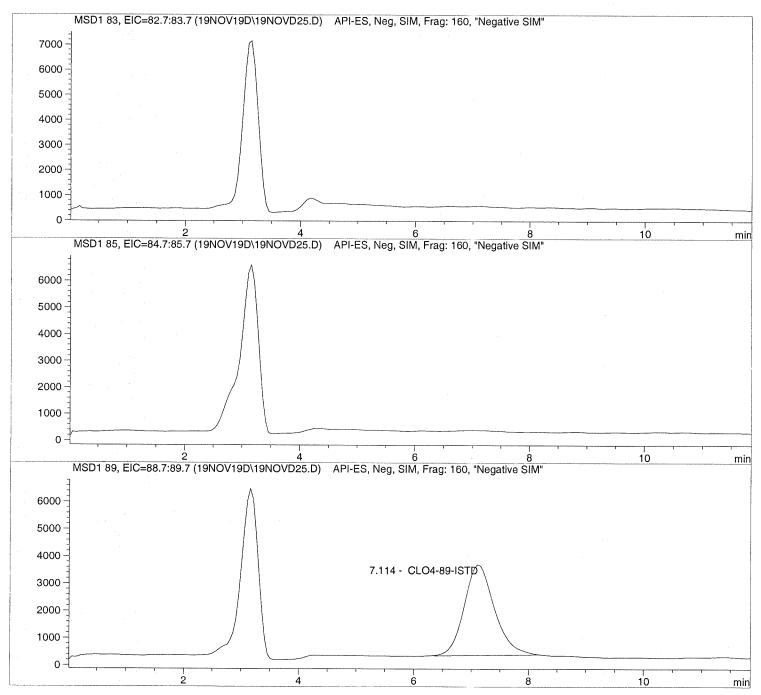
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD25.D Sample Name: 1932010007

Injection Date: 11/19/2019 14:21:39 Seq Line: 25

1932010007 Sample Name:

Location: Vial 94 Acq Operator: TNB Inj. No.: 1 Inj. Vol.:  $30 \mu 1$ 

Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information 

Sorted By: Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: 1.000000 Dilution: 1.000000 Sample Amount: 0.000

LCMS Results \_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RTType Area Amount Compound [min] [ug/sample] Name ---|-----0.000 0.0 0.0000|Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000	٠	0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.11	4   BBA	122347.6	5.0000	  CLO4-89-ISTD

\*\*\* End of Report \*\*\*

LCMS04

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD26.D 

Sample Name: 684810

Injection Date:

11/19/2019 14:35:25

Seq Line:

Inj. Vol.:

26

Sample Name:

Location:

Vial 71

Acq Operator:

684810 CCV@25 TNB

Inj. No.:

30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

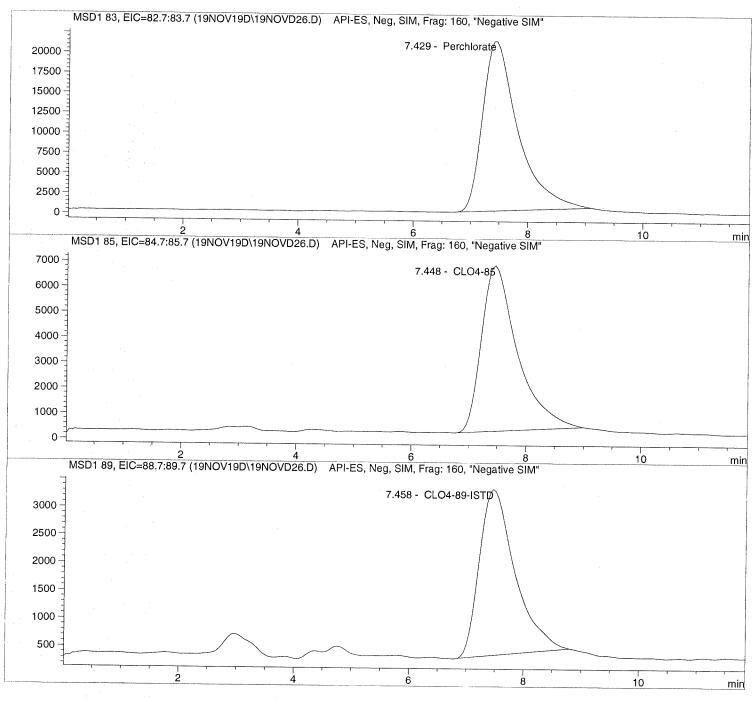
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD26.D Sample Name: 684810 CCV@25 -

Injection Date: 11/19/2019 14:35:25

Sample Name:

684810 CCV@25

Seg Line: Location: 26

Acq Operator: TNB

Inj. No.:

Vial 71

Acq. Method:

Inj. Vol.:

1  $30 \mu l$ 

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis

Sample Information 

Sorted By:

Signal

Calib. Data Modified:

Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000

1.000000 25.000

Sample Amount:

\_\_\_\_\_\_\_ LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.429	PBA	908551.0	24.2316	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [mir	Type	Area	Amount [ug/sample]	Compound Name
7.4	148   PBA	285244.9	24.8806	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.458	PBA	128522.3	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

LCMS04



-42,313.49 .

**Environmental Division** 

# **Raw Data**

Initial Calibration

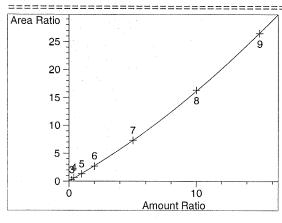
```
Calibration Table
______
Perchlorate
Calib. Data Modified : 9/23/2019 12:20:59 PM
                    : Internal Standard
Calculate
Based on
                           Peak Area
                    :
Rel. Reference Window: 20.000 %
Abs. Reference Window: 0.000 min
Rel. Non-ref. Window: 20.000 %
Abs. Non-ref. Window: 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing
                     : Quadratic (some peaks differ, see below)
: Ignored (some peaks differ, see below)
. Linear (Amnt) (some peaks differ see below)
Curve Type
Origin
                     :
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
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 Lv1
               Amount Area Amt/Area Ref Grp Name
 [min] Sig
7.750 1 3 1.00000 5.39218e4 1.85454e-5 1 Perchlorate 2.00000 1.32825e5 1.50574e-5
               5.00000 2.76271e5 1.80982e-5
              10.00000 5.61298e5 1.78159e-5
               25.00000 1.51820e6 1.64669e-5
               50.00000 3.31156e6 1.50986e-5
               75.00000 5.23914e6 1.43153e-5
               5.00000 2.14568e5 2.33026e-5 +I1 CLO4-89-ISTD
  7.767 3 3
               5.00000 2.04758e5 2.44190e-5
           5
               5.00000 2.13407e5 2.34294e-5
               5.00000 2.09246e5 2.38953e-5
           7
               5.00000 2.07403e5 2.41077e-5
               5.00000 2.02929e5 2.46391e-5
               5.00000 1.97933e5 2.52611e-5
  7.778 2 3 1.00000 1.70436e4 5.86732e-5
4 2.00000 4.20754e4 4.75337e-5
                                             1 CLO4-85
           5
               5.00000 9.24707e4 5.40712e-5
           6 10.00000 1.68622e5 5.93041e-5
               25.00000 4.63724e5 5.39114e-5
               50.00000 9.95933e5 5.02042e-5
```

```
RetTime Lvl
            Amount
                  Area
                           Amt/Area Ref Grp Name
 [min] Sig
9 75.00000 1.58066e6 4.74484e-5
More compound-specific settings:
Compound: Perchlorate
  Time Window
                     : From 3.581 min To 11.899 min
  Curve Type
                     : Quadratic
  Origin
                     : Ignored
  Calibration Level Weights:/
   Level 3
                    : 1
                     : 0.5
   Level 4
                     : 0.2
   Level 5
   Level 6
                     : 0.1
   Level 7
                     : 0.04
   Level 8
                     : 0.02
   Level 9
                     : 0.013333
Compound: CLO4-89-ISTD
  Time Window
Curve Type
                     : From 3.581 min To 11.896 min
                     : Linear
                     : Included
  Origin
  Calibration Level Weights:/
   Level 3
                     : 1
   Level 4
                     : 1
   Level 5
                     : 1
   Level 6
                     : 1
   Level 7
                     : 1
   Level 8
                     : 1
   Level 9
                     : 1
Compound: CLO4-85
  Time Window
                     : From 3.601 min To 11.913 min
  Curve Type
                     : Quadratic
                     : Ignored
  Origin
  Calibration Level Weights:/
   Level 3
                    : 1
   Level 4
                     : 0.5
   Level 5
                     : 0.2
                     : 0.1
   Level 6
   Level 7
                     : 0.04
                     : 0.02
   Level 8
   Level 9
                     : 0.013333
______
                    Peak Sum Table
_______
***No Entries in table***
```

\_\_\_\_\_\_

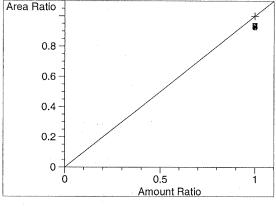
## 

#### Calibration Curves



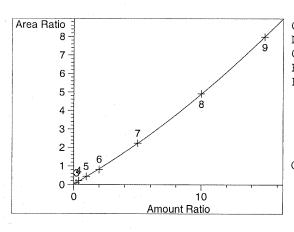
```
____________
              Perchlorate at exp. RT: 7.750
              MSD1 83, EIC=82.7:83.7
              Correlation:
                                  0.99975
              Residual Std. Dev.:
                                  0.10284
              Formula: y = ax^2 + bx + c
                          3.10463e-2
                   a:
                   b:
                          1.30369
                   c:
                          2.19496e-2
                   x: Amount Ratio
                   y: Area Ratio
              Calibration Level Weights:
```

Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767 MSD1 89, EIC=88.7:89.7 Correlation: 1.00000 Residual Std. Dev.: 0.00000 Formula: y = mx + b1.00000 0.00000 b: x: Amount Ratio y: Area Ratio Calibration Level Weights: Level 3 : 1 Level 4 Level 5 Level 6

Level 7 Level 8 Level 9



CLO4-85 at exp. RT: 7.778 MSD1 85, EIC=84.7:85.7 Correlation: 0.99969 Residual Std. Dev.: 0.02601 Formula:  $y = ax^2 + bx + c$ a: 8.85207e-3 3.99283e-1 b: 1.33505e-2 c: x: Amount Ratio y: Area Ratio Calibration Level Weights: Level 3 : 1 Level 4 : 0.5 Level 5 : 0.2 Level 6 : 0.1 Level 7 : 0.04 Level 8 : 0.02

: 0.013333

Level 9

### Batch Review Method:

C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'\*' ==> Run has been saved with batch file]

#*	Sample	Location Inj	SampleType Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
	CLO4@ 1.0ug/L CLO4@ 2.0ug/L CLO4@ 5.0ug/L CLO4@ 10.ug/L CLO4@ 25.ug/L CLO4@ 50.ug/L CLO4@ 75.ug/L ICAL Verf@10ug/L	Vial 73 1 Vial 74 1 Vial 75 1 Vial 76 1 Vial 77 1 Vial 78 1 Vial 79 1 Vial 80 1	Control 3 Control 4 Control 5 Control 6 Control 7 Control 8 Control 9 Control 11	5.39218e4 1.32825e5 2.76271e5 5.61298e5 1.51820e6 3.31156e6 5.23914e6 5.74879e5	7.750 7.797 7.770 7.785 7.741 7.775 7.736 7.756	8.75982e-1 2.37682 4.77237 9.75097 25.01082 50.40300 74.79107 10.11855
# * 	Sample	Location Inj	SampleType Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
- # # # # # # # # # # # # # # # # # # #	CLO4@ 1.0ug/L CLO4@ 2.0ug/L CLO4@ 5.0ug/L CLO4@ 10.ug/L CLO4@ 25.ug/L CLO4@ 50.ug/L CLO4@ 75.ug/L ICAL Verf@10ug/L	Vial 73 1 Vial 74 1 Vial 75 1 Vial 76 1 Vial 77 1 Vial 78 1 Vial 79 1 Vial 80 1	Control 3 Control 4 Control 5 Control 6 Control 7 Control 8 Control 9 Control 11	2.14568e5 2.04758e5 2.13407e5 2.09246e5 2.07403e5 2.02929e5 1.97933e5 2.06243e5	7.767 7.816 7.793 7.798 7.763 7.800 7.765 7.776	5.00000 5.00000 5.00000 5.00000 5.00000 5.00000 5.00000
#*	Sample	Location Inj	SampleType Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
 # * * * * # * # * * *	CLO4@ 1.0ug/L CLO4@ 2.0ug/L CLO4@ 5.0ug/L CLO4@ 10.ug/L CLO4@ 25.ug/L CLO4@ 50.ug/L CLO4@ 75.ug/L ICAL Verf@10ug/L	Vial 73 1 Vial 74 1 Vial 75 1 Vial 76 1 Vial 77 1 Vial 78 1 Vial 79 1 Vial 80 1 *** End	Control 3 Control 4 Control 5 Control 6 Control 7 Control 8 Control 9 Control 11 of Report ***	1.70436e4 4.20754e4 9.24707e4 1.68622e5 4.63724e5 9.95933e5 1.58066e6 1.71000e5	7.778 7.805 7.787 7.781 7.760 7.793 7.758 7.760	8.24488e-1 2.38090 5.14166 9.52209 25.04916 50.14223 74.93659 9.79043

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

## Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
====	=======	===============	=======	===	=========		
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		*,
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Samp1

Sample Name: CLO4@ 1.0ug/L

Injection Date: Sample Name:

9/20/2019 09:24:05

Seq Line: Location:

Vial 73

Acq Operator:

CLO4@ 1.0ug/L TNB

Inj. No.:
Inj. Vol.:

 $\begin{array}{c} 1\\ 30 \ \mu 1 \end{array}$ 

Acq. Method:

CLO4-AQN.M

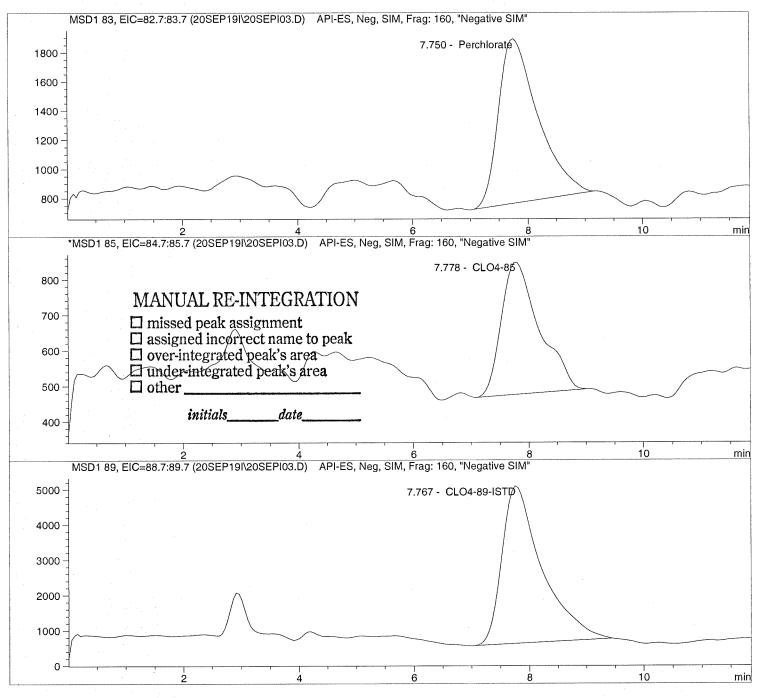
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L \_\_\_\_\_\_

Injection Date:

9/20/2019 09:24:05

Sample Name:

CLO4@ 1.0ug/L

Seg Line: Location:

1

Acq Operator:

Inj. No.:

Vial 73

TNB

Inj. Vol.:

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution:

1.000000

Sample Amount:

1.000

\_\_\_\_\_\_\_ \_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

R [m	T   in]	Туре	Area	Amount [ug/sample]	Compound Name
	.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
-	7.778	MM	17043.6	0.8245	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:

9/20/2019 09:37:58 Seq Line: CLO4@ 2.0ug/L Location: Vial 74

1

Acq Operator: TNB Inj. No.: Inj. Vol.:  $30 \mu 1$ 

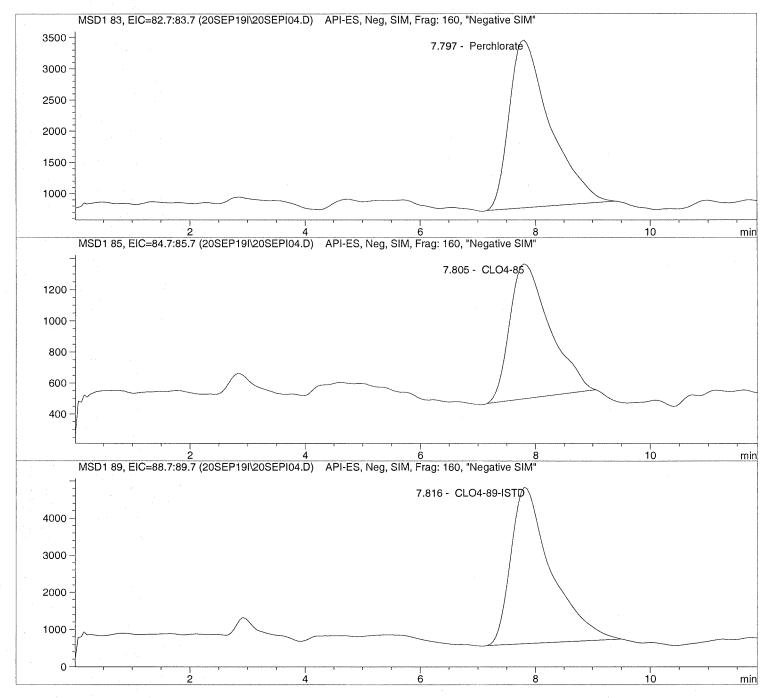
Acq. Method: CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Name:



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEP104.D Sample Name: CLO4@ 2.0ug/L

Injection Date: 9/20/2019 09:37:58 Sample Name: CLO4@ 2.0ug/L

Seq Line: Location: Vial 74 Inj. No.: 1 Inj. Vol.: 30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Acq Operator: TNB

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: 1.000000 Dilution: Sample Amount:

1.000000 2.000

LCMS Results

\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.797	PBA	132825.2	2.3768	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	  CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

LCMS04

Mon, 23. Sep. 2019 00:23:04 pm

Page 2 of 2

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sa

Sample Name: CLO4@ 5.0ug/L

9/20/2019 09:51:49

Seq Line: Location: Via

Injection Date:
Sample Name:

CLO4@ 5.0ug/L

Vial 75

Acq Operator:

TNB

Inj. No.:
Inj. Vol.:

 $\begin{array}{c} 1 \\ 30 \ \mu 1 \end{array}$ 

Acq. Method:

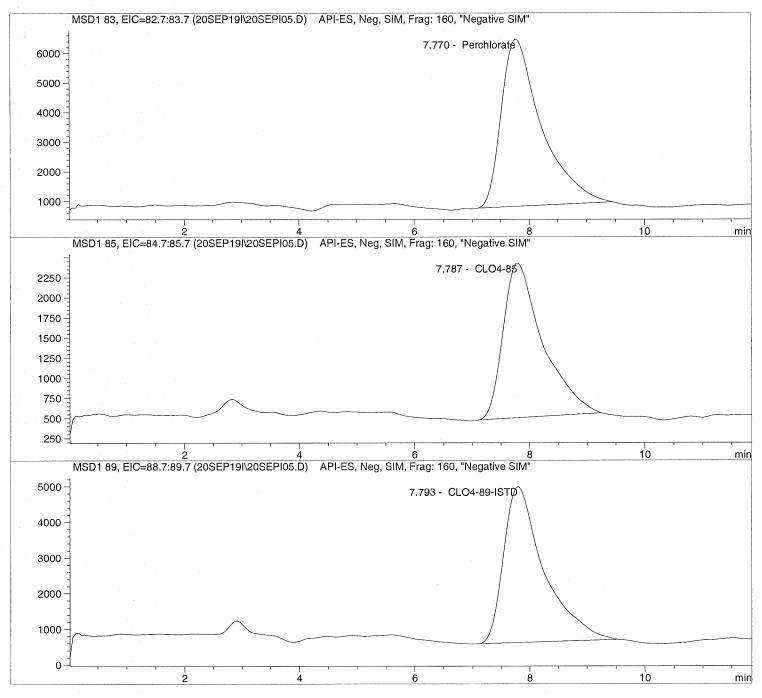
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L \_\_\_\_\_\_\_

Injection Date: 9/20/2019 09:51:49 Seg Line:

Sample Name: CLO4@ 5.0ug/L Acq Operator: TNB

Location: Inj. No.: Vial 75 1

Inj. Vol.:  $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified:

Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution: Sample Amount:

1.000000 1.000000 5.000

LCMS Results 

Signal1: MSD1 83, EIC=82.7:83.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
	7.770	PBA	276270.7	4.7724	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.787	PBA	92470.7	5.1417	  CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

\_\_\_\_\_\_ \*\*\* End of Report \*\*\*

LCMS04

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO40 10.ug/L

Injection Date:

9/20/2019 10:05:36

Sample Name:

Seq Line: Location:

Vial 76

Acq Operator:

CLO4@ 10.ug/L

Inj. No.:

1

TNB

Inj. Vol.:

 $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

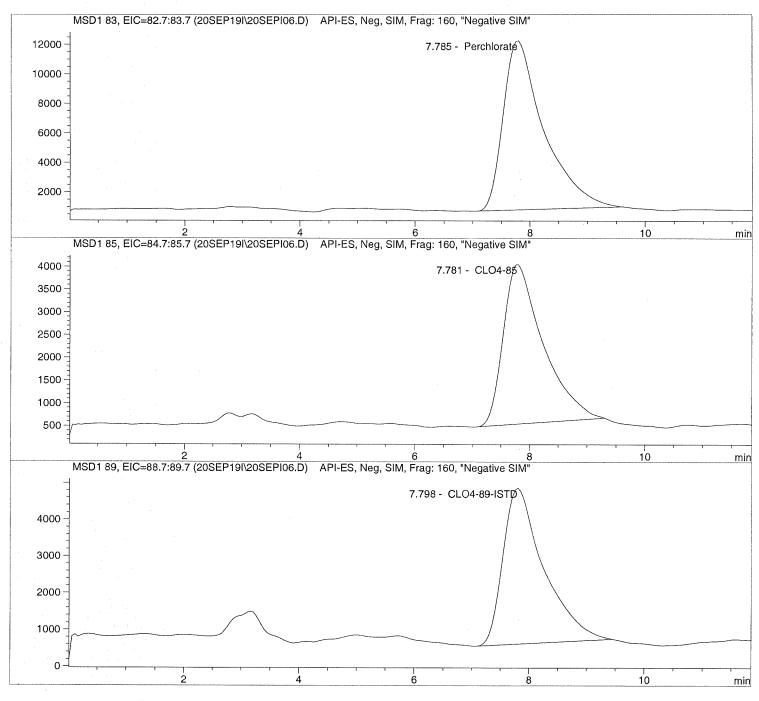
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEP106.D Sample Name: CLO4@ 10.ug/L 

Injection Date: 9/20/2019 10:05:36
Sample Name: CLO4@ 10.ug/L

Seq Line:

6 Location: Vial 76 Inj. No.: 1

Acq Operator:

TNB

Inj. Vol.:  $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis

Sample Information 

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000 1.000000

Dilution: Sample Amount:

10.000

LCMS Results 

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.785	PBA	561297.7	9.7510	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

LCMS04

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEP107.D

Sample Name: CLO4@ 25.ug/L

Injection Date:

9/20/2019 10:19:23

Seq Line:

Sample Name:

Acq Operator:

CLO4@ 25.ug/L

Location:

Vial 77

TNB

Inj. No.: Inj. Vol.:

30  $\mu$ 1

Acq. Method:

CLO4-AQN.M

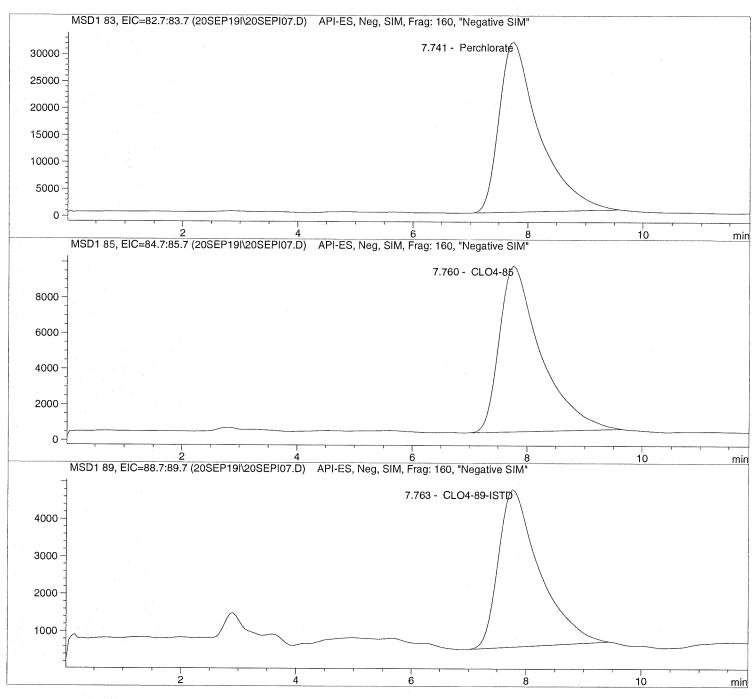
Analysis Method:

C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEP107.D Sample Name: CLO4@ 25.ug/L

\_\_\_\_\_\_\_

Injection Date: 9/20/2019 10:19:23

Seq Line:

Sample Name: CLO4@ 25.ug/L Acq Operator:

Location: Inj. No.:

Vial 77

TNB

Inj. Vol.:

1  $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000

1.000000 25.000

Sample Amount:

\_\_\_\_\_\_

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.741	PBA	1518197.9	25.0108	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.760	PBA	463724.0	25.0492	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D \_\_\_\_\_\_

Sample Name: CLO4@ 50.ug/L

Injection Date: 9/20/2019 10:33:18

Seq Line:

Sample Name:

CLO4@ 50.ug/L

Location:

Acq Operator:

TNB

Inj. No.: Inj. Vol.: Vial 78 1

 $30 \mu 1$ 

Acq. Method:

CLO4-AON.M

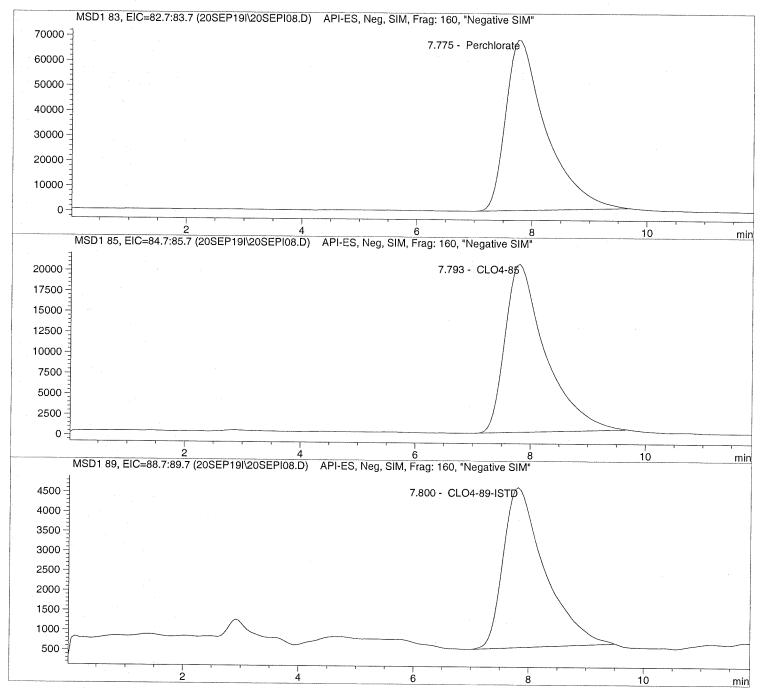
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis

\_\_\_\_\_\_



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date: 9/20/2019 10:33:18

Seq Line: 8

Sample Name: CLO4@ 50.ug/L

Location: Vial 78

Acq Operator: TNB

Inj. No.: Inj. Vol.:

1  $30 \mu l$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis

\_\_\_\_\_\_\_

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified:

Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEP109.D

Sample Name: CLO4@ 75.ug/L

Injection Date:

9/20/2019 10:47:05

Seq Line:

Sample Name:

CLO4@ 75.ug/L

Acq Operator:

Location:

Vial 79

TNB

Inj. No.: Inj. Vol.:

 $30 \mu l$ 

1

Acq. Method:

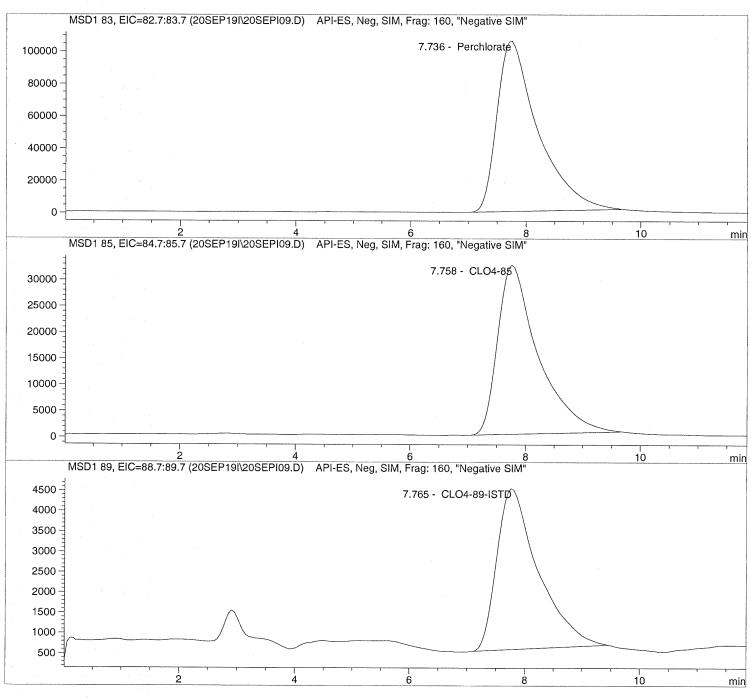
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date: 9/20/2019 10:47:05

q

Sample Name:

CLO4@ 75.ug/L

Seq Line: Location:

Vial 79

Acq Operator:

TNB

Inj. No.: Inj. Vol.:

1 30 µl

Acq. Method:

CLO4-AON.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis

\_\_\_\_\_\_

Sample Information

Sorted By:

Signal

Calib. Data Modified:

Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution:

1.000000

Sample Amount:

75.000

LCMS Results \_\_\_\_\_\_\_

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

\*\*\* End of Report \*\*\*

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D

Sample Name: ICAL Verf@10ug/L

9/20/2019 11:14:45

Seq Line:

Injection Date:

Sample Name:

ICAL Verf@10ug/L

Location: Inj. No.: Vial 80

 $30 \mu 1$ 

Acq Operator:

Acq. Method:

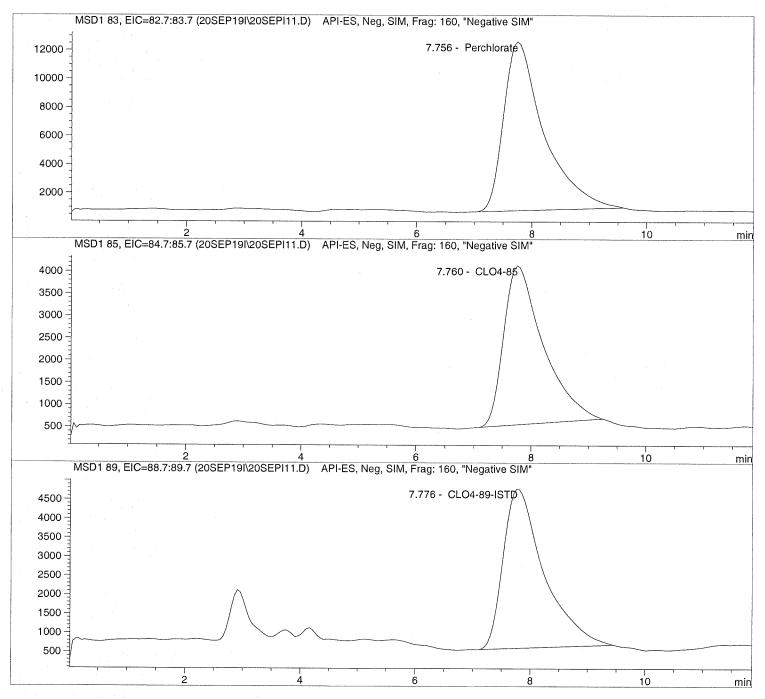
TNB

Inj. Vol.: CLO4-AQN.M

Analysis Method: Last Changed:

C:\HPCHEM\1\METHODS\CLO4-DP3.M 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L \_\_\_\_\_\_\_

Injection Date:

9/20/2019 11:14:45

Seq Line: 11

Sample Name:

ICAL Verf@10ug/L

Location: Inj. No.:

Vial 80

Acq Operator:

TNB

Inj. Vol.:

1  $30 \mu 1$ 

Acq. Method:

CLO4-AON.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:21:47

Perchlorate analysis

Sample Information

\_\_\_\_\_\_

Sorted By:

Signal

Calib. Data Modified:

Mon, 23. Sep. 2019,00:20:59 pm

Multiplier:

1.000000

Dilution:

1.000000

Sample Amount:

10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.756	PBA	574879.4	10.1185	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
7.76	0 PBA	171000.4	9.7904	CLO4-85	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	  CLO4-89-ISTD

\*\*\* End of Report \*\*\*



**Environmental Division** 

# **Raw Data**

**Unmodified** 

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date: 9/20/2019 09:24:05 Sample Name: CLO4@ 1.0ug/L Acq Operator:

TNB

Seq Line: Vial 73 Location:

Inj. No.: Inj. Vol.: 30  $\mu$ 1

Acq. Method:

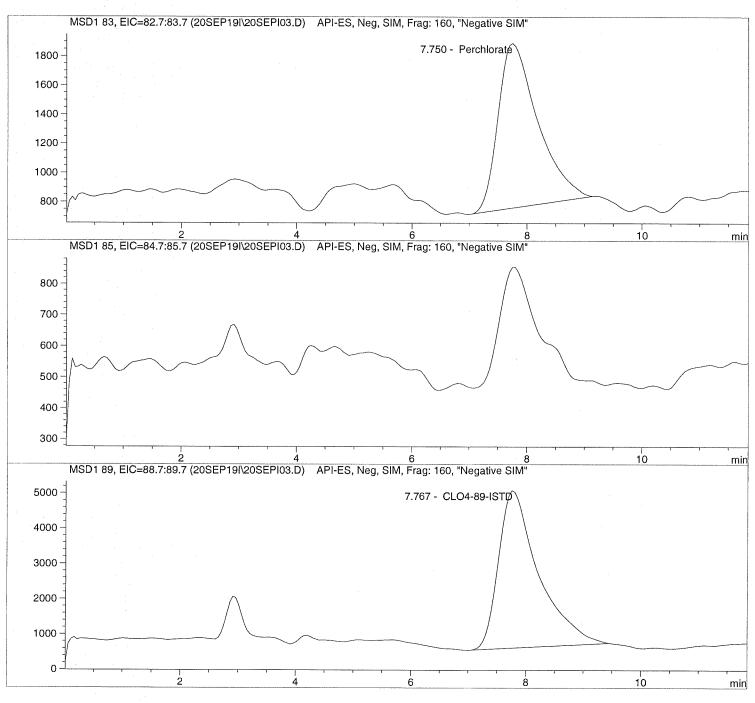
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEP103.D Sample Name: CLO4@ 1.0ug/L 

Injection Date: 9/20/2019 09:24:05

Seq Line:

Acq Operator:

Location: Inj. No.:

3 Vial 73

Sample Name: CLO4@ 1.0ug/L TNB

Inj. Vol.:

1  $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:

Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000

Sample Amount:

1.000

\_\_\_\_\_\_\_ LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	-
7.750	PBA	 53921.8	0.8760	Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Туре	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

	RT [min]	Туре	Area	Amount [ug/sample]	Compound Name	
İ	7.767	PBA	214568.1	5.0000	CLO4-89-ISTD	

\*\*\* End of Report \*\*\*

Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD02.D Sample Name: 684805

11/19/2019 09:04:34 Injection Date: Sample Name: 684805 QC@3.0

Seq Line: Location:

Vial 72

Acq Operator:

TNB

Inj. No.: Inj. Vol.:

30  $\mu$ 1

Acq. Method:

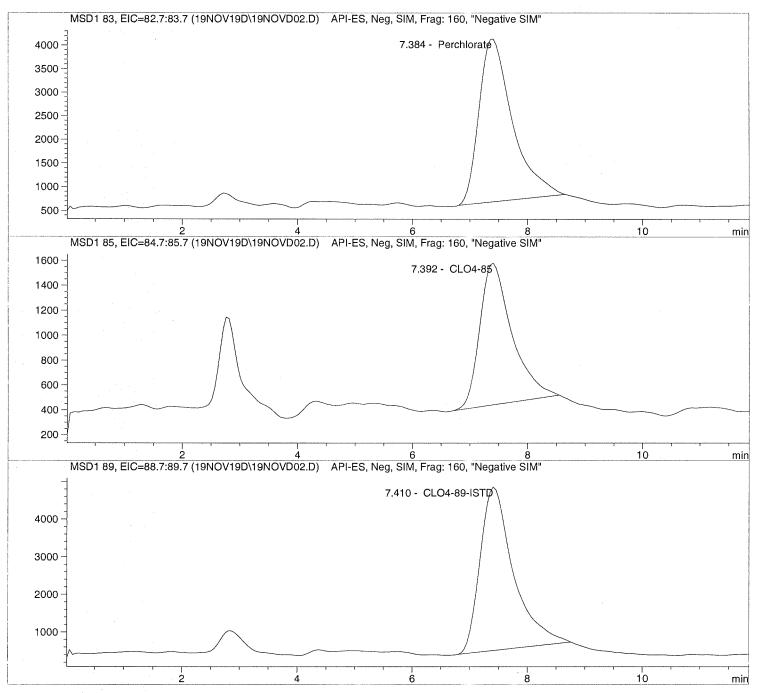
CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed:

11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19NOV19D\19NOVD02.D Sample Name: 684805 \_\_\_\_\_\_

Injection Date: 11/19/2019 09:04:34

Seq Line:

Inj. Vol.:

Sample Name: 684805 QC@3.0 Acq Operator: TNB

Location: Vial 72 Inj. No.: 1

2

 $30 \mu 1$ 

Acq. Method:

CLO4-AQN.M

Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M

Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

\_\_\_\_\_\_ 

Sample Information

Sorted By: Signal

Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm

Multiplier: Dilution:

1.000000 1.000000 3.000

Sample Amount:

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	
7.384	PBA	139068.9	2.9298	  Perchlorate	

Signal2: MSD1 85, EIC=84.7:85.7

	RT	Туре	Area	Amount	Compound
ļ	[min]		·	[ug/sample]	Name
	7 202		44010 1		
1	7.392	PBA	44210.1	2.9647	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name	ļ
7.410	PBA	174596.2	5.0000	CLO4-89-ISTD	

\_\_\_\_\_\_

\*\*\* End of Report \*\*\*



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

F: +1 281 530 5887 www.alsglobal.com

### WorkOrder: HS19110796

LHAAP-50 501032

**Aptim Environmental & Infrastucture, Inc.** 

Susan Huang 2500 City West Blvd., Suite 1700 Houston TX 77042

03-Dec-2019



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

F: +1 281 530 5887

December 03, 2019

Susan Huang Aptim Environmental & Infrastucture, Inc. 2500 City West Blvd., Suite 1700 Houston, TX 77042

Work Order: **HS19110796** 

Laboratory Results for: **LHAAP-50 501032** 

Dear Susan,

ALS Environmental received 4 sample(s) on Nov 15, 2019 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

Client: Aptim Environmental & Infrastucture, Inc.

Project: LHAAP-50 501032 SAMPLE SUMMARY

Work Order: HS19110796

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19110796-01	04WW09-191113-Post-inj	GW		13-Nov-2019 13:35	15-Nov-2019 08:45	
HS19110796-02	04WW05-191113-Post-inj	GW		13-Nov-2019 14:30	15-Nov-2019 08:45	
HS19110796-03	04WW07-191113-Post-inj	GW		13-Nov-2019 15:20	15-Nov-2019 08:45	
HS19110796-04	04WW010-191113-Post-inj	GW		13-Nov-2019 16:20	15-Nov-2019 08:45	

Client: Aptim Environmental & Infrastucture, Inc. CASE NARRATIVE

Project: LHAAP-50 501032 Work Order: HS19110796

### **Work Order Comments**

• The analysis for TOC was subcontracted to ALS Kelso WA. Final report attached.

Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19110796

Project: LHAAP-50 501032

Lab ID:HS19110796-01

**ANALYTICAL REPORT** 

Sample ID: 04WW09-191113-Post-inj Collection Date: 13-Nov-2019 13:35

Matrix:GW

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TO ANALYSIS	C Met	nod:NA					Analyst: SUBK
Subcontract Analysis	See Attached	0	0		NA	1	03-Dec-2019 09:38

Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19110796

Project: LHAAP-50 501032 Sample ID: 04WW05-191113-Post-inj

Lab ID:HS19110796-02

**ANALYTICAL REPORT** 

Collection Date: 13-Nov-2019 14:30

Matrix:GW

ANALYSES	RESULT QUA	AL DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TO ANALYSIS	C V	lethod:NA					Analyst: SUBK
Subcontract Analysis	See Attached	0	0		NA	1	03-Dec-2019 09:38

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

Client: Aptim Environmental & Infrastucture, Inc.

Project:

Sample ID:

LHAAP-50 501032 WorkOrder:HS19110796 04WW07-191113-Post-inj Lab ID:HS19110796-03

Collection Date: 13-Nov-2019 15:20 Matrix:GW

**ANALYTICAL REPORT** 

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TO ANALYSIS	OC Method:	NA					Analyst: SUBK
Subcontract Analysis	See Attached	0	0		NA	1	03-Dec-2019 09:38

Client: Aptim Environmental & Infrastucture, Inc.

WorkOrder:HS19110796

Project: LHAAP-50 501032

Lab ID:HS19110796-04

**ANALYTICAL REPORT** 

Sample ID: 04WW010-191113-Post-inj Collection Date: 13-Nov-2019 16:20

Matrix:GW

ANALYSES	RESULT QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TO ANALYSIS	C Metho	d:NA					Analyst: SUBK
Subcontract Analysis	See Attached	0	0		NA	1	03-Dec-2019 09:38

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

Client: Aptim Environmental & Infrastucture, Inc.

Project: LHAAP-50 501032 DATES REPORT

WorkOrder: HS19110796

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R3516	28 ( 0 ) <b>Test Name</b> : S	SUBCONTRACT ANAI	YSIS - TOC ANALYS	IS	Matrix: GW	
HS19110796-01	04WW09-191113-Post-inj	13 Nov 2019 13:35			03 Dec 2019 09:38	1
HS19110796-02	04WW05-191113-Post-inj	13 Nov 2019 14:30			03 Dec 2019 09:38	1
HS19110796-03	04WW07-191113-Post-inj	13 Nov 2019 15:20			03 Dec 2019 09:38	1
HS19110796-04	04WW010-191113-Post-inj	13 Nov 2019 16:20			03 Dec 2019 09:38	1

Aptim Environmental & Infrastucture, Inc. Client: QUALIFIERS,

**Project:** LHAAP-50 501032 **ACRONYMS, UNITS** 

UC10110796

WorkOrder:	HS19110796
Qualifier	Description
*	Value exceeds Regulatory Limit
а	Not accredited
В	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
Н	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
0	Sample amount is > 4 times amount spiked
Р	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

Matrix Spike MS

Matrix Spike Duplicate MSD PDS Post Digestion Spike **PQL** Practical Quantitaion Limit

SD Serial Dilution

SDL Sample Detection Limit

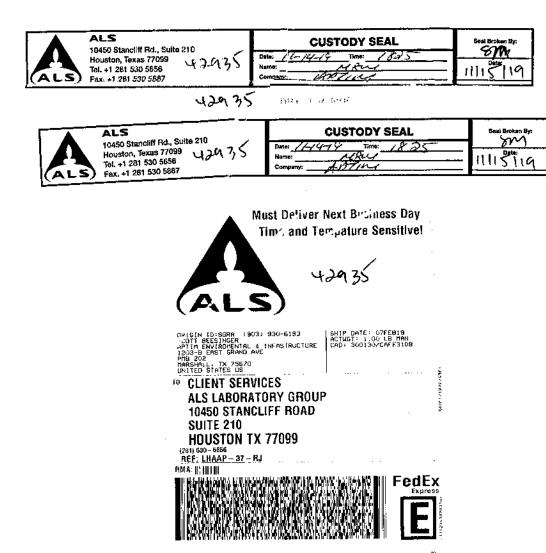
**TRRP** Texas Risk Reduction Program

### **CERTIFICATIONS, ACCREDITATIONS & LICENSES**

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US					Date: 03-Dec-19
Client Name: CBI-Hou Work Order: HS19110		Date/T Receiv	ime Received: ved by:	Sample Rec 15-Nov-2019 AC	ceipt Checklist 9 08:45
Checklist completed by:	Asad Chaudhry 15-Nov-201 eSignature Date	9 Reviewed by:	RJ Modashi eSignature	а	15-Nov-2019 Date
Matrices: <u>Wa</u>	<u>ter</u>	Carrier name:	FedEx Prior	ity Overnight	
Custody seals intact on s VOA/TX1005/TX1006 Sc Chain of custody present Chain of custody signed s Samplers name present of Chain of custody agrees Samples in proper contain Sample containers intact Sufficient sample volume All samples received with	shipping container/cooler? sample bottles? blids in hermetically sealed vials? t? when relinquished and received? on COC? with sample labels? iner/bottle? ?	Yes V Yes V Yes V Yes V Yes V Yes V Yes V Yes V Yes V Yes V Yes V Yes V	No	Not Present Not Present Not Present Not Present 1 Page(s) COC IDs:N/A	
Temperature(s)/Thermon		0.9c U/C			IR 25
Cooler(s)/Kit(s):		42935			
Date/Time sample(s) sen Water - VOA vials have z	•	11/15/2019 15:00 Yes	No 🔲 N	lo VOA vials subi	mitted
Water - pH acceptable up pH adjusted? pH adjusted by:		Yes Yes	No No	N/A V	
Login Notes:					
Client Contacted:	Date Contacted:		Person Cont	acted:	
Contacted By:	Regarding:				
Comments:					
Corrective Action:					

APTIM				<u> </u>					· <b></b>				a=		Page 1 of		<del></del>
COC ID:	LHAAP04	Post Ir	ijection	Nov 201	9-191113	3	TURNA	ROUND TIME	: Standard					RUSH:	No		
	PROJECT/CLIENT IN	FO			1 1		<del></del>	LABORATOR	Υ	-	1		OT	HER INFO			
	Longhorn AAP					Li	ab Name	AUS Laboratorie	1			E	nail Invoice To		aptim.com		
Project Number						Lab		RJ Modashia			1					~	
<del></del>	LHAAP-50						Email	RJ Modashia@al:	global.com			E	mail Report To	Susan, Huang	@aotim.com		
Address	1203-B East Grand Avenue						Address	10450 Stancliff F	d , Suite 210				Iail Reports To	+			
	PMB 202											·			hicago Highway,	Spire 200	0
	Marshall			State T	X		City	Houston	State	TX			City	Concord	meaga engarias,		ICA
Postal Code	<del></del>			Country US	SA	Pos	tal Code	77099	Country	USA		,-,	Postal Code			Country	
Phone Number	<del>·</del>				. " -	Phone	Number	281.575.2279 or	281 530.565G	•				<b></b>		T C C S A C A	1000
Project Manager	Praveen Srivastav			· .				i	<u> </u>			Shir	pping Company				
	SAMPL	E DETAIL	LS			<del></del>				<del></del>	ANAL VEL	REQUESTE		L			
	]	1	ļ .	į .	1 1			Sample Contain	2-40m	1	- AUALISE	HEQUESIE.	<u></u>	<u> </u>	<del></del>	1	<del></del> -
				}   				and Prestvatio	Amber/11250	4			<u></u>	<u></u>		<u> </u>	1
		İ								į							
				 					TOC hy SM5310C			HS	19110	796			
									NS A	Αį	otim En	ivironme	ental & I	nfrastu	icture, Ind	).	
		Start	End	Depth	Field		Time	i l	ļ Ç			LHA	AP-50 50	1032			
Sample ID	Location	Depth	Depth	Unit	Matrix	Date	(24hr)	# Of Cont.	<u> </u>	_				I	<b>is in</b> žio osii ir	ı.	-
WW09-191113-Post-Inj	I.HAAP04 / 04WW09	3.81	4.1	FT	GW	11/13/2019	1335	2	2							ll <sup>-</sup>	
WW05-191113-Post-Inj	LHAAP04 / 04WW05	7.65	7,83	FT	GW	11/13/2019	1430	2	2	-						-	+
WW07-191113-Post-Inj	LHAAP04 / 04WW07	8.85	9.26	FT	GW	11/13/2019	1520	2	2	-, <b>!!!</b>					ik ibiio biii ik	•	<del>†</del>
WW10-191113-Post-Inj	LHAAP04 / 04WW19	4.75	5.5	FT	GW	11/13/2019	1620	2	2	<del> </del>	†	İ	<b></b>	<u> </u>		<del>                                     </del>	$\dagger$
		1						· · · · · · · · · · · · · · · · · · ·		"		·		1	<del>                                     </del>	1	†
		<u>į                                    </u>	<u> </u>									j	i	1			$\top$
	<u></u>	<u> </u>	<u> </u>							<u> </u>			[			Ţ	
		<u> </u>			[					1				İ	1	1	1
			!								7		<del> </del>	<u> </u>	<del> </del>	†	
	<del> </del>	· i	<del> </del>		<del> </del>		<u> </u>	H	-	<del>+</del>	-	<del> </del> -	<del> </del>	<del> </del>		1	- <del> </del> -
	<del> </del>	<u>!</u>	Ļ <u>.</u> _		<u> </u>						<u>i</u>	L	<u>]</u> .	ĺ		!	
			1	į				l Ì.						]	i .	i	
		<del> </del>	·		<del> </del>					+	!	<del> </del>	<del>:</del>	<del></del> -	<del>                                     </del>	<del>!</del>	<u></u>
	1	+	<del> </del>		<del>├</del> ─ -		ļ	ļi		4		<u> </u>	ļ		l	;	- <del> </del>
	<u> </u>	<u> </u>	j	<u> </u>							İ					į	- [
										··1			i		1	;	<del></del>
			-	{·	<del> </del>	·· - ·		<del></del>		<del> </del>	<del> </del>	-	ł	<del></del>	-	<del>-</del>	
	ļ	· i	ļ						L				L	ļ		1	-
					;								1		ļ	:	1
ADDITIONAL COM	MENTS/SPECIAL INSTRUC	TIONS	<del></del>	RELIN	QUISHED B	Y/AEFILIATI	ION	DATE/TIME	-	ACCE	PTEO BY/AF	FILIATION	<del>///</del>	<u> </u>	DATE/TIM	<del>-</del>	4
					12/2	1 11	17.04		步丁		ALC.	7		1111		3:4.	7
						T.							· · · ·		3 1 1	<u> </u>	<b></b>
														<u> </u>			
	<u> </u>													· ·			
											d	243?	0.9%	, ,			
													71 4)				
													Cf + c	2.0			



**AB SGRA** 

TRK# 7376 9752 2644

FedEx

FRI - 15 NOV 10:30A PRIORITY OVERNIGHT

> 77099 TX-US IAH



e475872 11/14 567J1/F930/05R2

Page 14 of 116



December 02, 2019

**ALS Laboratory Group** 10450 Stancliff Road

Houston, TX 77099-4338

RJ Modashia

ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso. WA 98626

T:+1 360 577 7222

F:+1 360 636 1068 www.alsglobal.com

**Analytical Report for Service Request No: K1910847** 

RE: HS19110796

Dear RJ.

Suite 210

Enclosed are the results of the sample(s) submitted to our laboratory November 16, 2019 For your reference, these analyses have been assigned our service request number K1910847.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

**Project Manager** 



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T: +1 360 577 7222 F: +1 360 636 1068 www.alsglobal.com

### **Table of Contents**

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

**Case Narrative** 

Chain of Custody

**General Chemistry** 

Raw Data

**General Chemistry** 

### Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LOD Limit of Detection
LOO Limit of Quantitation

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a substance

allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater than or

equal to the MDL.

#### **Inorganic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

#### **Metals Data Qualifiers**

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Organic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Additional Petroleum Hydrocarbon Specific Qualifiers**

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- ${\bf Z}$  The chromatographic fingerprint does not resemble a petroleum product.

## ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-	
North Carolina DEQ	certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



## Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



Client: ALS Environmental - US Service Request: K1910847

Project: HS19110796 Date Received: 11/16/2019

Sample Matrix: Ground Water

### **CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

### **Sample Receipt:**

Four ground water samples were received for analysis at ALS Environmental on 11/16/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

### **General Chemistry:**

No significant anomalies were noted with this analysis.

Approved by Kelley Avejoy

Date 12/02/2019



## **Chain of Custody**

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



K191084

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**

**SAMPLING STATE: Texas**  COC ID: 12645

### SUBCONTRACT TO:

ALS Environmental Kelso 1317 S. 13th Avenue

Kelso, WA 98626

+1 360 501 3312 Phone:

### **CUSTOMER INFORMATION:**

Company: ALS Houston

RJ Modashia Address:

10450 Stancliff Rd, Ste 210

Phone: +1 281 530 5656 Email: RJ.Modashia@alsglobal.com

Alternate Contact:

Jumoke M. Lawal

Email:

Contact:

jumoke.lawal@alsglobal.com

**INFORMATION:** 

INVOICE

Company: ALS Houston

Contact: Accounts Payable

10450 Stancliff Rd, Ste 210 Address:

Phone: +1 281 530 5656

Reference: HS19110796

TSR: Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS F	REQUESTED		DUE DATE
1,	HS19110796-01	04WW09-191113-Post-inj	GW	13 Nov 2019 13:35
	TOC Analysis v	with DOD Level IV/EQuIS APTIM ED	D	03 Dec 2019
2.	HS19110796-02	04WW05-191113-Post-inj	GW	13 Nov 2019 14:30
	TOC Analysis	with DOD Level IV/EQuIS APTIM ED	D	03 Dec 2019
3.	HS19110796-03	04WW07-191113-Post-inj	GW	13 Nov 2019 15:20
	TOC Analysis	with DOD Level IV/EQuIS APTIM ED	D	03 Dec 2019
4.	HS19110796-04	04WW010-191113-Post-inj	GW	13 Nov 2019 16:20
	TOC Analysis	with DOD Level IV/EQuIS APTIM ED	D	03 Dec 2019

Comments: Please analyze for the analysis listed above.

Send report to the emails shown above.

QC Level:

DOD IV (DoD Data Package)

Relinquished By:

Received By:

Cooler ID(s):

Date/Time:

Date/Time:

Temperature(s):



PCKL

nt AS 1005100 Service Request K19 10841 eived: 11 16 19 Opened: 11 16 19 By: P Unloaded: 11 16 19 By: P	
eived: 11/16/19 Opened: 11/16/19 By: P Unloaded: 11/16/19 By: P	
,	
amples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered	
amples were received in: (circle) Cooler Box Envelope Other NA	
Vere custody seals on coolers? NA (Y) N If yes, how many and where?	
f present, were custody seals intact?  Y  N  If present, were they signed and dated?  Y	N
Corrected Raw Corrected Corr. Thermometer Cooler/COCID Tracking Number Temp Cooler Temp Temp Blank Temp Blank Factor ID NA	A Filed
8-0.60.2 0.4 0.2 402 1251 0791 4844	1116
12645	
12642	
Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves	
Were custody papers properly filled out (ink, signed, etc.)?  NA	N
Were samples received in good condition (temperature, unbroken)? Indicate in the table below.	N
If applicable, tissue samples were received: Frozen Partially Thawed Thawed	
Were all sample labels complete (i.e analysis, preservation, etc.)?	N
Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA	N
Were appropriate bottles/containers and volumes received for the tests indicated?  NA	N
Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA (Y)	N
Were VOA vials received without headspace? Indicate in the table below.	N
Was C12/Res negative?	N
Sample ID on Bottle Sample ID on COC Identified by:	
Bottle Count Out of Head- Sample ID Bottle Type Temp space Broke pH Reagent Volume Added Number Initials	Time
	<del> </del>
	<u> </u>
otes, Discrepancies, & Resolutions:	
7/25/16 Pageo	r 

Page 10 of 102 Page 24 of 116



# **General Chemistry**

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Report

**Client:** ALS Environmental - US

Service Request: K1910847 **Date Collected:** 11/13/19 **Project:** HS19110796 **Sample Matrix:** Ground Water **Date Received:** 11/16/19

**Analysis Method:** SM 5310 C Units: mg/L **Prep Method:** Basis: NA None

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed Q
04WW09-191113-Post-inj	K1910847-001	680	10	4	2	20	11/23/19 22:55
04WW05-191113-Post-inj	K1910847-002	32.8	0.50	0.20	0.07	1	11/23/19 23:23
04WW07-191113-Post-inj	K1910847-003	35.3	0.50	0.20	0.07	1	11/23/19 23:51
04WW010-191113-Post-inj	K1910847-004	65	10	4	2	20	11/26/19 13:58
Method Blank	K1910847-MB1	ND U	0.50	0.20	0.07	1	11/23/19 17:14
Method Blank	K1910847-MB2	ND U	0.50	0.20	0.07	1	11/26/19 13:13

QA/QC Report

Client: ALS Environmental - US

Project HS19110796
Sample Matrix: Ground Water

**Analysis Method:** SM 5310 C **Prep Method:** None Service Request:K1910847

Date Collected: 11/13/19
Date Received: 11/16/19

Units:mg/L
Basis:NA

# Replicate Sample Summary Carbon, Total Organic

					Sample	Duplicate			RPD	Date
Sample Name:	Lab Code:	LOQ	LOD	MDL	Result	Result	Average	RPD	Limit	Analyzed
04WW09-191113-Post-inj	K1910847-001DUP	10	4	2	680	676	678	<1	10	11/23/19
04WW05-191113-Post-inj	K1910847-002DUP	0.50	0.20	0.07	32.8	32.4	32.6	1	10	11/23/19
04WW07-191113-Post-inj	K1910847-003DUP	0.50	0.20	0.07	35.3	34.8	35.0	1	10	11/23/19
04WW010-191113-Post-inj	K1910847-004DUP	10	4	2	65	65	64.9	<1	10	11/26/19

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: ALS Environmental - US

HS19110796

Service Request: Date Analyzed: K1910847

Project: Sample Matrix:

Ground Water

**Date Extracted:** 

11/23/19 NA

Lab Control Sample Summary Carbon, Total Organic

**Analysis Method:** 

SM 5310 C

Units:

mg/L

Prep Method:

None

**Basis:** 

NA

**Analysis Lot:** 

661076

			Spike		% Rec
Sample Name	Lab Code	Result	Amount	% Rec	Limits
Lab Control Sample	K1910847-LCS1	24.7	25.0	99	83-117

QA/QC Report

Client: ALS Environmental - US

HS19110796

Service Request: Date Analyzed: K1910847

Project: Sample Matrix:

**Prep Method:** 

Ground Water

**Date Extracted:** 

11/26/19 NA

**Lab Control Sample Summary** 

Carbon, Total Organic

**Analysis Method:** SM 5310 C

None

**Units:** 

mg/L

Basis:

NA

**Analysis Lot:** 

661464

			Spike		% Rec
Sample Name	Lab Code	Result	Amount	% Rec	Limits
Lab Control Sample	K1910847-LCS2	25.0	25.0	100	83-117

QA/QC Report

Client: ALS Environmental - US Service Request: K1910847

**Project:** HS19110796

# **Continuing Calibration Verification (CCV) Summary**

## Carbon, Total Organic

Analysis Method: SM 5310 C Units: mg/L

	Analysis		Date	True	Measured	Percent	Acceptance Limits
	Lot	Lab Code	Analyzed	Value	Value	Recovery	Acceptance Linits
CCV1	661076	KQ1917446-01	11/23/19 16:45	25.0	24.5	98	90-110
CCV2	661076	KQ1917446-02	11/23/19 21:01	25.0	24.6	98	90-110
CCV3	661076	KQ1917446-03	11/24/19 02:11	25.0	24.6	98	90-110
CCV4	661076	KQ1917446-04	11/24/19 06:54	25.0	24.2	97	90-110
CCV5	661464	KQ1917720-01	11/26/19 12:44	25.0	24.4	98	90-110
CCV6	661464	KQ1917720-02	11/26/19 17:01	25.0	24.8	99	90-110
CCV7	661464	KQ1917720-03	11/26/19 22:11	25.0	24.4	97	90-110
CCV8	661464	KQ1917720-04	11/27/19 02:54	25.0	24.6	98	90-110

Printed 12/02/19 5:22:30 PM

Superset Reference:19-0000531763 rev 00  $\,$ 

QA/QC Report

Client: ALS Environmental - US Service Request:K1910847

**Project:** HS19110796

# Continuing Calibration Blank (CCB) Summary Carbon, Total Organic

Analysis Method: SM 5310 C Units:mg/L

	Analysis		Date						
	Lot	Lab Code	Analyzed	LOQ	LOD	MDL	Result	Q	
CCB1	661076	KQ1917446-05	11/23/19 16:59	0.50	0.20	0.07	ND	U	
CCB2	661076	KQ1917446-06	11/23/19 21:15	0.50	0.20	0.07	ND	U	
CCB3	661076	KQ1917446-07	11/24/19 02:26	0.50	0.20	0.07	ND	U	
CCB4	661076	KQ1917446-08	11/24/19 07:09	0.50	0.20	0.07	ND	U	
CCB5	661464	KQ1917720-05	11/26/19 12:59	0.50	0.20	0.07	ND	U	
CCB6	661464	KQ1917720-06	11/26/19 17:15	0.50	0.20	0.07	ND	U	
CCB7	661464	KQ1917720-07	11/26/19 22:26	0.50	0.20	0.07	ND	U	
CCB8	661464	KQ1917720-08	11/27/19 03:09	0.50	0.20	0.07	ND	U	



# Raw Data

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



# **General Chemistry**

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Work	Original ( ) K/9/06/90, 796, 947, 86/929, 969, 11031, 11032, 110	1033, 10803,	1/628, 1/672, 1/647, 1/649, 975, 1/643
Tier:	I IV IV IL IL IV IV	Iv Iv	A M II II II
Date	Analyzed: 11/23/19		TOC:661076
Analy	Br 10	Run#	667079 DOC: 661079
Analy	vsis: 105/00c		
	DATA QUALITY REPORT INORGANICS		,
Expla	in any "no" responses to questions below, and any corrective actions in th	ne commen	ts section below.
1.	Is the method name and number correct and appropriate?		<b>Ø</b> s/no/NA
2.	Holding times met for all analyses and for all samples?		Øs/no/NA
3.	Are calculations correct?		<b>⊘</b> s/no/NA
4.	Is the reporting basis correct? (Dry Weight)		<b>∲</b> s/no/NA
5.	All quality control criteria met?	·	y <b>@</b> s/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?		yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?		€es/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?		<b>©</b> s/no/NA
9.	Are results for methods blanks all ND?		y∕9s/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)		yes/r@/NA
11.	Are all exceptions explained?		<b>Ø</b> s/no/NA
12.	Have all applicable service requests been reviewed?		(ves/no/NA
13.	Are all samples labeled correctly?		€s/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)		<b>®</b> s/no/NA
15.	Are detection limits and units reported correctly?		yes/no/NA
16.	Is the unused space on the benchsheet crossed out?		Øes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)		Øs/no/NA
СОМІ	MENTS: KI910847-4/4d, KI910903-2/2d, 803-4/4d Sent for CA	cary or	-3/4, oud
Final A	approved by: July Date: 11/2	16/19	DQREPORT
	/		

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined	KQ1917446-11 Carbor				KQ1917446-07 Carbon,						KQ1917446-01 Carbon,				,				r									K1910680-004 Carbo				Lah Code Target Angli
adjusted for Solids b	Carbon, Total Organic N	Carbon, Total Organic 1	Total Organic	Total Organic	Total Organic	Total Organic		Carbon, Total Organic	Total Organic	Total Organic	Total Organic	Total Organic		Carbon, Total Organic	Total Organic	Total Organic	Carbon, Total Organic 1		Carbon, Total Organic 1	Carbon, Total Organic 1	Carbon, Total Organic 1	Carbon, Total Organic 1	Carbon, Total Organic 1	Carbon, Total Organic 1	Carbon, Total Organic 1	Caroon, rotal Organic			1		Carbon, Total Organic	The s
ecause it has not yet been de	MS K1910796-004	LCS	MB	ССВ	ССВ	ССВ	ССВ	CCV	CCV	CCV	CCV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N'A	N/A	N/A	N/A	N/A	N/A	
termined.	Ground Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Water	Water	Water	Water	Water	Water	
	22.48 mg/L	24.74 mg/L	-0.04  mg/L	-0.04 mg/L	-0.01 mg/L	-0.04  mg/L	-0.04 mg/L	24.22 mg/L	24.56  mg/L	24.61 mg/L	24.53 mg/L	8.35  mg/L	10.75 mg/L	7.46 mg/L	7.78  mg/L	5.96 mg/L	5.98 mg/L	7.26 mg/L	61.27 mg/L	35.27 mg/L	32.82 mg/L	34.01 mg/L	0.20 mg/L	1.78 mg/L	0.88 mg/L	1.05 mg/L	0.17 mg/L	0.56  mg/L	0.63 mg/L	$0.30~\mathrm{mg/L}$	0.36 mg/L	
	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	Annaly signature.
	22.5 mg/L 1	24.7 mg/L 1	$0.50~\mathrm{mg/L}~\mathrm{U}$ 1	0.50 mg/L U 1	$0.50~\mathrm{mg/L}~\mathrm{U}~1$	0.50  mg/L  U  1	0.50 mg/L U 1	24.2 mg/L 1	24.6  mg/L 1	24.6 mg/L 1	24.5 mg/L 1	835 mg/L 100	1080 mg/L 100	746 mg/L 100	778 mg/L 100	596 mg/L 100	598 mg/L 100	726 mg/L 100	61.3 mg/L 1	35.3 mg/L 1	32.8 mg/L 1	680 mg/L 20	0.20 mg/L J 1	1.78 mg/L 1	0.88 mg/L 1	1.05 mg/L 1	0.17 mg/L J 1	0.56 mg/L 1	0.63 mg/L 1	0.30  mg/L  J  1	0.36 mg/L J 1	
11/26/19	0.07	0.07	0.07	0.07	0.07	0.07	0.07					7	7	7	7	7	7	7	0.07	0.07	0.07	2	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	MICCHOO!
19	0.50 89	0.50 99	0.50	0.50	0.50	0.50	0.50					50	50	50	50	50	50	50	0.50	0.50	0.50	10	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50 % Rec 2	
	11/23/19 20:46	11/23/19 17:29	11/23/19 17:14	11/24/19 07:09	11/24/19 02:26	11/23/19 21:15	11/23/19 16:59	11/24/19 06:54	11/24/19 02:11	11/23/19 21:01	11/23/19 16:45	11/24/19 04:34	11/24/19 04:06	11/24/19 03:38	11/24/19 03:10	11/24/19 01:43	11/24/19 01:15	11/24/19 00:47	11/24/19 00:19	11/23/19 23:51	11/23/19 23:23	11/23/19 22:55	11/23/19 20:18	11/23/19 22:27	11/23/19 21:59	11/23/19 21:30	11/23/19 19:50	11/23/19 19:22	11/23/19 18:54	11/23/19 18:26	% RSD Date Analyzed 11/23/19 17:58	
	Z	z	Z	z	z	Z	z	z	z	z	Z	Z	z	z	z I	Zag	e 35	Z of 21	7 116	Z 02	z	z	~	z	z	z	z	z	z	z	z <u>(C:</u>	

Printed 11/26/19 13:26

Instrument Name: K-TOC-03	ne: K-TOC-03		Analyst: BDITZLER	ZLER		Analysis Lot:	661076 M	ethod/1	Method/Testcode: SM 5510 C/10C 1	3310 C/1	00.1	_
Lah Code	Target Analytes	00	Parent Sa <u>mple</u>	Matrix	Raw Result S	Sample Amt.	Final Result Dil	MDL	POL % Rec	% RSD	-	<u>QC? Ti</u>
KQ1917446-12	Carbon, Total Organic		K1910680-001	Water	0.36 mg/L 0.26 mg/L	10 ml	0.36  mg/L J 1 $0.26  mg/L J$ 1	0.07	0.50	13*	11/23/19 18:26	<b>z</b> 2
KQ191/446-13	Carbon, Total Organic	5	N1/10000 002		0.61 2/1	10 30	0.61 ma/I 1	0.07	0.50	w	11/23/19 18:54	Z
KQ1917446-14	Carbon, Total Organic	DUP	K1910680-003	Water	0.01 mg/L	10 ml	$0.67 \mathrm{mg/L}$	0.07	0.50	17*	11/23/19 19:22	Z
KQ1917446-15	Carbon, Total Organic	DUP	K1910680-004	Water	0.6 / mg/L	10 III	1 1/2 - 0.0	0.07	0.50		11/23/19 19:50	z
KQ1917446-16	Carbon, Total Organic	DUP	K1910680-005	Water	0.20 mg/L	10 ml	0.20 mg/L J 1		0.50	14 5	11/23/19 21:59	z
KQ1917446-17	Carbon, Total Organic	DUP	K1910796-002	Ground	0.77 mg/L	10 ml	$0.77 \mathrm{mg/L}$	0.07	0.50	14:	11/23/17 21.57	2
KO1917446-18	Carbon, Total Organic	DUP	K1910796-001	Ground	1.14 mg/L	10 ml	1.14  mg/L 1	0.07	0.50	∞	11/23/19 21:30	z
KQ1917446-19	Carbon, Total Organic	DUP	K1910796-003	Ground Water	1.75 mg/L	10 ml	1.75 mg/L 1	0.07	0.50	_	11/23/19 22:27	Z
KQ1917446-20	Carbon, Total Organic	DUP	K1910796-004	Ground	0.21 mg/L	10 ml	0.21 mg/L J 1	0.07	0.50	6	11/23/19 20:18	Z
KO1917446-21	Carbon, Total Organic	DUP	K1910847-002	Ground	32.44 mg/L	10 ml	32.4 mg/L 1	0.07	0.50	_	11/23/19 23:23	Z
KQ1917446-22	Carbon, Total Organic	DUP	K1910847-001	Ground Water	33.78 mg/L	10 ml	676 mg/L 20	2	10	_	11/23/19 22:55	Z
KQ1917446-23	Carbon, Total Organic	DUP	K1910847-003	Ground	34.76 mg/L	10 ml	34.8 mg/L 1	0.07	0.50		11/23/19 23:51	: Z
KQ1917446-24	Carbon, Total Organic	DUP	K1910847-004	Ground	60.91 mg/L	10 ml	60.9  mg/L 1	0.07	0.50	<u>^</u>	11/24/19 00:19	7 116 of 1
KO1917446-25	Carbon, Total Organic	DUP	K1910861-001	Water	6.74 mg/L	10 ml	674 mg/L 100	7	50	7	11/24/19 00:47	of po
V01017446-26	Carhon Total Organic	DUP	K1910861-002	Water	5.82 mg/L	10 ml	582 mg/L 100	7	50	٠ س	11/24/19 01:13	e 30
KO1917446-27	Carbon, Total Organic	DUP	K1910861-003	Water	$5.90~\mathrm{mg/L}$	10 ml		1 ~	50	<u>.</u> –	11/24/17 01:45	z z Pag
KQ1917446-28	Carbon, Total Organic	DUP	K1910861-004	Water	7.76 mg/L	10 ml	776 mg/L 100		30	<u> </u>	11/24/17 05:10	z j
KO1917446-29	Carbon, Total Organic	DUP	K1910861-005	Water	7.41 mg/L	10 ml		1 ~	50 0		11/24/19 04:06	Z 2
KO1917446-30	Carbon, Total Organic	DUP	K1910861-006	Water	10.62 mg/L	10 ml		ı ~	<b>5</b> 0	<b>)</b> -	11/24/19 04:34	Z :
KQ1917446-31	Carbon, Total Organic	DUP	K1910861-007	Water	8.16 mg/L	10 ml	816 mg/L 100		00	,	11,27,17	DI

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Printed 11/26/19 13:26

Results Summary

5	Page -				1,126/19			# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.	r Solids becar	esult is not yet adjusted for	# indicates Final R
	2	11/24/17 10:50	0.50	0.07	0.50 mg/L ∪ 1	10 ml	-0.04 mg/L	Water	ganic CCB	Carbon, Total Organic	KQ1917447-08
ı	z	11/2/10 16:36	0.50			10 ml	0.23 mg/L	Water	ganic CCB	Carbon, Total Organic	KQ1917447-07
	z	11/24/19 12:06	0.50	0.07	0.30 mg/L 0 1		-0.04 mg/L		ganic CCB	Carbon, Total Organic	KQ1917447-06
	Z I	11/24/19 07:09	0.50	0.07	0.50 mg/L U 1		-0.01 mg/L			Carbon, Total Organic	KQ1917447-05
ı	z	11/24/19 02:26	0.40	0.07	0.50 /1 11 1		24.32 mg/s	water	ganic (CV	Carbon, Total Organic	KQ1917447-04
	z	11/24/19 16:22			24.3 mg/L 1	10 ml	24./3 mg/l			Carbon, Total Organic	KQ1917447-03
	z	11/24/19 11:51			24.7 mg/L 1	10 ml	24.22 mg/L			Carbon, Total Organic	KQ1917447-02
	Z	11/24/19 06:54			24.2 mg/L 1	10 ml	1/ 20 mg/l		1	Calcoll, rotal Olganic	MQ191/44/-01
	z	11/24/19 02:11			24.6  mg/L 1	10 ml	24.56 mg/L	Water	ganic CCV	Carbon Total Oro	VO1017447 01
	-	11/24/17 11.07	0.50	0.07	3.94 mg/L l	10 ml	3.94 mg/L	Ground	ganic N/A	Carbon, Total Organic	K1911033-009
	< 2	11/24/17 10:41	300	· /	7820 mg/L 1000	10 ml	7.82 mg/L	Ground Water	ganic N/A	Carbon, Total Organic	K1911033-008
	z	11/24/10 10:41					d d	Water		Carbon, 10tal Organic	K1911033-007
RIC	z	11/24/19 10:12	0.50	0.07	2.51 mg/L 1	10 ml	2 51 mg/L	Water	N/A		
GH1	7	11/24/19 09:44	0.50	0.07	4.37 mg/L 1	10 ml	4.37 mg/L	Ground	anic N/A	Carbon, Total Organic	K1911033-006
	ζ :	11/24/19 09:44	7 7		/91 mg/L 20	10 ml	39.57 mg/L	Ground Water	anic N/A	Carbon, Total Organic	K1911033-005
	z  	11/24/19 09:16	10	اد	1			Water			
JTI	age	11/24/19 08:48	0.50	0.07	2.38 mg/L 1	10 ml	2.38 mg/L	Ground	anic N/A	Carbon, Total Organic	K1911033-004
ON	37		0.00	0.07	2.80 mg/L 1	10 ml	2.80 mg/L	Ground Water	anic N/A	Carbon, Total Organic	K1911033-003
SII	z of 1	11/24/19 08:20	0 40	0 07			7.01 mg/c	Water	anic N/A	Carbon, Total Organic	K1911033-002
RIC	Z 16	11/24/19 07:52	0.50	0.07	2.81 mg/L 1	10 ml	2 &1 ma/I	Ground			
GHT	n2	11/24/19 07:24	0.50	0.07	3.66 mg/L 1	10 ml	3.66 mg/L	Ground Water	anic N/A	Carbon, Total Organic	K1911033-001
PA	₹ 2	11/24/10 10:00	0.50	0.07	1.99 mg/L 1	10 ml	1.99 mg/L	Ground Water	anic N/A	Carbon, Total Organic	K1911032-006
RTN	Z :	11/24/19 15:39	0.50	0 01	1830 mg/L 400	10 ml	4.63 mg/L	Ground Water	anic N/A	Carbon, Total Organic	K1911032-005
IE	z	11/24/19 15:11	200	30				walei			
R	Z	11/24/19 14:43	0.50	0.07	2.02 mg/L 1	10 ml	2.02 mg/L	Water Ground Water	inic N/A	Carbon, Total Organic	K1911032-004
	7	11/24/19 14:13	0.50	0.07	1.59 mg/L 1	10 ml	1.59  mg/L	Ground	ınic N/A	Carbon, Total Organic	K1911032-003
	<b>4</b> 2	11/24/19 13:47	0.50	0.07	1.55 mg/L 1	10 ml	1.55 mg/L	Ground Water	ınic N/A	Carbon, Total Organic	K1911032-002
		11/24/10 12:47			1.5 Tugur.	10 1111	1.54 mg/L	Water	nic N/A	Carbon, Total Organic	K1911032-001
	z	11/24/19 13:19	0.50	0.07	0.70 mg/L 1	10 ml	0.90 mg/L	Water		Carbon, Total Organic	K1911031-001
	Z	11/24/19 12:50	0.50	0 07	0 90 mg/I 1	10 2	1,2 m 00 0	Water		Carbon, 10tal Organic	K1910969-002
	Z	11/24/19 06:26	0.50	0.07	1.16 mg/L 1	10 ml	1.16 mg/L	Drinking	1	Carbon, roun orga	N1910727-005
	Z	11/24/19 05:58	0.50	0.07	1.91 mg/L 1	10 ml	1.91 mg/L	Water		Carbon, Fotal Organic	K1910929-003
	; z	11/24/19 05:30	0.50	0.07	0.79  mg/L 1	10 ml	0.79  mg/L	Water		Carbon, Total Organic	K1910929-001
	z	11/24/19 05:02		0.07	1.49 mg/L 1	10 ml	1.49 mg/L	Parent Sample		Target Analytes	Lab Code
	C? Ti	Date Analyzed	POL % Rec % RSD		Final Result Dil	omple Amt					
		10C1	Method/Testcode: SM 5310 C/10C 1	thod/Te	: 661077 M	Analysis Lot:		Analyst: BDITZLER		me: K-TOC-03	Instrument Name: K-TOC-03
		Ē ) H		, j							

Printed 11/26/19 13:34

Results Summary

Instrument Name: K-TOC-03	e: K-TOC-03		Analyst: BDITZLER	ZLER		Analysis Lot:	661077 I	Method/T	estcode: S	Method/Testcode: SM 5310 C/TOC T	OC T	
Lab Code		(A)	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result Dil	<u>MDL</u>	PQL % Rec 0.50	Rec % RSD	Date Analyzed 11/24/19 02:41	<u>QC? T:</u>
KQ1917447-10 KQ1917447-10	Carbon, Total Organic	LCS		Water	25.09 mg/L	10 ml	25.1 mg/L 1	0.07	0.50 100	0	11/24/19 02:55	Z
KQ1917447-11		SW	K1911033-009	Ground Water	26.11 mg/L	10 ml	52.2 mg/L 2	0.2	1.0 97	7	11/24/19 11:37	Z
KO1917447-12	Carbon, Total Organic	DUP	K1910929-001	Water	1.39 mg/L	10 ml	1.39  mg/L 1	0.07	0.50	7	11/24/19 05:02	Z
KQ1917447-13		DUP	K1910929-002	Water	0.88 mg/L	10 ml	0.88 mg/L 1	0.07	0.50	- <del>*</del>	11/24/19 05:30	z
KQ1917447-14	Carbon, Total Organic	DUP	K1910929-003	Water	1.94 mg/L	10 ml	1.94 mg/L 1	0.07	0.50	n 2	11/24/19 05:58	z z
KQ1917447-15		DUP	K1910969-002	Drinking Water	1.11 mg/L	10 ml	1.11 mg/L 1	0.07	0.50	ر. د	11/24/19 06:26	;
KQ1917447-16	Carbon, Total Organic	DUP	K1911031-001	Water	0.79 mg/L	10 ml	0.79 mg/L 1	0.07	0.50	13*	11/24/19 12:50	Z
KQ1917447-17	Carbon, Total Organic	DUP	K1911032-002	Ground	1.60 mg/L	10 ml	1.60 mg/L 1	0.07	0.50	3	11/24/19 13:47	Z
KQ1917447-18	Carbon, Total Organic	DUP	K1911032-001	Ground	1.42 mg/L	10 ml	1.42 mg/L 1	0.07	0.50	8	11/24/19 13:19	Z
KQ1917447-19	Carbon, Total Organic	DUP	K1911032-003	Ground Water	1.50 mg/L	10 ml	1.50 mg/L 1	0.07	0.50	5	11/24/19 14:15	Z
KQ1917447-20	Carbon, Total Organic	DUP	K1911032-004	Ground	1.87 mg/L	10 ml	1.87 mg/L 1	0.07	0.50	∞	11/24/19 14:43	Z T P
KQ1917447-21	Carbon, Total Organic	DUP	K1911032-005	Ground	4.83 mg/L	10 ml	1930 mg/L 400	30	200	4	11/24/19 15:11	Z 6 102
KQ1917447-22	Carbon, Total Organic	DUP	K1911032-006	Ground Water	1.82 mg/L	10 ml	1.82 mg/L 1	0.07	0.50	9	11/24/19 15:39	of 11
KQ1917447-23	Carbon, Total Organic	DUP	K1911033-001	Ground	3.65 mg/L	10 ml	3.65 mg/L 1	0.07	0.50	<u>^</u>	11/24/19 07:24	ze 38
KQ1917447-24	Carbon, Total Organic	DUP	K1911033-002	Ground Water	2.74 mg/L	10 ml	2.74 mg/L 1	0.07	0.50	ω	11/24/19 07:52	Pag D D
KQ1917447-25	Carbon, Total Organic	DUP	K1911033-003	Ground Water	2.76 mg/L	10 ml	2.76 mg/L 1	0.07	0.50	1	11/24/19 08:20	
KQ1917447-26	Carbon, Total Organic	DUP	K1911033-004	Ground Water	2.31 mg/L	10 ml	2.31 mg/L 1	0.07	0.50	ω	11/24/19 08:48	ZIGI
KQ1917447-27	Carbon, Total Organic	DUP	K1911033-005	Ground Water	38.77 mg/L	, 10 ml	775 mg/L 20	2	10	2	11/24/19 09:16	z
KQ1917447-28	Carbon, Total Organic	DUP	K1911033-006	Ground Water	3.18 mg/L	, 10 ml	3.18 mg/L 1	0.07	0.50	31*	11/24/19 09:44	z
KQ1917447-29	Carbon, Total Organic	DUP	K1911033-007	Ground	2.24 mg/L	, 10 ml	2.24 mg/L 1	0.07	0.50	11*	11/24/19 10:12	Z
KQ1917447-30	Carbon, Total Organic	DUP	K1911033-008	Ground	8.01 mg/L	. 10 ml	8010 mg/L 1000	0 70	500	2	11/24/19 10:41	z
KQ1917447-31	Carbon, Total Organic	DUP	K1911033-009	Ground Water	3.61 mg/L	10 ml	3.61 mg/L 1	0.07	0.50	9	11/24/19 11:09	z
												_

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

	KQ1917448-11 C	KQ1917448-10 C:	KQ1917448-09 Ca	KQ1917448-08 Ca	KQ1917448-07 Ca	KQ1917448-06 Ca	KQ1917448-05 Ce	KQ1917448-04 Ca	KQ1917448-03 Ca	KQ1917448-02 Ca	KQ1917448-01 Ca			K1911049-002 Ca			K1911047-001 Ca	K1911032-007 Ca		K1911028-004 Car					-				Lab Code 1ai	
	Carbon, Total Organic N	Carbon, Total Organic	Carbon, Total Organic C	Carbon, Total Organic C	Carbon, Total Organic C	Carbon, Total Organic C	Carbon, Total Organic C	Carbon, Total Organic C	Carbon, Total Organic C	Carbon, Total Organic C	Carbon, Total Organic C	Total Organic		Carbon, Total Organic N			Carbon, Total Organic N	Carbon, Total Organic N/A	Carbon, Total Organic N/A	Carbon, Total Organic N/A	Carbon, Total Organic N/A	Total Organic	Carbon, Total Organic N/A	Carbon, Total Organic N/A		Carbon, Total Organic N/A	Carbon, Total Organic N/A		Larget Analytes  Carbon Total Organic N/A	
	MB	ССВ	ССВ	ССВ	ССВ	ССВ	CCV	CCV	CCV	CCV	CCV	N/A	N/A	N/A	N/A	N/A	N/A	·											rarent Sample	Dougat Comple
	Ground Water	Ground Water	Ground Water	Ground	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Water	Water	Water	Water	Water	Water	Ground Water	Water	Water	Water		Water			Water	Water		Water '	
	0.14  mg/L	-0.04 mg/L	-0.04 mg/L	-0.04 mg/L	-0.04 mg/L	0.23 mg/L	24.12 mg/L	24.22 mg/L	24.63 mg/L	24.32 mg/L	24.73 mg/L	1.62 mg/L	11.75 mg/L	9.04 mg/L	4.21 mg/L	26.84 mg/L	3.61 mg/L	4.08 mg/L	1.44  mg/L	1.41 mg/L	0.73 mg/L	22.10 mg/L	0.89 mg/L	14.93 mg/L	39.95 mg/L	67.32 mg/L	21.79 mg/L	119.98 mg/L	43.43 mg/L	
	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	mnle Amt
	0.14 mg/L J	0.50 mg/L U	0.50 mg/L U	0.50 mg/L U	0.50 mg/L U	0.23 mg/L J	24.1 mg/L 1	24.2 mg/L 1	24.6 mg/L 1	24.3 mg/L 1	24.7 mg/L 1	1.62 mg/L 1	11.7  mg/L 1	181 mg/L 20	84 mg/L 20	2680 mg/L 100	361 mg/L 100	4.08 mg/L 1	1.44 mg/L 1	1.41 mg/L 1	0.73 mg/L 1	22.1 mg/L 1	0.89 mg/L 1	14.9 mg/L 1	39.9 mg/L 1	67.3 mg/L 1	21.8 mg/L 1	120 mg/L 1		Final Result Dil
	1 0.07	1 0.07	1 0.07	1 0.07	0.07	0.07	, ,					0.07	0.07				0 7	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07		MDL
3	0.50	0.50	1	0.50	0.50	0.50						0.50	0.50	10	10	50	50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		POL % Rec % RSD
	11/24/19 12:21	11/25/19 06:34	11/25/19 02:04	11/24/19 21:47	11/24/19 16:36	11/24/19 12:06	11/25/19 06:19	11/25/19 01:49	11/24/19 21:32	11/24/19 16:22	11/24/19 11:51	11/24/19 23:56	11/24/19 23:28	11/24/19 22:31	11/24/19 21:04	11/24/19 20:36	11/24/19 20:08	11/24/19 10:31	11/25/19 02:4/	11/25/19 02:18	11/25/19 01:21	11/25/19 00:52	11/25/19 00:24	11/24/19 19:40	11/24/19 19:11	11/24/19 18:43	11/24/19 18:15	11/24/19 17:47	11/24/19 17:19	
	z	Z					Z Z	; z	Z	<b>7</b>	age :	39 O	f 1	16 16	Z	: z	Z	-	< Z	; z	Z	Z	z	z	Z	z	Z	Z	z	0C? T

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Printed 11/26/19 13:39

Results Summary

RIGHT SOLUTIONS | RIGHT PARTNER

KQ1917448-31 KQ1917448-32	KQ1917448-29 KQ1917448-30	KQ1917448-26 KQ1917448-27 KQ1917448-27 KQ1917448-28	KQ1917448-23 KQ1917448-23 KQ1917448-24	KQ1917448-19 KQ1917448-20 KQ1917448-21	KQ1917448-16 KQ1917448-17 KQ1917448-18	KQ1917448-13 KQ1917448-14 KQ1917448-15	<u>Lab Code</u> KQ1917448-12	Instrumen
32	30	26	2 2 2 2	19 20 21	16 17 18	13 14 15	12	t Name
Carbon, Total Organic Carbon, Total Organic	Carbon, Total Organic Carbon, Total Organic	Carbon, Total Organic Carbon, Total Organic Carbon, Total Organic	Carbon, Total Organic Carbon, Total Organic Carbon, Total Organic	Carbon, Total Organic Carbon, Total Organic Carbon, Total Organic	Carbon, Total Organic Carbon, Total Organic Carbon, Total Organic	Carbon, Total Organic Carbon, Total Organic Carbon, Total Organic	Target Analytes Carbon, Total Organic	Instrument Name: K-TOC-03
DUP	DUP DUP	DUP DUP	DUP	DUP DUP DUP	DUP DUP DUP	MS DUP	3 <b>0</b>	
K1911049-003 K1911049-004	K1911049-001 K1911049-002	K1911032-007 K1911032-007 K1911047-001 K1911047-002	K1911028-004 K1911028-005 K1911028-001	K1910803-006 K1910803-001 K1911028-003	K1910803-003 K1910803-004 K1910803-005	K1911032-007 K1911049-002 K1910803-002	Parent Sample	Analyst: BDITZLER
Water Water	Water Water	Water Water Water	Water Water Water	Water Water Water	Water Water Water	Ground Water Water Water	Matrix Ground Water	TZLER
11.81 mg/L 1.50 mg/L	3.99 mg/L 8.98 mg/L	21.32 mg/L 4.18 mg/L 3.03 mg/L 26.76 mg/L	1.38 mg/L 1.42 mg/L 0.82 mg/L	13.68 mg/L 44.82 mg/L 0.66 mg/L	18.16 mg/L 69.64 mg/L 22.58 mg/L	26.35 mg/L 29.03 mg/L 122.07 mg/L	Raw Result 24.93 mg/L	
10 ml	10 ml	10 ml	10 ml 10 ml	10 ml 10 ml	10 ml 10 ml 10 ml	10 ml 10 ml 10 ml	Sample Amt. 10 ml	Analysis Lot:
11.8 mg/L 1 1.50 mg/L 1		303 mg/L 100	1.38 mg/L 1 1.42 mg/L 1 0.82 mg/L 1	13.7 mg/L 1 44.8 mg/L 1 0.66 mg/L 1	18.2 mg/L 1 69.6 mg/L 1 22.6 mg/L 1	52.7 mg/L 2 2900 mg/L 100 122 mg/L 1	Final Result Dil 24.9 mg/L 1	661078
0.07 0.07		0.07	0.07 0.07 0.07	0.07 0.07 0.07	0.07 0.07 0.07	0.2 ) 7 0.07	MDL 0.07	Metho
0.50		0.9		0.50 0.50 0.50 0.50	0.50 0.50 0.50 0.50	.2 1.0 7 50 0.50	L POL )7 0.50	d/Teste
ÒĊ	10	.50	000	0 0 0	0	0 97 0 109 0	L % Rec 0 100	nde: SI
∞ <u>^</u>	<u></u>	<u>^</u> 18*	9 1 2	9 11*	18* 3 56*	2	<u>se % RSD</u>	Method/Testcode: SM 5310 C/TOC T
11/24/19 23:28 11/24/19 23:56	11/24/19 21:04	11/24/19 16:51 11/24/19 20:08	11/25/19 02:18 11/25/19 02:47 11/25/19 00:24	11/24/19 19:40 11/24/19 17:19 11/25/19 01:21	11/24/19 18:15 11/24/19 18:43 11/24/19 19:11	11/24/19 16:07 11/24/19 22:59 11/24/19 17:47	Date Analyzed 11/24/19 12:36	JUL T
z z	Z Z Z Page 4	Z Z Z Z 10 of 116	zzz	zzz	zzz	zz z	<u>QC?</u> <u>T</u>	
RIGHT S	OLUTIO	NS   RIGH	PARTN	ER				

<sup>#</sup> indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

	KQ1917449-11	KQ1917449-10	KQ1917449-09	KQ1917449-08	KQ1917449-07	KQ1917449-06	KQ1917449-05	KQ1917449-04	KQ1917449-03	KQ1917449-02	KQ1917449-01	K1911043-002.R01	K1911043-001	K1910975-002	<u>Lab Code</u> K1910975-001	Instrument Name: K-TOC-03	
	Carbon, Dissolved Organic DUP (DOC)	Carbon, Dissolved Organic DUP (DOC)	Carbon, Dissolved Organic DUP (DOC)	Carbon, Dissolved Organic DUP (DOC)	Carbon, Dissolved Organic MS (DOC)	Carbon, Dissolved Organic LCS (DOC)	Carbon, Dissolved Organic MB (DOC)	Carbon, Dissolved Organic CCB (DOC)	Carbon, Dissolved Organic CCB (DOC)	Carbon, Dissolved Organic CCV (DOC)	Carbon, Dissolved Organic CCV (DOC)	Carbon, Dissolved Organic N/A (DOC)	Carbon, Dissolved Organic N/A (DOC)	Carbon, Dissolved Organic N/A (DOC)	Target Analytes QC Carbon, Dissolved Organic N/A (DOC)	1e: K-TOC-03	
	K1911043-002	K1911043-001	K1910975-002	K1910975-001	K1910975-001										Parent Sample	Analyst: BDITZLER	
	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Matrix Water	TZLER	
	-0.04 mg/L	11.71 mg/L	8.27 mg/L	0.72 mg/L	26.58 mg/L	24.22 mg/L	-0.04 mg/L	-0.04  mg/L	24.68 mg/L	24.12 mg/L	-0.04 mg/L	-0.04 mg/L	11.72 mg/L	7.97 mg/L	Raw Result S 0.89 mg/L		٠
	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	Sample Amt. 10 ml	Analysis Lot	
	500 mg/L U 1000	11700 mg/L 1000	82.7 mg/L 10	0.72 mg/L 1	26.6 mg/L 1	24.2 mg/L 1	0.50 mg/L U 1	0.50 mg/L U 1	24.7 mg/L 1	24.1 mg/L 1	-0.0368 mg/L 1	500 mg/L U 1000	11700 mg/L 1000	79.7 mg/L 10	Final Result Dil 0.89 mg/L 1	: 661079	
., /	70	70	0.7	0.07	0.07	0.07	0.07	0.07	0.07			70	70	0.7	MDL 0.07	[ethod/T	
1/2/10	500	500	5.0	0.50	0.50 103	0.50 97	0.50	0.50	0.50			500	500	5.0	POL % Rec	Method/Testcode: SM 5310 C/TOC D	
	NC	Δ	4	21*											% RSD	5310 C/	
	11/25/19 04:12	11/25/19 03:44	11/25/19 04:40	11/25/19 05:08	11/25/19 05:36	11/25/19 02:04	11/25/19 01:49	11/25/19 06:34	11/24/19 22:16	11/25/19 06:19	11/24/19 22:01	11/25/19 04:12	11/25/19 03:44	11/25/19 04:40	<b>Date Analyzed</b> 11/25/19 05:08	TOC D	
	z	<b>⊅</b> a	g <del>Z</del> 4 :	l o <del>f</del> 1	1 <del>7</del>	z	Z	Z	z	Z	Z	z	Z	Z	Z   OC.		
RIG	HT S	OLU	TIOI	NS   I	RIGH	IT P	ARTI	VER	ı			ł	,				

0.031 0.031	#DIV/0! #DIV/0!	OBSERVATIONS	13	0.031
0.000		STD Deviation	0.08537	0
0.000		AVERAGE	0.03675	0
0.000		UCL	0.12213	0
0.000		LCL	-0.04862	0
0.000				0
0.270				ABOVE
0.177		OBSERVATIONS	1	ABOVE
0.000		STD Deviation	#DIV/0!	0
0.000		AVERAGE	0.03100	0
0.000		UCL	#DIV/0!	0
0.000		LCL	#DIV/0!	0
0.000				0
				0
		OBSERVATIONS	0	0
		STD Deviation	#DIV/0!	0
		AVERAGE	#DIV/0!	0
		UCL	#DIV/0!	0
		LCL	#DIV/0!	0
				0
				0
		OBSERVATIONS	0	0
		STD Deviation	#DIV/0!	0
		AVERAGE	#DIV/0!	0
				0
				0
				0
				0
				0
				0

11/26/19 Fully

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
СВА	RB	1			0.0000	0	< 0.5	
2	ccv	1	24.567	0.0368	24.5300	24.52995	24.5	11/23/2019
3	ccb	1	0.000	0.0368	-0.0368	-0.03675	< 0.5	11/23/2019
4	mb	1	0.000	0.0368	-0.0368	-0.03675	< 0.5	11/23/2019
5	lcs	1	24.774	0.0368	24.7370	24.73695	24.7	11/23/2019
6	K1910680-001	1	0.394	0.0368	0.3575	0.35745	< 0.5	11/23/2019
7	K1910680-001	1	0.400	0.0368	0.3632	0.36315	< 0.5	11/23/2019
8	K1910680-002	1	0.336	0.0368	0.2995	0.29945	< 0.5	11/23/2019
9	K1910680-002	1	0.301	0.0368	0.2638	0.26375	< 0.5	11/23/2019
10	K1910680-003	1	0.665	0.0368	0.6281	0.62805	0.63	11/23/2019
11	K1910680-003	1	0.645	0.0368	0.6085	0.60845	0.6	11/23/2019
12	K1910680-004	1	0.598	0.0368	0.5611	0.56105	0.56	11/23/2019
13	K1910680-004	1	0.704	0.0368	0.6673	0.66725	0.67	11/23/2019
14	K1910680-005	1	0.209	0.0368	0.1722	0.17215	<0.5	11/23/2019
15	K1910680-005	1	0.237	0.0368	0.1999	0.19985	<0.5	11/23/2019
16	K1910796-004	1	0.235	0.0368	0.1982	0.19815	< 0.5	11/23/2019
17	K1910796-004	1	0.247	0.0368	0.2103	0.21025	<0.5	11/23/2019
18	KQ1917446-11	1	22.520	0.0368	22.4829	22.48285	22.5	11/23/2019
19	ccv	1	24.651	0.0368	24.6140	24.61395	24.6	11/23/2019
20	ccb	1	0.000	0.0368	-0.0368	-0.03675	< 0.5	11/23/2019
21	K1910796-001	1	1.085	0.0368	1.0481	1.04805	1.05	11/23/2019
22	K1910796-001	1	1.173	0.0368	1.1367	1.13665	1.1	11/23/2019
23	K1910796-002	1	0.917	0.0368	0.8806	0.88055	0.9	11/23/2019
24	K1910796-002	1	0.803	0.0368	0.7659	0.76585	0.77	11/23/2019
25	K1910796-003	1	1.814	0.0368	1.7772	1.77715	1.78	11/23/2019

LCS =24.0 ppm APG 4013 Lot #	#010615 (REF# 11-GEN-05-50N)
CCV = 25.0 ppm (Ref.#11-GEN-05-52	PE)
Spike: 0.05 ml of 5000 ppm stock>	10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

	27 Bap idates	time
Analyzed By: W	Date Analyzed 11/76/19	
Reviewed By:	Date Reviewed /1/26/19	

Revision 1, 2010 R:\WE/T\ANALYSES\TOCATEMBLATE\TOCwaterLIMS

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method: Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1910796-003	1	1.791	0.0368	1.7545	1.75445	1.75	11/23/2019
27	K1910847-001	20	34.048	0.0368	34.0116	680.231	680.23	11/23/2019
28	K1910847-001	20	33.816	0.0368	33.7788	675.575	675.6	11/23/2019
29	K1910847-002	1	32.858	0.0368	32.8211	32.82105	32.8	11/23/2019
30	K1910847-002	1	32.481	0.0368	32.4447	32.44465	32.4	11/23/2019
31	K1910847-003	1	35.302	0.0368	35.2656	35.26555	35.3	11/23/2019
32	K1910847-003	1	34.801	0.0368	34.7641	34.76405	34.8	11/23/2019
33	K1910847-004	1	61.309	0.0368	61.2726	61.27255	61.3	11/24/2019
34	K1910847-004	1	60.948	0.0368	60.9109	60.91085	60.9	11/24/2019
35	K1910861-001	100	7.292	0.0368	7.2555	725.545	725.5	11/24/2019
36	K1910861-001	100	6.781	0.0368	6.7447	674.465	674.5	11/24/2019
37	K1910861-002	100	6.013	0.0368	5.9758	597.575	597.6	11/24/2019
38	K1910861-002	100	5.852	0.0368	5.8151	581.505	581.5	11/24/2019
39	K1910861-003	100	5.998	0.0368	5.9616	596.155	596.2	11/24/2019
40	K1910861-003	100	5.934	0.0368	5.8973	589.725	589.7	11/24/2019
41	ccv	1	24.592	0.0368	24.5555	24.55545	24.6	11/24/2019
42	ccb	1	0.031	0.0368	-0.0058	-0.00575	<0.5	11/24/2019
43	K1910861-004	100	7.819	0.0368	7.7823	778.225	778.2	11/24/2019
44	K1910861-004	100	7.801	0.0368	7.7640	776.395	776.4	11/24/2019
45	K1910861-005	100	7.497	0.0368	7.4601	746.005	746.0	11/24/2019
46	K1910861-005	100	7.442	0.0368	7.4053	740.525	740.5	11/24/2019
47	K1910861-006	100	10.791	0.0368	10.7546	1075.455	1075.5	11/24/2019
48	K1910861-006	100	10.652	0.0368	10.6153	1061.525	1061.5	11/24/2019
49	K1910861-007	100	8.384	0.0368	8.3476	834.755	834.8	11/24/2019
50	K1910861-007	100	8.194	0.0368	8.1568	815.675	815.7	11/24/2019

Analyzed By: <i>W</i>	Date Analyzed (1/23//9
Reviewed By: Hum	Date Reviewed 11/26/19

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	24.259	0.0368	24.2227	24.22265	24.22	11/24/2019
52	ccb	1	0.000	0.0368	-0.0368	-0.03675	< 0.5	11/24/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0 /	<0.5	
56		1		0.0000	0.0000	0/	< 0.5	
57		1	2.02.000	0.0000	0.0000	0	< 0.5	
58		1		0.0000	0.0000	0	< 0.5	
59		1		0.0000	0.0000	0	< 0.5	
60		1		0.0000	0.0000	0	< 0.5	
61		1		0.0000	0,0000	0	< 0.5	
62		1		0.0000	0.0000	0	< 0.5	
63		1		0.0000	0.0000	0	< 0.5	
64		1		0.0000	0.0000	0	< 0.5	
65		1		0.0000	0.0000	0	< 0.5	
66		1		0.0000	0.0000	0	< 0.5	
67		1	/	0.0000	0.0000	0	< 0.5	
68		1		0.0000	0.0000	0	< 0.5	
69		1		0.0000	0.0000	0	< 0.5	
70		1		0.0000	0.0000	0	< 0.5	
71		1/		0.0000	0.0000	0	< 0.5	
72		1		0.0000	0.0000	0	< 0.5	
73		1		0.0000	0.0000	0	< 0.5	
74		1		0.0000	0.0000	0	< 0.5	
75		1		0.0000	0.0000	0	<0.5	

[A1 1 D ]	B. 4	Date Analyzed 11/22/19
Analyzed By:	3CV	Date Analyzed "/Diffe
Reviewed By:	Hull	Date Reviewed 11/26/19
		Page 45 of 116

Matrix: WATER

Analysis: Total Organic Carbon (WATER)

Method: Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	< 0.5	
2	ccv	1	24.592	0.0368	24.5555	24.55545	24.6	11/24/2019
3	ccb	1	0.031	0.0368	-0.0058	-0.00575	< 0.5	11/24/2019
4	mb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
5	lcs	1	25.123	0.0368	25.0866	25.08655	25.1	11/24/2019
6	K1910929-001	1	1.527	0.0368	1.4898	1.48975	1.49	11/24/2019
7	K1910929-001	1	1.429	0.0368	1.3918	1.39175	1.4	11/24/2019
8	K1910929-002	1	0.827	0.0368	0.7902	0.79015	1	11/24/2019
9	K1910929-002	1	0.919	0.0368	0.8820	0.88195	0.88	11/24/2019
10	K1910929-003	1	1.943	0.0368	1.9064	1.90635	1.91	11/24/2019
11	K1910929-003	1	1.976	0.0368	1.9391	1.93905	1.9	11/24/2019
12	K1910969-002	1	1.201	0.0368	1.1638	1.16375	1.16	11/24/2019
13	K1910969-002	1	1.147	0.0368	1.1100	1.10995	1.11	11/24/2019
14	ccv	1	24.259	0.0368	24.2227	24.22265	24.22	11/24/2019
15	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
16	K1911033-001	1	3.696	0.0368	3.6588	3.65875	3.7	11/24/2019
17	K1911033-001	1	3.684	0.0368	3.6472	3.64715	3.65	11/24/2019
18	K1911033-002	1	2.845	0.0368	2.8083	2.80825	2.8	11/24/2019
19	K1911033-002	1	2.775	0.0368	2.7385	2.73845	2.7	11/24/2019
20	K1911033-003	1	2.836	0.0368	2.7992	2.79915	2.80	11/24/2019
21	K1911033-003	1	2.795	0.0368	2.7582	2.75815	2.76	11/24/2019
22	K1911033-004	1	2.422	0.0368	2.3849	2.38485	2.4	11/24/2019
23	K1911033-004	1	2.347	0.0368	2.3104	2.31035	2.3	11/24/2019
24	K1911033-005	20	39.603	0.0368	39.5660	791.319	791.32	11/24/2019
25	K1911033-005	20	38.802	0.0368	38.7653	775.305	775.31	11/24/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

	auto	tillic
Date Analyzed	11/23/19	
Date Reviewed	11/26/19	
		Date Reviewed 1/9/1/4

Revision 1, 2010 R:\WETANALYSES\TOC\TEMPLATE\TOCwaterLIMS

## Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1911033-006	1	4.402	0.0368	4.3652	4.36515	4.37	11/24/2019
27	K1911033-006	1	3.221	0.0368	3.1843	3.18425	3.18	11/24/2019
28	K1911033-007	1	2.543	0.0368	2.5060	2.50595	2.5	11/24/2019
29	K1911033-007	1	2.273	0.0368	2.2363	2.23625	2.2	11/24/2019
30	K1911033-008	1000	7.861	0.0368	7.8241	7824.05	7824.1	11/24/2019
31	K1911033-008	1000	8.044	0.0368	8.0074	8007.35	8007.4	11/24/2019
32	K1911033-009	1	3.972	0.0368	3.9355	3.93545	3.9	11/24/2019
33	K1911033-009	1	3.647	0.0368	3.6099	3.60985	3.6	11/24/2019
34	KQ1917447-11	2	26.144	0.0368	26.1076	52.2151	52.2	11/24/2019
35	ccv	1	24.762	0.0368	24.7255	24.72545	24.7	11/24/2019
36	ccb	1	0.270	0.0368	0.2328	0.23275	< 0.5	11/24/2019
37	K1911031-001	1	0.934	0.0368	0.8970	0.89695	0.9	11/24/2019
38	K1911031-001	1	0.826	0.0368	0.7890	0.78895	0.8	11/24/2019
39	K1911032-001	1	1.580	0.0368	1.5437	1.54365	1.5	11/24/2019
40	K1911032-001	1	1.458	0.0368	1.4216	1.42155	1.4	11/24/2019
41	K1911032-002	1	1.585	0.0368	1.5487	1.54865	1.5	11/24/2019
42	K1911032-002	1	1.638	0.0368	1.6012	1.60115	1.6	11/24/2019
43	K1911032-003	1	1.623	0.0368	1.5864	1.58635	1.6	11/24/2019
44	K1911032-003	1	1.541	0.0368	1.5038	1.50375	1.5	11/24/2019
45	K1911032-004	1	2.055	0.0368	2.0187	2.01865	2.0	11/24/2019
46	K1911032-004	1	1.904	0.0368	1.8668	1.86675	1.9	11/24/2019
47	K1911032-005	400	4.671	0.0368	4.6341	1853.62	1853.6	11/24/2019
48	K1911032-005	400	4.867	0.0368	4.8300	1931.98	1932.0	11/24/2019
49	K1911032-006	1	2.028	0.0368	1.9917	1.99165	2.0	11/24/2019
50	K1911032-006	1	1.861	0.0368	1.8238	1.82375	1.8	11/24/2019

Analyzed By: 300		Date Analyzed	1/23/19
	- P		
Reviewed By:	the state of	Date Reviewed	11/26/19

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	24.356	0.0368	24.3194	24.31935	24.32	11/24/2019
52	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
53		11		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0 /	<0.5	
56		1		0.0000	0.0000	9	<0.5	
57		1		0.0000	0.0000	0	< 0.5	
58	44.4.1	1		0.0000	0.0000	0	< 0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000 /	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	< 0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1	/	0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	< 0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1/		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	< 0.5	
70		1		0.0000	0.0000	0	< 0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75	1	1		0.0000	0.0000	-0	<0.5	

alyzed By: W		Date Analyzed 11/23/19
	0	
viewed By:		Date Reviewed ///26 //9

Page 48 of 116

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
СВА	RB	1			0.0000	0	<0.5	
2	ccv	1	24.762	0.0368	24.7255	24.72545	24.7	11/24/2019
3	ccb	1	0.270	0.0368	0.2328	0.23275	<0.5	11/24/2019
4	mb	1	0.177	0.0368	0.1406	0.14055	< 0.5	11/24/2019
5	lcs	1	24.962	0.0368	24.9254	24.92535	24.9	11/24/2019
6	KQ1917448-13	2	26.387	0.0368	26.3507	52.7013	52.70	11/24/2019
7	ccv	1	24.356	0.0368	24.3194	24.31935	24.3	11/24/2019
8	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
9	K1911032-007	1	4.121	0.0368	4.0838	4.08375	4.08	11/24/2019
10	K1911032-007	1	4.215	0.0368	4.1781	4.17805	4.18	11/24/2019
11	K1910803-001	1	43.462	0.0368	43.4256	43.42555	43.4	11/24/2019
12	K1910803-001	1	44.855	0.0368	44.8186	44.81855	44.82	11/24/2019
13	K1910803-002	1	120.019	0.0368	119.9820	119.98195	119.98	11/24/2019
14	K1910803-002	1	122.103	0.0368	122.0664	122.06635	122.07	11/24/2019
15	K1910803-003	1	21.826	0.0368	21.7893	21.78925	21.8	11/24/2019
16	K1910803-003	1	18.201	0.0368	18.1638	18.16375	18.2	11/24/2019
17	K1910803-004	1	67.352	0.0368	67.3154	67.31535	67.32	11/24/2019
18	K1910803-004	1	69.680	0.0368	69.6435	69.64345	69.6	11/24/2019
19	K1910803-005	1	39.984	0.0368	39.9477	39.94765	39.9	11/24/2019
20	K1910803-005	1	22.612	0.0368	22.5756	22.57555	22.58	11/24/2019
21	K1910803-006	1	14.967	0.0368	14.9307	14.93065	14.93	11/24/2019
22	K1910803-006	1	13.722	0.0368	13.6848	13.68475	13.7	11/24/2019
23	K1911047-001	100	3.650	0.0368	3.6131	361.305	361.3	11/24/2019
24	K1911047-001	100	3.066	0.0368	3.0297	302.965	302.97	11/24/2019
25	K1911047-002	100	26.873	0.0368	26.8364	2683.635	2683.64	11/24/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref. #11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

			******
Analyzed By: W	Date Analyzed	11/23/19	
		, ,	
Reviewed By:	Date Reviewed	11/26/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\FEMPLATE\TOCwaterLIMS

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1911047-002	100	26.799	0.0368	26.7618	2676.175	2676.18	11/24/2019
27	K1911049-001	20	4.249	0.0368	4.2124	84.247	84.25	11/24/2019
28	K1911049-001	20	4.029	0.0368	3.9925	79.849	79.8	11/24/2019
29	ccv	1	24.669	0.0368	24.6320	24.63195	24.6	11/24/2019
30	ccb	1	0.000	0.0368	-0.0368	-0.03675	< 0.5	11/24/2019
31	K1911049-002	20	9.079	0.0368	9.0426	180.851	180.9	11/24/2019
32	K1911049-002	20	9.012	0.0368	8.9750	179.499	179.5	11/24/2019
33	KQ1917448-14	100	29.072	0.0368	29.0348	2903.475	2903.5	11/24/2019
34	K1911049-003	1	11.784	0.0368	11.7471	11.74705	11.7	11/24/2019
35	K1911049-003	1	11.848	0.0368	11.8116	11.81155	11.8	11/24/2019
36	K1911049-004	1	1.659	0.0368	1.6225	1.62245	1.6	11/24/2019
37	K1911049-004	1	1.541	0.0368	1.5039	1.50385	1.5	11/24/2019
38	K1911028-001	1	0.932	0.0368	0.8949	0.89485	0.9	11/25/2019
39	K1911028-001	1	0.858	0.0368	0.8217	0.82165	0.8	11/25/2019
40	K1911028-002	1	22.140	0.0368	22.1030	22.10295	22.1	11/25/2019
41	K1911028-002	1	21.561	0.0368	21.5239	21.52385	21.5	11/25/2019
42	K1911028-003	1	0.771	0.0368	0.7346	0.73455	0.7	11/25/2019
43	K1911028-003	1	0.696	0.0368	0.6592	0.65915	0.7	11/25/2019
44	ccv	1	24.254	0.0368	24.2171	24.21705	24.2	11/25/2019
45	ccb	1	0.000	0.0368	-0.0368	-0.03675	< 0.5	11/25/2019
46	K1911028-004	1	1.442	0.0368	1.4057	1.40565	1.4	11/25/2019
47	K1911028-004	1	1.412	0.0368	1.3753	1.37525	1.4	11/25/2019
48	K1911028-005	1	1.478	0.0368	1.4409	1.44085	1.4	11/25/2019
49	K1911028-005	1	1.461	0.0368	1.4244	1.42435	1.4	11/25/2019
50	ccv	1	24.161	0.0368	24.1246	24.12455	24.1	11/25/2019

Analyzed By: Date Analyzed | 1/23/19

Reviewed By: Date Reviewed 1/26/19

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccb	1	0.000	0.0368	-0.0368	-0.03675	< 0.5	11/25/2019
52		11		0:0000	0.0000	0	<0.5)	
53		1		0.0000	0.0000	0	<0,5	
54		1		0.0000	0.0000	0	<0.5	
55		1	,	0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0/	<0.5	
57		1		0.0000	0.0000	/0	< 0.5	
58		1		0.0000	0.0000	0	< 0.5	
59		1		0.0000	0.0000	0	< 0.5	
60		1		0.0000	0,0000	0	<0.5	
61		1		0.0000	0.0000	0	< 0.5	
62		1		0.0000	0.0000	0	< 0.5	
63		1		0.0000	0.0000	0	< 0.5	
64		1		9.0000	0.0000	0	< 0.5	
65		1		0.0000	0.0000	0	< 0.5	
66		1		0.0000	0.0000	0	< 0.5	
67		1		0.0000	0.0000	0	< 0.5	
68		1		0.0000	0.0000	0	< 0.5	
69		. 1		0.0000	0.0000	0	< 0.5	
70		1/		0.0000	0.0000	0	< 0.5	
71		/1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	< 0.5	
75		1		0.0000	0.0000	0	<0.5	

nalyzed By:   W	Date Analyzed 11/23/19
eviewed By: Hullan	Date Reviewed 11/26/19

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	mb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
3	lcs	1	24.714	0.0368	24.6774	24.67735	24.7	11/24/2019
4	ccv	1	24.254	0.0368	24.2171	24.21705	24.2	11/25/2019
5	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/25/2019
6	K1911043-001	1000	11.760	0.0368	11.7231	11723.05	11723.05	11/25/2019
7	K1911043-001	1000	11.743	0.0368	11.7062	11706.15	11706.2	11/25/2019
8	K1911043-002	1000	0.000	0.0368	-0.0368	-36.75	< 0.5	11/25/2019
9	K1911043-002	1000	0.000	0.0368	-0.0368	-36.75	< 0.5	11/25/2019
10	K1910975-002	10	8.002	0.0368	7.9657	79.6565	79.66	11/25/2019
11	K1910975-002	10	8.302	0.0368	8.2651	82.6505	82.7	11/25/2019
12	K1910975-001	1	0.922	0.0368	0.8852	0.88515	0.89	11/25/2019
13	K1910975-001	1	0.756	0.0368	0.7189	0.71885	0.72	11/25/2019
14	KQ1917449-07	1	26.613	0.0368	26.5764	26.57635	26.58	11/25/2019
15	ccv	1	24.161	0.0368	24.1246	24.12455	24.1	11/25/2019
16	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/25/2019
17		1		0.0000	0.0000	-0-	<del>&lt;0,5</del>	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	< 0.5	
23		1		0.0000	0.0000	0	< 0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GE	EN-05-51 <i>A</i>	1		
LCS =24.0 ppm APG 4013 Lot#	<sup>£</sup> 010615 (	REF# 11-GEN-05	-50N)	
CCV = 25.0 ppm (Ref.#11-GEN-05-52)	E)		,	
Spike: 0.05 ml of 5000 ppm stock> 1	10.0 ml	=25.0 ppm x Dilu	ution Factor (Ref.#	11-GEN-05-51
				W. W. W. W. W. W. W. W. W. W. W. W. W. W
			date	time
Analyzed By: W		Date Analyzed	11/23/19	
Designation of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the				
Reviewed By: Thury		Date Reviewed	11/26/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\FEMPLATE\TOCwaterLIMS

TOC:661076, 661077, 661078 DOC: 661079

**Schedule: 11232019** 

Version: 8

Instrument: Fusion1

Last Saved by: Fusion1 (Fusion1)

Last Saved on: 2019/11/23 17:20 - Saturday

	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1		Reac
(Clean)	Clean	Clean		1		Read
(Clean)	Clean	Clean		1	True	Read
(Blank)	Blank	Reagent/Acid Blank		1	True	Read
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Read
В		[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Read
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Read
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1		Read
С	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Read
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1		Read
3	Sample	K1910680-001.01		2		Read
4	Sample	K1910680-002.01	CAS_salt_010711 (CAS_salt_010711)	2		Read
5	Sample	K1910680-003.01	CAS_salt_010711 (CAS_salt_010711)	2		Read
6	Sample	K1910680-004.01		2		Read
7	Sample	K1910680-005.03		2		Read
8	Sample	K1910796-004.01		2	POSSIBLE AND AND AND AND AND AND AND AND AND AND	Ready
9	Sample	K1910796-004.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	**********	Ready
В	Check Standard		CAS_salt_010711 (CAS_salt_010711)	1	MACONOMISCO PARTICIPATOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRACTOR POR CONTRAC	Ready
D	Check Standard	- Andrews - Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control o	CAS_salt_010711 (CAS_salt_010711)	1	and the second second	
10	Sample	K1910796-001,01		£	SANTAN CONTRACTOR	Ready
11	Sample	K1910796-002.01		2	think property of the contraction of the	Ready
12	Sample	K1910796-003.01		2	rinopolitripronomona.	Ready
13	Sample			2	negative section of the section of	Ready
14	CONTROL OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE	K1910847-001.01 20x		2	shiri-i-i-i-manabeseus	Ready
1 <del>4</del> 15	Sample	K1910847-002.01		2	New York of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Particular Control of the Pa	Ready
	Sample	K1910847-003.01				Ready
16	Sample	K1910847-004.01		2	True	Ready
17	Sample	K1910861-001.01 100x				Ready
18	Sample	K1910861-002.01 100x		2	True	Ready
19	Sample	K1910861-003.01 100x		2	True	Ready
3		[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)			Ready
)	Check Standard	[TOC] CCB [0 ppm]		1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)			Ready
)	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1910861-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1910861-005.01 100x	CAS_salt_010711 (CAS_salt_010711)			Ready
23	Sample	K1910861-006.01 100x	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s			Ready
24	Sample	K1910861-007.01 100x				Ready
25	Sample	K1910929-001.01				Ready
26	Sample	K1910929-002.01	the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of			Ready
:7	Sample	K1910929-003.01		entre entre entre entre 🌬 en	(technological)	Ready
-	Sample	K1910969-002.01	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	and the second second second second	and the second second second	Ready
	The bottom of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	armanananan dan	novement verse sign	Ready
)	Check Standard			· · · · · · · · · · · · · · · · · · ·	and the second	Ready
				oronomonomonia de la compania de la compania de la compania de la compania de la compania de la compania de la	manamanana	Ready
	Sample	K1911033-002.03		and the second second second	marrow and the	and the second second second
<del>namenamental</del>	the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s				mmaanaaady	Ready
					announce of	Ready
americano antico de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio del la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio del la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de la companio de	PRODUCTION CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR					Ready
			CAS_salt_010711 (CAS_salt_010711)		and the second	Ready
····					reconsensation de	Ready
orania de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya			CAS_salt_010711 (CAS_salt_010711)	and the second second second	·····	Ready
	19090ที่ 2505099 กับเดิมสายสมาชิง (1950 การเกลา (ครายสายสายสายสายสายสายสายสายสายสายสายสายสา		CAS_salt_010711 (CAS_salt_010711)	···	an a commence of the	Ready
NAMES OF TAXABLE PARTY.	CONTRACTOR OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF		CAS_salt_010711 (CAS_salt_010711)			Ready
				1 -	True	Ready
1	Jneck Standard	[TOC] CCV 25 ppm [25 ppm]   2019 09:09:30	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

# **Schedule: 11232019**

	Sample Type	Sample ID	Method ID (Calibration ID)	Reps		State
D	\$0000000000000000000000000000000000000	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1911031-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1911032-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1911032-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1911032-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1911032-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1911032-005.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1911032-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1911032-007.03 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
В	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1911032-007.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1910803-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1910803-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1910803-003.01	CAS_salt_010711 (CAS_salt_010711)	2		Ready
52	Sample	K1910803-004.01	CAS_salt_010711 (CAS_salt_010711)	2		Ready
53	Sample	K1910803-005.01	CAS_salt_010711 (CAS_salt_010711)	2	September 1 - September 1	Ready
54	Sample	K1910803-006.01	CAS_salt_010711 (CAS_salt_010711)	2	STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY	Ready
55	Sample	K1911047-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	***************************************	Ready
56	Sample	K1911047-002.01 100x	CAS salt 010711 (CAS salt 010711)	2	Designation of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of	Ready
57	Sample	K1911049-001.01 20x	CAS_salt_010711 (CAS_salt_010711)	2		Ready
PROGRAMMAN CONTRACTOR OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAMMAN AND ADDRESS OF THE PROGRAM		[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	PROPERTY AND PROPERTY.	Ready
management of the second		[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	-	Ready
nersia esta esta esta esta esta esta esta est	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	terror and a second second second second second second second second second second second second second second	Ready
	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	*****	Ready
eroetericionista concerno de	Sample	K1911049-002.01 20x	CAS_salt_010711 (CAS_salt_010711)	2		Ready
	Sample	K1911049-002.01 ms 100x	CAS_salt_010711 (CAS_salt_010711)	1	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th	Ready
grange and a second and a second	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	ethilikehindren mikrokelo	Ready
	Sample	K1911049-003.01	CAS_salt_010711 (CAS_salt_010711)	2	voice and a service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service o	Ready
<u>englikenti manimumini d</u>	Sample	K1911049-004.01	CAS_salt_010711 (CAS_salt_010711)	2	redesign the section	Ready
***************************************	Sample	K1911028-001.04	CAS_salt_010711 (CAS_salt_010711)	2	*******	Ready
	Sample	K1911028-002.04	CAS_salt_010711 (CAS_salt_010711)	2	laine investigation access	Ready
-	Sample	K1911028-003.04	CAS_salt_010711 (CAS_salt_010711)	2	***********	Ready
	CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	-	Ready
	na fisika da perior melangi mengangan ana menangan kanangan perior perior perior perior perior perior perior p	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
orane commence commence and a second		K1911028-004.04	CAS_salt_010711 (CAS_salt_010711)	2	<del>deland</del> eservantelaki	Ready
		K1911028-005 <u>.04</u>	CAS salt 010711 (CAS salt 010711)	2		Ready
	restrationaries because the best income in the description and open interest consequences of	FB 11/21/19	CAS_salt_010711 (CAS_salt_010711)	1		Ready
	Sample	FB 11/22/19	CAS_salt_010711 (CAS_salt_010711)	1		Ready
				££.		Ready
	Sample	K1911043-002.01 doc 1000x		2		Ready
erconocciones en construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de la construction de	ativity and a first control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the c	K1910975-002.01 doc 10x		åà-		Ready
-	Sample	K1910975-001.01 doc		granisa and a second	Settlement or Personal Control	Ready
·	war an announce and a second and a second and a second and a second and a second and a second and a second and	K1910975-001.01 ms doc	CAS_salt_010711 (CAS_salt_010711)	Barraine reconstructive condition		Ready
and the second second		RB	CAS_salt_010711 (CAS_salt_010711) CAS_salt_010711 (CAS_salt_010711)	and the second second	personal security and	Ready
unancerana and a second		PORTORES (A PORTOR DO TOTO CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTROL DE CONTRO	AND CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACT		anno con concessorad	Ready
Acres de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la c			CAS_salt_010711 (CAS_salt_010711) CAS_salt_010711 (CAS_salt_010711)		Water to the same and the same and	Ready
-		[. Co] Cob [o ppiii]	CAS_Sait_010/11 (CAS_Sait_010/11)		False	i veauy

# Fusion Report - 11232019 Saturday, November 23, 2019 02:23 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History) Printed on 2019/11/26 09:09 -Tuesday

# **Report Summary Information**

Company Location:

Gen Chem Lab

Schedule Name:

11232019

Engine

1.1.5.1

Instrument Name:

Fusion1

Version: Firmware

1.2.0696

Report Version:

1 of 1

Version:

Connection: RS232 COM1

11/26/19 Auduy

Report Creation by Operators (schedule

Sample Type: Clean

Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4)

Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7)

Fusion1 (Fusion1) (v8)

Comment:

version):

**Report Results** 

From Schedule Version 2

	Pos A	nalysis Type	Sample II	)	Star	t Time
* (	clean)		Clean		2019/1	1/23 14:23
Rep	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.02	17.16	4.14	49.59	05:26

4 TC Close 440 544			1 C Clean	7.50	10.99	3.49	49.85	07:19
4 TC Clean 1.40 5.11 3.71 49.85 07:0		ა		,	5.61	3.60	49.88	07:04
		4	TC Clean	1.40	5.11	3.71	49.85	07:02
	~~~		***************************************	***************************************	and deviation of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of t			

Samp	le ly	/pe	: CI	ean

From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
•	(clean)		Clean	2019/11/23 14:55

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.72	15.29	3.57	49.65	05:23

Page 55 of 116

•	2	TC Clean	3.64	7.23	3.59	49.87	07:17
	3	TC Clean	1.59	5.34	3.74	49.87	07:02
	4	TC Clean	1.19	4.93	3.74	49.91	07:02

	Pos		ıalysis Гуре	Start	Start Time							
•	(clean)			Clean	2019/11	/23 15:34						
Re #	Analy	Base Analysis Type Adjusted (Abs)		Analysis Adjus		Analysis Adjusted NDIR (Abs		NDIR (Abs)	Baseline (Abs)	Pressure (psig) Run		
1	IC CI	ean	11.48	15.13	3.65	49.68	05:24					
2	TC CI	ean	3.90	7.40	3.51	50.02	04:07					
3	TC CI	ean	1.55	5.07	3.52	50.06	03:50					
4	TC CI	ean	1.18	4.74	3.56	50.06	03:48					

	Pos A	nalysis Type	Sample II	)	Start	Start Time			
*	(blank)		Reagent/Acid I	Blank	2019/11/	23 15:56			
Rep	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time			
1	IC Clean	11.31	14.93	3.62	49.60	05:13			
2	TC Clean	3.39	7.01	3.62	50.04	04:06			
3	TC Clean	1.31	4.93	3.61	50.06	03:48			
4	TC Clean	1.45	4.95	3.50	50.05	03:47			
						Marinial Arabina Arabina Arabina Arabina di Angalangan da Angalangan da Angalangan da Angalangan da Angalangan			
5	Reagent Blank	4.02	7.68	3.66	50.07	05:09			
6	Acid Blank	1.14	4.93	3.79	49.74	05:31			

Samp	ole Type: Sample							From	Schedule V	ersion (
P	os Analysis Type	Sample ID	Result (p	opmC)		Dev. mC)	RSI	D Start Time		
• [	TOC TOC	RB	0.032	24 ppm	0.0000 ppm		0.000	0% 2	2019/11/23 16	
Rep #	Base Analysis Type	ppm	hā	Adjust (Abs		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0324	0.3238		9.00		12.79	3.79	50.19	10:34
	<u>Dilution</u>	Blank Contribution	<u>M</u> e	ethod		Calibra	tion			

1:10

(TC) 8.7842 (IC) (v1323)

CAS\_salt\_010711 (v4)

CAS\_salt\_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
***************************************	В	TOC	25.0000	1:2	[]	0 / infinity ( NA / NA )	24.5667 ppm (PASS)	0.0000 ppm	0%	2019/11/23 16:45

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
В	TOC	25 ppm	1	24.5667	245.6673	176.22	180.09	3.87	50.19	10:30

**Completion State** Success - Criteria

**Success Action** 

Method

Calibration

STD Conc - Pos B

CAS\_salt\_010711

met.

Do Nothing

CAS\_salt\_010711 (v4)

(v30)

50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity ( NA / NA )	0.0000 ppm	0.0000 ppm	0%	2019/11/23 16:59
L							(PASS)			

Pos	Base Analysis Type	ID	Rep #	ppm	hā	Adjusted	NDIR	Baseline	Pressure	Run Time	**************************************
D	TOC	0 ppm	1	0.0000	0.0000	7.20	10.93	3.73	50.19	10:29	index of the same

**Completion State** Success - Criteria

met.

Success Action Do Nothing

Method CAS salt 010711 (v4)

Calibration CAS salt 010711 (v30)

STD Conc - Pos D

0 ppmC

Sample Type: Sample

From Schedule Version 7

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/23 17:14

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.91	9.77	3.86	50.22	10:30

**Dilution** 1:10

Blank Contribution

<u>Method</u> CAS\_salt 010711

Calibration CAS salt 010711

(TC) 8.7842 (IC) (v1323)

(v4)

(v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

Pos BAT Concentration Dil Sample ID Result Std. Dev. **RSD Start Time** Min / Max

Page 57 of 116

			(ppm)			(% de	ev)						
•	С	TOC	25.0000	1:1	[TOC] LCS [24 ppm]	.0 0 / infi ( NA / I	, ,	24.7 p (PA:	pm	0.00 pr	00 0% om	2019/11/23	3 17:29
Po	s	Base Analysis Type	ID	Rep	ppm	þg	Ad	justed		NDIR	Baseline	Pressure	Run Time
С	; ]	тос	25.0 ppm	1	24.7737	247.7372		177.62		181.34	3.71	50.22	10:32
_		npletion S ccess - Crit met.		ess <i>A</i> Noth	Action ning CA	Method AS_salt_01 (v4)		-	 S_sa	<u>bration</u> alt_010711 √30)		Conc - Pos 25 ppmC	s C

Sa	mple	e Type: Sample								From	Schedule V	ersion
	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSI	<b>o</b>	Start Time	
•	2	тос	ICS		0.05	515 ppm	0.0	0000 ppm	0.000	0% 20	19/11/23 17	':43
	ep # /	Base Analysis Type	ppm	I	μg	Adju (At		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.0515		0.5154		9.13		12.75	3.61	50.28	10:32
		Dilution 1:10	Blank Contrib (TC) 8.7842 (v1323)		CAS_s	l <u>ethod</u> salt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID		Result (	ppmC)		Dev.	RSE	<b>)</b>	Start Time	
•	3	тос	K1910680-001	.01	0.39	71 ppm	0.0	0041 ppm	1.0200	0% 20 <sup>-</sup>	19/11/23 17	:58
Re #	ep /	Base Analysis Type	ppm	ŀ	1g	Adjus (Ab		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time
1	1	TOC	0.3942		3.9420		11.46		15.12	3.66	50.22	10:23
2	2	TOC	0.3999		3.9995		11.50		15.20	3.70	50.24	10:31
		Dilution 1:10	Blank Contrib (TC) 8.7842 (v1323)		CAS_s	<u>ethod</u> alt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v30	01071	1		
	•••••	Analysis					C44	Dev.			***************************************	

		1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_0107 (v4)	11 CAS_salt (v3	010711	
	Pos	s Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	4	TOC	K1910680-002.01	0.3183 ppm	0.0252 ppm	7.9200%	2019/11/23 18:26
R	ер	Base	mag	ua Adjus	sted NDIR (	Abs) B	aseline Pressure Run

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3362	3.3616	11.07	14.56	3.49	50.27	10:28
2	TOC	0.3005	3.0051	10.82	14.32	3.50	50.24	10:27
						······································		

<u></u>	ilution	Blank Contribution	<u>Method</u>	<u>Calibra</u>	<u>ation</u>
	1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_01071 (v4)	1 CAS_salt_ (v3	
Pos	Analysis	Sample ID	Pesult (nnmC)	Std. Dev.	PSD

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
•	5	TOC	K1910680-003.01	0.6550 ppm	0.0139 ppm	2.1200%	2019/11/23 18:54	

***************************************	Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.6648	6.6483	13.30	17.08	3.79	50.23	10:28
	2	TOC	0.6452	6.4524	13.16	16.93	3.77	50.22	10:24

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC) (V1323)
 CAS\_salt\_010711 (V30)
 CAS\_salt\_010711 (V30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
•	6	TOC	K1910680-004.01	0.6509 ppm	0.0751 ppm	11.5400%	2019/11/23 19:22	

	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.5978	5.9780	12.84	16.55	3.71	50.24	10:25
-	2	TOC	0.7040	7.0402	13.56	17.06	3.50	50.21	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	7	TOC	K1910680-005.03	0.2227 ppm	0.0196 ppm	8.7900%	2019/11/23 19:50

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2089	2.0887	10.20	13.79	3.59	50.22	10:27
2	TOC	0.2366	2.3657	10.39	13.99	3.60	50.18	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	8	TOC	K1910796-004.01	0.2410 ppm	0.0085 ppm	3.5400%	2019/11/23 20:18

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2349	2.3495	10.38	14.07	3.70	50.17	10:30
2	TOC	0.2470	2.4703	10.46	14.10	3.64	50.21	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
Ľ	9	TOC	K1910796-004.01 ms	22.5196 ppm	0.0000 ppm	0.0000%	2019/11/23 20:46

١,	ep ¥	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	22.5196	225.1962	161.65	165.26	3.61	50.18	10:32

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)		Result	Std. Dev	. RSD	Start Time	
•	В	ТОС	25.0000	1:2	[TOC] CCV 29 ppm [25 ppm		,	24.650 ppi (PAS	n pp	00 0% om	2019/11/23	3 21:01
P	1	Base nalysis Type	i ID	Rep #	ppm	þg	Adj	justed	NDIR	Baseline	Pressure	Run Time
E	3	TOC	25 ppm	1	24.6507	246.5070		176.79	180.47	3.68	50.17	10:32
		oletion ess - C met.		ess <i>A</i> o Noth	Action ling CA	Method AS_salt_01 (v4)			alibration salt_010711 (v30)		Conc - Pos 50 ppmC	s B

aı	mple	Type: (	Check Standard -	> CC	В						From	Schedule V	ersion		
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / (% d		Result	S	Std. Dev.	RSD	Start Ti	me		
•	D	TOC	TOC		0.0000	1:1	[TOC] CCB [0 ppm]	0 / inf ( NA /		0.000 pp (PAS	m	0.0000 ppn	- 1	2019/11/23	3 21:15
Po	os A	Base nalysis Type	ID	Rep	ppm	μg	Adj	usted	ND	DIR E	Baseline	Pressure	Run Time		
Ε	)	тос	0 ppm	1	0.0000	0.0000		7.20		10.96	3.76	50.20	10:30		
9	Com	oletion	State Succ	ess A	Action	Method		<u>C:</u>	alibra	ation	STD	Conc - Pos	s D		
	Succ	ess - Cr met.	riteria Do	Noth	ing CA	S_salt_01 (v4)	0711	CAS	_salt_ (v30	_010711 D)		0 ppmC			

<u>a</u>	mp	le T	<b>Type</b> : Sample								From	Schedule V	ersion
	Po	os	Analysis Type	Sample ID	international company of the state of the st	Result (	ppmC)		. Dev. omC)	RSI	)	Start Time	
•	10	0	тос	K1910796-001	01	1.12	91 ppm	0.0626 ppm 5.540		5.5400	2019/11/23 2		1:30
	ep #	Base Analysis Type		pe ppm		þg		sted s)	NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time
	1		TOC	1.0848		10.8484		16.15		19.70	3.56	50.19	10:28
2	2		тос	1.1734		11.7338	16.75			20.53	3.78	50.20	10:30
		<u>D</u>	<u>Pilution</u> 1:10	Blank Contrib		_	ethod alt_0107	11	Calibra CAS_salt_		1		
				(v1323)	( - )		(v4)		(v30				
	Po	s	Analysis Type	Sample ID	Result (ppm0			Std. Dev. (ppmC)		RSD		Start Time	
•	1	1	тос	K1910796-002.	01	0.86	00 ppm	0.0	0811 ppm	9.4400	)% 20	19/11/23 21	:59
Re	ep #	An	Base nalysis Type	ppm		µg	Adjus (Ab		NDIR (A	vps)	Baseline (Abs)	Pressure (psig)	Run Time
-	1		TOC	0.9173	~~~~~~	9.1734		15.01	***************************************	18.72	3.71	50.17	10:29

2	:	TOC	0.8026		8.0257	union-delication (	14.23		17.85	3.62	50.21	10:2
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)		· ·	<u>flethod</u> salt_0107 (v4)	711	Calibra CAS_salt_ (v3	01071	1		
	Pos	Analysis Type	Sample ID		Result	(ppmC)		l. Dev. pmC)	RS	D	Start Time	······································
•	12	тос	K1910796-003	.01	1.8	026 ppm	0.	.0160 ppm	0.890	0% 20	19/11/23 22	2:27
Re #		Base Analysis Type	ppm		µg	Adju (Al		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	1.8139		18.1393		21.10		24.61	3.52	50.15	10:2
2		TOC	1.7912		17.9124		20.94		24.64	3.70	50.17	10:2
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)			<u>lethod</u> salt_0107 (v4)	'11	Calibra CAS_salt_ (v30	01071	1		
4	Pos	Analysis Type	Sample ID		Result (	ppmC)	(p <sub>l</sub>	l. Dev. pmC)	RSI	<b>D</b>	Start Time	•
•	13	TOC	K1910847-001.01	l 20x	33.93	319 ppm	0.	1646 ppm	0.490	0% 20	19/11/23 22	2:55
Re #		Base Inalysis Type	ppm		hā	Adju (At		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	34.0483	-	340.4830		239.90	2	243.51	3.61	50.13	10:2
2		TOC	33.8155		338.1553	***************************************	238.32	2	242.06	3.74	50.17	10:27
	<u> </u>	Dilution 1:10	Blank Contrib (TC) 8.7842 (v1323)		_	lethod salt_0107 (v4)		Calibra CAS_salt_ (v30	01071	1		
-	Pos	Analysis Type	Sample ID		Result (		(pp	. Dev. omC)	RSI		Start Time	***************************************
<u>*                                    </u>	14	TOC	K1910847-002.	01	32.66	696 ppm		0.2662 ppm		0% 20	19/11/23 23	3:23
Re <sub>l</sub> #		Base nalysis Type	ppm		1ā	Adju (Ab	os)	NDIR (A		Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	32.8578	****	328.5780		231.82		35.44	3.62	50.13	
2		TOC	32.4814	3	324.8140	erreterioristationale manneau	229.27	2	32.83	3.57	50.16	10:25
	<u>]</u>	Dilution 1:10	Blank Contrib (TC) 8.7842 ( (v1323)		· · · · · · · · · · · · · · · · · · ·	<u>ethod</u> alt_0107 (v4)	11	Calibra CAS_salt_ (v30	01071	1		
F	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSE	)	Start Time	
•	15	тос	K1910847-003.	01	35.05	15 ppm	0.3	3546 ppm	1.0100	0% 20	19/11/23 23	:51
Rep #		Base nalysis Type	ppm	,	ıā	Adjus (Ab		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	35.3023	3	53.0229		248.41	2	51.92	3.51	50.15	10:24
2		TOC	34.8008	3	48.0081		245.01	2	48.71	3.70	50.19	10:26
	<u>[</u>	Dilution 1:10	Blank Contribu (TC) 8.7842 ( (v1323)		CAS_s	<u>ethod</u> alt_0107 (v4)	11	Calibra CAS_salt_ (v30	01071	1		
F	Pos	Analysis Type	Sample ID		Result ( <sub> </sub>	opmC)		Dev. mC)	RSE	)	Start Time	***************************************

	10											
<b>♦</b> 1	6 TOC	K1910847-004	.01	61.12	285 ppm	0.	2557 ppm	0.420	0% 20	19/11/24 00	):19	
Rep #	Base Analysis Type	ppm	l	ng	Adju (Al		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	61.3093	6	613.0929		424.95	4	128.74	3.79	50.16	10:26	
2	TOC	60.9476	6	09.4762		422.49	4	126.28	3.78	50.18	10:27	
	<u>Dilution</u>	Blank Contrib	oution	M	lethod		Calibra	ation				
	1:10	(TC) 8.7842 (v1323)		CAS_s	alt_0107 (v4)	'11	CAS_salt_ (v30		1			
Po	Analysis Type	Sample ID		Result (	ppmC)	3	. Dev. omC)	RSI	<b>o</b>	Start Time		
<ul><li>1</li></ul>	7 TOC	K1910861-001.01	100x	7.03	368 ppm	0.	3612 ppm	5.130	0% 20	19/11/24 00	):47	
Rep #	Base Analysis Type	ppm	ŀ	ıg	Adju (At		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	7.2922		72.9217	***************************************	58.28		62.10	3.82	50.15	10:27	
2	TOC	6.7814		67.8141		54.82	······································	58.35	3.54	50.11	10:30	
<b></b>	<u>Dilution</u>	Blank Contrib	vution	M	ethod	······································	Calibra	tion			······································	
	1:10	(TC) 8.7842			alt 0107	11	CAS_salt_		1			
	0	(v1323)	(10)	0/10_0	(v4)	• •	(v30		•			
Po	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSE	)	Start Time		
◆ 18	з тос	K1910861-002.01	100x	5.93	22 ppm	0.	1137 ppm	1.9200	0% 20 <sup>-</sup>	19/11/24 01	:15	
Rep #	Base Analysis Type	ppm	ŀ	ıg	Adju (Ab		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	6.0125		60.1255		49.60		53.26	3.66	50.14	10:29	
2	TOC	5.8518		58.5182		48.51		52.12	3.61	50.05	10:25	
	Dilution	Blank Contrib	ution	М	ethod		Calibra	tion				
	1:10	(TC) 8.7842			<u>otiou</u> alt_0107	11	CAS_salt_		1			
		` (v1323)	` ,		(v4)		(v30					
Po	Analysis Type	Sample ID		Result ( <sub>I</sub>	opmC)		. Dev. omC)	RSE	)	Start Time		
◆ 19		K1910861-003.01	100x	5.96	61 ppm			0.7600	)% 20°	19/11/24 01	:43	
Rep	Base				Adju	hats			Baseline	Pressure	Run	
#	Analysis Type	ppm	þ	ıg	(Ab		NDIR (A	bs)	(Abs)	(psig)	Time	
1	TOC	5.9983		59.9826	***************************************	49.50		53.04	3.54	50.09	10:26	
2	TOC	5.9340		59.3403		49.06		52.60	3.54	50.03	10:27	
	<u>Dilution</u>	Blank Contrib	ution	M	ethod		Calibra	tion				
	1:10	(TC) 8.7842		CAS_s	alt_0107	11	CAS_salt_	01071	1			
		(v1323)			(v4)		(v30	Λ				

Pos         BAT         Concentration (ppm)         Dil         Sample ID         Min / Max (% dev)         Result         Std. D           * B         TOC         25.0000         1:2         [TOC] CCV 25         0 / infinity         24.5922         0.0	Dev. RSD Start Time
● B TOC 25.0000 1:2 [TOC] CCV 25 0 / infinity 24.5922 0.0	
ppm [25 ppm] (NA / NA )   ppm   (PASS)	0000 0% 2019/11/24 02

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time
В	TOC	25 ppm	1	24.5922	245.9222	176.39	179.84	3.44	50.03	10:32

Completion StateSuccess ActionMethodCalibrationSTD Conc - Pos BSuccess - Criteria<br/>met.Do NothingCAS\_salt\_010711<br/>(v4)CAS\_salt\_010711<br/>(v30)50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0310 ppm (PASS)	0.0000 ppm	0%	2019/11/24 02:26

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0310	0.3101	9.67	13.33	3.66	50.08	10:31

Completion State
Success - Criteria
met.

Success Action
Do Nothing

<u>Method</u> CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos D 0 ppmC

Sample Type: Sample

From Schedule Version 8

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
<b>●</b> 20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/24 02:41

S	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
-	1	TOC	0.0000	0.0000	8.75	12.48	3.72	49.99	10:30

Dilution 1:10 Blank Contribution (TC) 8.7842 (IC)

(v1323)

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

The same of the sa	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	С	TOC	25.0000	1:1	[TOC] LCS [24.0	, , ,	25.1233	0.0000	0%	2019/11/24 02:55
					ppm]	(NA/NA)	ppm (PASS)	ppm		***************************************

	Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	-
-	С	TOC	25.0 ppm	1	25.1233	251.2331	180.00	183.53	3.53	50.03	10:32	Ž

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos C 25 ppmC

Page 63 of 116

àa:	mp	l <b>e Type</b> : Sampl	е							From	Schedule V	ersion
	Ро	Analysis Type	Sample ID		Result	(ppmC)		l. Dev. pmC)	RS	D	Start Time	)
•	2	I TOC	K1910861-004.0	1 100x	7.8	099 ppm	0.	0129 ppm	0.170	0% 20	19/11/24 03	3:10
	ep #	Base Analysis Type	ppm		μg	Adju (At		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	7.8190		78.1899		61.86		65.43	3.57	50.08	10:2
2	2	TOC	7.8007		78.0072		61.74		65.35	3.62	50.02	10:2
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)		_	<u>/lethod</u> salt_0107 (v4)	11	Calibra CAS_salt_ (v30	01071	1		
	Ро	s Analysis Type	Sample ID		Result	(ppmC)		l. Dev. pmC)	RSI	<b>D</b>	Start Time	
•	22	t TOC	K1910861-005.01	100x	7.4	694 ppm	0.	0388 ppm	0.520	0% 20	19/11/24 03	3:38
Re #	ep #	Base Analysis Type	ppm		μg	Adju:		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	1	TOC	7.4968		74.9680		59.67		63.39	3.72	50.08	10:2
2	2	TOC	7.4420		74.4200		59.30		62.89	3.59	50.04	10:2
		1:10	(TC) 8.7842 (v1323)	(IC)	CAS_s	salt_0107 (v4)	***************************************	Calibra CAS_salt_ (v30	01071	1		
_	Pos	Type	Sample ID		Result (		(pp	. Dev. omC)	RSI		Start Time	
•	23	TOC	K1910861-006.01	100x	10.72	216 ppm	0.0	0985 ppm	0.920	0% 20	19/11/24 04	:06
#		Base Analysis Type	ppm		hā	Adjus (Ab		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	10.7913		107.9132		82.04		85.66	3.63	50.12	10:29
2	2	TOC	10.6520	·····	106.5195		81.09		84.72	3.63	50.06	10:27
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)			<u>lethod</u> salt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v30	01071	1		
	Pos	туре	Sample ID		Result (	ppmC)		Dev. mC)	RSE	)	Start Time	
	24	TOC	K1910861-007.01	100x	8.28	889 ppm	0.1	1349 ppm	1.6300	0% 201	19/11/24 04	:34
₹e #	p !	Base Analysis Type	ppm	Ą	1g	Adjus (Ab		NDIR (A	bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	8.3843		83.8426		65.70		69.24	3.54	50.09	10:26
2	<u>:                                    </u>	TOC	8.1935	entre de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la co	81.9348		64.40		67.94	3.54	50.10	10:26
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)		_	ethod alt_0107′ (v4)	11 (	Calibra CAS_salt_( v30	01071	1		
4	Pos	rype	Sample ID		Result (ppmC) Std. D			mC) RSD			Start Time	
1	25	TOC	K1910929-001.	01	1.47	75 ppm	0.0	)693 ppm	4.6900	)% 201	9/11/24 05:	02
								····	·		***************************************	***************************************

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5265	15.2651	19.15	22.67	3.52	50.08	10:26
2	TOC	1.4285	14.2854	18.48	22.07	3.59	50.12	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC) (V1323)
 CAS\_salt\_010711 (V4)
 CAS\_salt\_010711 (V30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
(	26	TOC	K1910929-002.01	0.8728 ppm 0.0649 ppm		7.4400%	2019/11/24 05:30

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8269	8.2688	14.40	17.92	3.52	50.11	10:29
2	TOC	0.9187	9.1866	15.02	18.57	3.55	50.11	10:29

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	27	TOC	K1910929-003.01	1.9595 ppm	0.0231 ppm	1.1800%	2019/11/24 05:58

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9431	19.4313	21.97	25.45	3.48	50.14	10:29
2	TOC	1.9758	19.7583	22.20	25.88	3.69	50.11	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	28	TOC	K1910969-002.01	1.1736 ppm	0.0380 ppm	3.2400%	2019/11/24 06:26

	Rep #	Base Analysis Type	ppm	hā	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
-	1	TOC	1.2005	12.0049	16.93	20.49	3.56	50.15	10:28
	2	TOC	1.1467	11.4671	16.57	20.16	3.59	50.15	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC) (v1323)
 CAS\_salt\_010711 (v4)
 CAS\_salt\_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity ( NA / NA )	24.2594 ppm (PASS)	0.0000 ppm	0%	2019/11/24 06:54

Pos Base Analysis ID Rep ppm µg Adjusted NDIR Baseline Pressure Run

	Туре		#			W restaura	And Addressed	**************************************		Time
В	TOC	25 ppm	1	24.2594	242.5942	174.13	177.81	3.67	50.11	10:29
	npletion S ccess - Crit met.		ess A	ing C	Method AS_salt_0107 (v4)	-	Calibration S_salt_010711 (v30)		onc - Pos O ppmC	s B

	mpie	Type: (	Check Standard	> CC	:B					From	Schedule V	ersion
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / (% d		Result	Std. De	v. RSD	Start Ti	me
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / inf ( NA /	, ,	0.0000 ppm (PASS)	pr	00 0% om	2019/11/24	07:09
P	os A	Base nalysis Type	i ID	Rep	ppm	þg	Adjı	usted	NDIR	Baseline	Pressure	Run Time
]	)	TOC	0 ppm	1	0.0000	0.0000		7.62	11.38	3.76	50.13	10:30
	Cam.	pletion	State Succ	cess A	Action	Method		Cal	ibration	STD	Conc - Pos	s D
	COIII											

Samp	ole Ty	<u>ype</u> : Sample							F	rom s	Schedule V	ersion
P	Pos Analysis Type 29 TOC		Sample ID	Result (	ppmC)		. Dev. omC)	RSE	)	Start Time		
<b>♦</b> 2	9	тос	K1911033-001.03	3.68	897 ppm	0.	0082 ppm	0.2200	0%	201	19/11/24 07	ː24
Rep Base # Analysis Type		}	ppm	µg	Adjus (Ab		NDIR (A	Abs)	Base (Al		Pressure (psig)	Run Time
1		TOC	3.6955	36.9550		33.87		37.44		3.58	50.10	10:30
2		TOC	3.6839	36.8386		33.79		37.44		3.65	50.12	10:27
	<u>Dil</u>	lution	Blank Contribution	<u>M</u>	<u>ethod</u>		Calibra	<u>ition</u>				
	1	1:10	(TC) 8.7842 (IC) (v1323)	CAS_s	alt_0107′ (v4)	11	CAS_salt_ (v30	-	1			

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	30	TOC	K1911033-002.03	2.8101 ppm	0.0494 ppm	1.7600%	2019/11/24 07:52

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8450	28.4502	28.10	31.78	3.68	50.13	10:24
2	тос	2.7752	27.7519	27.62	31.38	3.76	50.10	10:26

<b>Dilution</b>	Blank Contribution	<u>Method</u>	Calibration
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1323)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	31	TOC	K1911033-003.03	2.8154 ppm	0.0290 ppm	1.0300%	2019/11/24 08:20

Rep	Base	7	Adjusted	Baseline	Pressure	Run
-----	------	---	----------	----------	----------	-----

#	Analysis Type	ppm	μg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	2.8359	28.3589	28.03	31.72	3.68	50.10	10:27
2	TOC	2.7949	27.9493	27.76	31.45	3.69	50.12	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC) (v1323)
 CAS\_salt\_010711 (v4)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
•	32	TOC	K1911033-004.03	2.3843 ppm	0.0527 ppm	2.2100%	2019/11/24 08:48	

Rep #	Base Analysis Type	ppm	þд	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	2.4216	24.2162	25.22	28.84	3.62	50.11	10:29
2	TOC	2.3471	23.4708	24.72	28.28	3.57	50.10	10:32

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC) (v1323)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

	F	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
Ĺ	>	33	TOC	K1911033-005.03 20x	39.2024 ppm	0.5662 ppm	1.4400%	2019/11/24 09:16

F	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	39.6027	396.0271	277.60	281.33	3.73	50.11	10:27
	2	TOC	38.8020	388.0202	272.17	276.09	3.92	50.14	10:28

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	34	TOC	K1911033-006.03	3.8114 ppm	0.8350 ppm	21.9100%	2019/11/24 09:44

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4019	44.0190	38.66	42.53	3.86	50.11	10:29
2	TOC	3.2210	32.2098	30.65	34.21	3.56	50.10	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
35	TOC	K1911033-007.03	2.4078 ppm	0.1907 ppm	7.9200%	2019/11/24 10:12

	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
-	1	TOC	2.5427	25.4272	26.04	29.72	3.67	50.12	10:29
	2	TOC	2.2730	22.7298	24.21	27.75	3.54	50.10	10:30

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

Re #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8608	78.6083	62.14	65.77	3.63	50.14	10:31
2	TOC	8.0441	80.4409	63.39	67.04	3.65	50.09	10:25

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1323)	(v4)	(v30)

	Pos	os Analysis Sample ID		Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	37	TOC	K1911033-009.08	3.8094 ppm	0.2302 ppm	6.0400%	2019/11/24 11:09

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9722	39.7217	35.75	39.38	3.63	50.12	10:30
2	TOC	3.6466	36.4659	33.54	37.02	3.49	50.11	10:28

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1323)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	38	TOC	K1911033-009.08 ms 2x	26.1443 ppm	0.0000 ppm	0.0000%	2019/11/24 11:37

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.1443	261.4428	186.25	189.80	3.55	50.11	10:33

<u>Dilution</u>	Blank Contribution	<u>Method</u>	Calibration
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1323)	(v4)	(v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

***************************************	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2	[]	0 / infinity ( NA / NA )	24.7622 ppm (PASS)	0.0000 ppm	0%	2019/11/24 11:51

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	***************************************
 В	TOC	25 ppm	1	24.7622	247.6222	177.55	181.02	3.47	50.15	10:28	

Completion StateSuccess ActionMethodCalibrationSTD Conc - Pos BSuccess - Criteria<br/>met.Do NothingCAS\_salt\_010711<br/>(v4)CAS\_salt\_010711<br/>(v30)50 ppmC

Sample 1	Type:	Check	Standard	> C(	CR

E	Caba	ماريام	1/0-0	: 0
From	ocne	auie	vers	iori o

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2695 ppm (PASS)	0.0000 ppm	0%	2019/11/24 12:06

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	
D	TOC	0 ppm	1	0.2695	2.6952	11.29	14.85	3.56	50.13	10:34	

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) CAS\_salt\_010711 (v30) STD Conc - Pos D 0 ppmC

## Sample Type: Sample

## From Schedule Version 8

h		Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
	•	39	TOC	MB3	0.1773 ppm	0.0000 ppm	0.0000%	2019/11/24 12:21	

 Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	***************************************
1	TOC	0.1773	1.7735	9.99	13.72	3.73	50.13	10:34	************

Dilution 1:10 Blank Contribution (TC) 8.7842 (IC) (v1323)

<u>Method</u> CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

## Sample Type: Check Standard --> LCS

### From Schedule Version 8

10	os BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
* C	С ТОС	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity ( NA / NA )	24.9621 ppm (PASS)	0.0000 ppm	0%	2019/11/24 12:36

Po	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time	President and the second second second
С	TOC	25.0 ppm	1	24.9621	249.6214	178.90	182.70	3.80	50.17	10:37	

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30) STD Conc - Pos C 25 ppmC

## Sample Type: Sample

### From Schedule Version 8

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
40	TOC	K1911031-001.01	0.8797 ppm	0.0764 ppm	8.6800%	2019/11/24 12:50

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	-
									december 1

<u> -</u>  -	······································	······································	ıtion		ethod	21.70			3.61	50.22	10:2
	TOC	2.0554		20.5538		22.74			3.63	50.21	10:3
Aı	Base nalysis Type	ppm	ļ	ıa			NDIR (A	ıbs)	Baseline (Abs)	Pressure (psig)	Rui Tim
44	тос	K1911032-004.0	)1	1.97	94 ppm			5.4300	)% 20°	19/11/24 14	:43
Pos	Analysis Type	Sample ID		Result (p	opmC)			RSE	)	Start Time	
L	1:10			CAS_s	alt_0107	11 (	CAS_salt_	01071	1		
		······································	-4:	······································	-411	13.24			3.34	30.23	10.2
-				<del></del>	······································						10:2 10:2
Aı		ppm	ļ			s)			(Abs)	(psig)	Ru Tim
43	TOC	K1911032-003.0	)1	1.58	18 ppm	0.0	)584 ppm	3.6900	20	19/11/24 14	:15
Pos	Analysis Type	Sample ID		Result (p	opmC)			RSE	)	Start Time	)
	Dilution 1:10			CAS_s	alt_0107	11 (	CAS_salt_	01071	1		
+	TOC	1.6379	***************************************	16.3788		19.90			3.52	50.20	10:
	nalysis Type	ppm 1 5854	••••••			s)		······································	(Abs)	(psig)	Ru Tim 10:2
	L	K1911032-002.0	J1	1.01			1371 ppm	2.3000			······
Pos	Analysis Type	Sample ID	24			(pp	mC)			****************	
<u>]</u>	Dilution 1:10			CAS_s	 alt_0107	11	CAS_salt_	01071	1		
	тос	1.4583		14.5830		18.68		22.26	3.58	50.20	10:
		ppm 1.5804	Marie Company of Compa			s)	NDIR (A	Abs) 23.29	(Abs)	(psig)	Tim
		K 191 1032-001.	UI	1.31				<u> </u>	,		Ru
Pos	Туре	Sample ID				(pp	mC)			***************************************	***
<u></u>	<u>Dilution</u> 1:10			CAS_s	alt_0107	11	CAS_salt_	01071	1		
	TOC	0.8257	······································	8.2570		14.39		18.18	3.79	50.17	10:
	Pos 42 D A D A D A D A D A D A D A D A D A D	Analysis Type  Analysis Type TOC TOC TOC Dilution 1:10  Analysis Type TOC TOC TOC  Dilution 1:10  Analysis Type TOC TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC  Dilution TOC TOC TOC TOC  Dilution TOC TOC TOC TOC TOC TOC TOC TOC TOC TOC	Dilution	Dilution   1:10   Blank Contribution   (TC) 8.7842 (IC) (v1323)	Dilution   1:10   Blank Contribution   (TC) 8.7842 (IC)   (v1323)     Dilution   Type   Sample ID   Result (IC)   (v1323)     Dilution   Dilution   (TC) 8.7842 (IC)   (v1323)     Dilution   (TC) 8.7842 (IC)   (v1323)     Dilution   (TC) 8.7842 (IC)   (v1323)     Dilution   Dilution   (TC) 8.78	Dilution   1:10   Blank Contribution   (TC) 8.7842 (IC) (v1323)   CAS_salt_0107 (v4)	Dilution   1:10   Elank Contribution   (v4)   CAS_salt_010711   (v4)	Dilution   1:10   Calibra   CAS_salt_010711	Dilution   1:10   Calibration   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS   Salt   O10711   CAS	Dilution   Slank Contribution   TC) 8.7842 (IC) (V1323)   CAS_salt_010711   CAS_sa	Dilution   Blank Contribution (TC) 8.7842 (IC) (v1323)   Result (ppmC)   Std. Dev. (ppmC)   CAS_salt_010711   CAS_salt_010711   (v30)

***************************************	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
*	45	TOC	K1911032-005.01 400x	4.7687 ppm	0.1385 ppm	2.9100%	2019/11/24 15:11

Rep #	Base Analysis Type	ppm	hâ	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6708	46.7076	40.49	43.95	3.46	50.26	10:28
2	TOC	4.8667	48.6669	41.82	45.56	3.74	50.27	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC) (v1323)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

	Ро	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
ľ	<b>4</b> 6	TOC	K1911032-006.01	1.9445 ppm	0.1188 ppm	6.1100%	2019/11/24 15:39

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	2.0284	20.2842	22.55	26.14	3.58	50.27	10:31
2	тос	1.8605	18.6048	21.41	25.06	3.65	50.23	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	47	TOC	K1911032-007.03 ms 2x	26.3874 ppm	0.0000 ppm	0.0000%	2019/11/24 16:07

***************************************	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	26.3874	263.8736	187.90	191.52	3.62	50.24	10:30

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7842 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1323)
 (v4)
 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

	P	os	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	)   I	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]		24.3561 ppm (PASS)	0.0000 ppm	0%	2019/11/24 16:22

Ро	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
В	TOC	25 ppm	1	24.3561	243.5606	174.79	178.42	3.63	50.26	10:33

Completion StateSuccess ActionMethodCalibrationSTD Conc - Pos BSuccess - Criteria<br/>met.Do NothingCAS\_salt\_010711<br/>(v4)CAS\_salt\_010711<br/>(v30)50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
*	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity ( NA / NA )	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/24 16:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
D	TOC	0 ppm	1	0.0000	0.0000	7.48	11.05	3.57	50.24	10:31	-

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos D 0 ppmC

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	48	TOC	K1911032-007.03	4.1677 ppm	0.0667 ppm	1.6000%	2019/11/24 16:51

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1205	41.2052	36.75	40.48	3.73	50.22	10:28
2	TOC	4.2148	42.1480	37.39	40.98	3.59	50.25	10:27

Dilution 1:10 Blank Contribution (TC) 8.7842 (IC) (v1323) <u>Method</u> CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
•	49	TOC	K1910803-001.01	44.1588 ppm	0.9849 ppm	2.2300%	2019/11/24 17:19	

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	43.4623	434.6235	303.80	307.50	3.70	50.24	10:26
2	TOC	44.8553	448.5526	313.26	317.05	3.79	50.20	

Dilution 1:10 Blank Contribution (TC) 8.7842 (IC) (v1323) Method CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	50	TOC	K1910803-002.01	121.0609 ppm	1.4739 ppm	1.2200%	2019/11/24 17:47

Re #	p Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	120.0187	1200.1870	823.46	827.29	3.83	50.25	10:28
2	тос	122.1031	1221.0313	837.61	842.19	4.58	50.24	10:29

Dilution 1:10 Blank Contribution (TC) 8.7842 (IC) (v1323) <u>Method</u> CAS\_salt\_010711 (v4)

Calibration CAS\_salt\_010711 (v30)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
				***************************************		

	51	тос	K1910803-003	.01	20.01	33 ppm	2.5	636 ppm	12.810	00% 20	)19/11/24 1	8:15
Rep		Base nalysis Type	ppm		μg		usted lbs)	NDIR	(Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	21.8260		218.2603		156.94		161.38	4.44	50.17	10:27
2		TOC	18.2005		182.0049		132.33		136.43	4.11	50.22	10:27
	ַ	Dilution 1:10	Blank Contrib (TC) 8.7842 (v1323)	(IC)	_	<u>/lethod</u> salt_010 (v4)	711	Calibr CAS_salt (v3	 :_01071	1		
Р	os	Analysis Type	Sample ID	***************************************	Result (	(ppmC)	9	. Dev. omC)	RS	D	Start Time	Э
<b>♦</b> 5	52	TOC	K1910803-004	.01	68.5	161 ppm	1.	6462 ppm	2.400	0% 20	19/11/24 18	8:43
Rep			ppm		hā		usted bs)	NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	67.3521		673.5207		465.97		469.89	3.93	50.19	10:27
2		TOC	69.6802		696.8016		481.77		488.04	6.27	50.15	10:30
	<u>Dilution</u>		Blank Contribution		N	lethod		Calibr	ation	*		·å······
	_	1:10	(TC) 8.7842 (v1323)			CAS_salt_0107 (v4)		CAS_salt_01 (v30)		1		
Pos Analysis Type			Sample ID		Result (p	opmC)	Std. (pp		Den		Start Time	•
§ 5	53	TOC	K1910803-005.	01	31.29	83 ppm	12.2	840 ppm	39.250	0% 20	19/11/24 19	9:11
Rep #		Base nalysis Type	ppm	***************************************	μg	Adjusted (Abs)		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	39.9844		399.8441		280.20	280.20 285.79		5.59	50.18	10:30
2	<u> </u>	TOC	22.6123		226.1228		162.27		166.53	4.26	50.14	10:26
	D	<u>ilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)			lethod alt_0101 (v4)	711	<u>Calibr</u> CAS_salt (v3	_01071	1		
P	os	Analysis Type	Sample ID	***************************************	Result (	ppmC)		Dev. mC)	RSE	)	Start Time	
<b>•</b> 5	64	TOC	K1910803-006.	01	14.34	45 ppm	0.8	3810 ppm	6.1400	0% 20	19/11/24 19	):40
Rep #		Base nalysis Type	ppm		μg	Adju (Al		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		тос	14.9674		149.6740		110.38		114.24	3.86	50.18	10:28
2	<u></u>	TOC	13.7215		137.2151		101.92	·	105.81	3.89	50.14	10:27
		ilution 1:10	Blank Contrib (TC) 8.7842 (		CAS_s	<u>ethod</u> alt_0107	711	Calibra CAS_salt_	_01071	1		
Po	os	Analysis Type	(v1323) Sample ID		Result (p	(v4)	Std.	1	RSD		Start Time	
<ul><li>◆ 5.</li></ul>	5		K1911047-001.01	100x	3.358	31 ppm			12.2800	)% 20	19/11/24 20	0.08
Rep		Base alysis Type	ppm		µg	Adju (At	sted	NDIR (/		Baseline (Abs)	Pressure (psig)	Run Time
#	7''	, ,,										
# 1		TOC	3.6498		36.4983		33.56	***************************************	37.32	3.76	50.14	10:27

<u>Dilution</u>	Blank Contribution	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1323)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
*	56	TOC	K1911047-002.01 100x	26.8358 ppm	0.0527 ppm	0.2000%	2019/11/24 20:36

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.8731	268.7307	191.20	194.84	3.64	50.13	10:25
2	тос	26.7985	267.9853	190.69	194.42	3.73	50.17	10:26

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1323)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	57	TOC	K1911049-001.01 20x	4.1392 ppm	0.1555 ppm	3.7600%	2019/11/24 21:04

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2491	42.4913	37.63	41.27	3.65	50.16	10:28
2	TOC	4.0292	40.2918	36.13	39.75	3.61	50.12	10:30

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1323)	(v4)	(v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

***************************************		Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
	•	В	TOC	25.0000	1:2	[]	0 / infinity (NA / NA)	24.6687 ppm (PASS)	0.0000 ppm	0%	2019/11/24 21:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
В	TOC	25 ppm	1	24.6687	246.6868	176.91	180.57	3.66	50.17	10:34

Completion State	Success Action	<u>Method</u>	<u>Calibration</u>	STD Conc - Pos B
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	50 ppmC
met.		(v4)	(v30)	

### Sample Type: Check Standard --> CCB From Schedule Version 8 Concentration Min / Max Dil Pos BAT Sample ID Result Std. Dev. **RSD Start Time** (ppm) (% dev) TOC 0.0000 1:1 0 / infinity D [TOC] CCB [0 0.0000 0.0000 0% 2019/11/24 21:47 (NA/NA) ppm] ppm ppm (PASS) Rep Run Pos **Base** ID Adjusted Baseline Pressure ppm μg **NDIR** Time Analysis

	Туре							***************************************		
D	TOC	0 ppm	1	0.0000	0.0000	8.80	12.38	3.58	50.14	10:32
	mpletion S ccess - Cri met.		cess A o Nothi		Method S_salt_01 (v4)	-	Calibration S_salt_01071 (v30)		Conc - Po 0 ppmC	s D

<u>Sa</u>	mple	Type: Sample							From	Schedule V	ersion
	Pos	Analysis Type	Sample ID	Result (	ppmC)		. Dev. omC)	RSD	)	Start Time	)
•	58	TOC	MB4	0.00	000 ppm	0.0	0000 ppm	0.0000	)% 20	19/11/24 22	2:01
	ep # A	Base analysis Type	ppm	þg	Adjus (Abs		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.0000	0.0000		8.03		11.47	3.43	50.10	10:29
	<u>!</u>	<u>Dilution</u>	Blank Contribution	<u> </u>	lethod		Calibra	<u>ıtion</u>			
		1:10	(TC) 8.7842 (IC) (v1323)	CAS_s	alt_01071 (v4)	1	CAS_salt_ (v30	•			

<u>Sa</u>	mple	Type:	Check Standard -	> L	CS						From	Schedule V	ersion
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / I (% de		Resul	t	Std. Dev.	RSD	Start Ti	me
•	С	TOC	25.0000	1:1	[TOC] LCS [25 ppm]	5.0 0 / infi ( NA /	, ,	24.71 pp (PAS	om	0.0000 ppm		2019/11/24	22:16
P	os A	Base nalysis Type	i ID	Re #	ррт	þg	Adj	usted	l	NDIR E	Baseline	Pressure	Run Time
(		TOC	25.0 ppm	1	24.7141	247.1405		177.22		180.81	3.59	50.14	10:30

<b>Completion State</b>	Success Action	<u>Method</u>	<u>Calibration</u>	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

<u>Sa</u>	mpl	e Type: Sample	Э						From	Schedule V	ersion 8
	Ро	s Analysis Type	Sample ID	Result (	ppmC)		l. Dev. pmC)	RSI		Start Time	
•	59	TOC	K1911049-002.01	20x 9.04	155 ppm	0.	0478 ppm	0.530	0% 20	19/11/24 22	2:31
8	Rep Base # Analysis Type		ppm	hā	Adjus (Abs		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	9.0793	90.7931		70.41		74.08	3.66	50.15	10:27
	2	TOC	9.0117	90.1169		69.96		73.45	3.50	50.14	10:24
		<u>Dilution</u> 1:10	Blank Contribu (TC) 8.7842 (I (v1323)		ethod alt_01071 (v4)	1	Calibra CAS_salt_ (v30	01071	1	од на при	·
Г	T	Analysis				C+4	Dev			**************************************	

 
 Pos
 Analysis Type
 Sample ID
 Result (ppmC)
 Std. Dev. (ppmC)
 RSD
 Start Time

•	60	тос	K1911049-002.0 100x	1 ms	29.07	715 ppm	0.	0000 ppm	0.000	20	)19/11/24 2:	2:59
Re <sub>l</sub>		Base nalysis Type	ppm	Marian de mariante de mariante de mariante de mariante de mariante de mariante de mariante de mariante de maria	hā	Adju (Al		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	29.0715		290.7153		206.12	2	209.76	3.64	50.16	10:32
	<u>[</u>	Dilution 1:10	Blank Contrib (TC) 8.7842 (v1323)			lethod salt_0107 (v4)	711	Calibra CAS_salt_ (v30	_01071	1		of-year-assessment control of the second
F	Pos	Analysis Type	Sample ID		Result (		1	. Dev. omC)	RS	D	Start Time	·
•	61	TOC	RB		0.00	000 ppm	0.0	0000 ppm	0.000	0% 20	19/11/24 23	3:13
Rep #		Base nalysis Type	ppm		μg	Adju (Al		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.0000		0.0000		7.92		11.64	3.72	50.14	10:34
	ַ	<u> Dilution</u>	Blank Contrib	ution	M	ethod		Calibra	ation			
		1:10	(TC) 8.7842 (v1323)			alt_0107 (v4)	'11	CAS_salt_ (v30	_01071	1		
F	os	Analysis Type	Sample ID	***************************************	Result (	ppmC)		. Dev. omC)	RSI	<b>D</b>	Start Time	•
• (	62	TOC	K1911049-003.	01	11.81	61 ppm	0.0	0456 ppm	0.390	0% 20	19/11/24 23	3:28
Rep		Base nalysis Type	ppm		hâ	Adju:		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		тос	11.7838		117.8381		88.77		92.40	3.62	50.11	10:31
2		TOC	11.8483	***************************************	118.4834	· · · · · · · · · · · · · · · · · · ·	89.21		92.81	3.60	50.16	10:25
	<u>D</u>	ilution	Blank Contrib	ution	M	ethod		Calibra	tion			
		1:10	(TC) 8.7842 ( (v1323)	(IC)		alt_0107 (v4)	11	CAS_salt_ (v30		1		
Р	os	Analysis Type	Sample ID		Result (p	opmC)		Dev. mC)	RSI	<b>D</b>	Start Time	
<b>*</b> (	33	TOC	K1911049-004.0	01	1.59	99 ppm	0.0	0839 ppm	5.240	0% 20	19/11/24 23	:56
Rep #		Base nalysis Type	ppm		μg	Adjus (Ab		NDIR (A	(bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	1.6592	······································	16.5924	***************************************	20.05		23.59	3.54	50.11	10:30
2		TOC	1.5406		15.4065	***************************************	19.24		22.81	3.57	50.13	10:25
	D	ilution 1:10	Blank Contribu (TC) 8.7842 ( (v1323)		CAS_s	<u>ethod</u> alt_0107 (v4)	11 (	Calibra CAS_salt_ (v30	01071	1		
Р	os	Analysis Type	Sample ID		Result (p	pmC)		Dev. mC)	RSE	)	Start Time	
* E	64	TOC	K1911028-001.0	)4	0.89	50 ppm	0.0	)518 ppm	5.7800	0% 20	19/11/25 00	:24
Rep #		Base alysis Type	ppm	ŀ	ıg	Adjus (Ab		NDIR (A	bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.9316	***************************************	9.3163		15.11		18.58	3.47	50.15	10:28
2	<u></u>	TOC	0.8584		8.5841		14.61		18.06	3.45	50.11	10:24
		<u>ilution</u> 1:10	Blank Contribu (TC) 8.7842 (I			ethod alt_01071	11 (	Calibra CAS_salt_0		I		

(v1323)

(v4)

(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
*	65	TOC	K1911028-002.04	21.8501 ppm	0.4095 ppm	1.8700%	2019/11/25 00:52

Re #	p Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	22.1397	221.3968	159.07	162.59	3.52	50.14	10:29
2	TOC	21.5606	215.6056	155.14	158.84	3.70	50.12	10:28

Dilution 1:10 Blank Contribution (TC) 8.7842 (IC)

(v1323)

<u>Method</u> CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	66	TOC	K1911028-003.04	0.7336 ppm	0.0533 ppm	7.2700%	2019/11/25 01:21

***************************************	Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.7713	7.7134	14.02	17.61	3.59	50.10	10:26
	2	TOC	0.6959	6.9591	13.51	17.14	3.64	50.14	10:29

Dilution 1:10 Blank Contribution (TC) 8.7842 (IC) (v1323)

Method CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2		0 / infinity ( NA / NA )	24.2538 ppm (PASS)	0.0000 ppm	0%	2019/11/25 01:49

Pos	Base Analysis Type	ID	Rep #	ppm	hā	Adjusted	NDIR	Baseline	Pressure	Run Time	
В	TOC	25 ppm	1	24.2538	242.5382	174.10	177.84	3.74	50.11	10:29	and the second second

Completion State
Success - Criteria
met.

Success Action
Do Nothing

<u>Method</u> CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos B 50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/25 02:04

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.19	9.91	3.72	50.09	10:33

ple Pos	Type: Sample			***************************************	(v4)		CAS_salt_ (v3			0 ppmC	·
os		!	•••••••••••••••••••••••••••••••••••••••						From	Schedule \	ersion
67	Analysis Type	Sample ID	**************************************	Result (	(ppmC)	1	I. Dev. pmC)	RSI		Start Time	******************************
	тос	K1911028-004	.04	1.42	272 ppm	·	.0215 ppm	1.500	0% 20	19/11/25 02	2:18
A	Base nalysis Type	ppm		µg	Adju (Al		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	TOC	1.4424		14.4239		18.58		22.17	3.60	50.13	10:29
	TOC	1.4120		14.1204		18.37		22.07	3.70	50.12	10:26
	Dilution 1:10					<b>'</b> 11	CAS_salt_	_01071	1		
os	Analysis Type	Sample ID		Resuit (	ppmC)	1		RSI	<b>)</b>	Start Time	
88	TOC	K1911028-005.	04	1.46	893 ppm	0.	0117 ppm	0.790	0% 20 <sup>-</sup>	19/11/25 02	:47
Αr	Base nalysis Type	ppm	elakakan karakan samali <del>maja paga paga</del>	hã			NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	TOC	1.4776		14.7759		18.81		22.49	3.68	50.15	10:28
<u> </u>	TOC	1.4611	····	14.6110		18.70		22.34	3.64	50.11	10:29
<u>D</u>	1:10					***************************************	CAS_salt_ (v30	01071	1		
os	Туре	Sample ID	***************************************			(pp	omC)			***************************************	
9	TOC	FB 11/21/19	***************************************	0.00	000 ppm	0.0	0000 ppm	0.0000	)% 201	9/11/25 03	:15
Ar		ppm				s)	NDIR (A		(Abs)	Pressure (psig)	Run Time
<u></u>	TOC	0.0000		0.0000	······································	5.76		9.25	3.49	50.12	10:32
<u>D</u>	oilution 1:10			CAS_s	alt_0107	11	CAS_salt_	01071	ľ		
os	Analysis Type	Sample ID		Result (	opmC)		1	RSD		Start Time	
0	TOC	FB 11/22/19		0.00	00 ppm	0.0	0000 ppm	0.0000	)% 201	9/11/25 03	:29
An		ppm		hā			NDIR (A	.bs)	Baseline (Abs)	Pressure (psig)	Run Time
<u></u>	TOC	0.0000		0.0000		5.79		9.29	3.50	50.13	10:30
	<u>ilution</u> 1:10			CAS_s	alt_0107′	11	CAS_salt_0	 010711			
os	Analysis Type	Sample ID		Result (p	ppmC)			RSD		Start Time	
	os 68 An E	Dilution 1:10  See Analysis Type TOC TOC TOC  Dilution 1:10  Base Analysis Type TOC  Dilution 1:10  Base Analysis Type TOC  Dilution 1:10  Base Analysis Type TOC  Dilution 1:10  Analysis Type TOC  Dilution 1:10  Analysis Type TOC  Dilution 1:10  Analysis Type TOC  Dilution 1:10	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC

* 7	1 TOC	K1911043-001.0 1000x	1 doc	11.75	513 ppm	0.	0120 ppm	0.100	0% 20	19/11/25 03	3:44
Rep #	Base Analysis Type	ppm		μg	Adju (At		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.7598		117.5980		88.61		92.27	3.66	50.11	10:29
2	тос	11.7429		117.4286		88.49		92.16	3.67	50.11	10:30
	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)	(IC)		lethod salt_0107 (v4)	'11	<u>Calibr</u> CAS_salt_ (v3	_01071	1		
Po	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSI		Start Time	•
♦ 72	2 TOC	K1911043-002.0 1000x	1 doc	0.00	000 ppm	0.0	0000 ppm	0.000	20	19/11/25 04	1:12
Rep #	Base Analysis Type	ppm	·····	μg	Adju: (Ab		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	·· · · · · · · · · · · · · · · · · · ·	0.0000		7.79		11.41	3.62	50.11	10:29
2	TOC	0.0000		0.0000		7.15		10.87	3.72	50.09	10:26
	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)			ethod alt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v3	01071	1		
Po	s Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSE	<b>O</b>	Start Time	)
♦ 73	з тос	K1910975-002.0 10x	1 doc	8.15	21 ppm	0.2	2117 ppm	2.6000	20	19/11/25 04	:40
Rep #	Base Analysis Type	ppm		hа	Adju: (Ab		NDIR (A	∖bs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0024		80.0240		63.10		66.61	3.51	50.14	10:30
2	TOC	8.3018		83.0176		65.14		68.78	3.64	50.11	10:28
	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)		CAS_s	<u>ethod</u> alt_0107 (v4)	11 (	Calibra CAS_salt_ (v30	01071	1		
Ро	s Analysis Type	Sample ID		Result (p	pmC)	Std.   (ppr		RSD		Start Time	
•	TOC Base	K1910975-001.01	doc	0.838	37 ppm Adjus			14.0200	Baseline	19/11/25 05 Pressure	:08 <b>Run</b>
	Analysis Type	ppm		μg	(Ab		NDIR (A	Abs)	(Abs)	(psig)	Time
1	TOC	0.9219		9.2190		15.04		18.69	3.65	50.11	10:26
2	тос	0.7556		7.5558		13.91	***************************************	17.48	3.57	50.12	10:25
	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7842 (v1323)		CAS_s	<u>ethod</u> alt_0107 ( <b>v4</b> )	11 (	Calibra CAS_salt_ (v30	01071	I		
Po	Analysis Type	Sample ID		Result (p	opmC)		Dev. mC)	RSD		Start Time	
• 75	тос	K1910975-001.01 doc	1 ms	26.61	31 ppm	0.0	0000 ppm	0.0000	)% 201	9/11/25 05	:36
				***************************************		***************************************					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

	1	тос	26.6131		266.1305		189.43	1	93.03	3.60	50.14	10:29
	<u> 1</u>	<u>Dilution</u>	Blank Contrib	ution	M	ethod		Calibra	tion			•
		1:10	(TC) 8.7842 (v1323)	(IC)		alt_0107 (v4)	111	CAS_salt_ (v30		1		
	Pos	Analysis Type	Sample ID		Result ( <sub>l</sub>	ppmC)		l. Dev. pmC)	RSE	)	Start Time	
•	61	TOC	RB		0.00	00 ppm	0.	0000 ppm	0.0000	0% 20	19/11/25 05	5:51
Re #	<b>∌p</b> <b>‡</b> A	Base nalysis Type	ppm	**************************************	hā	Adjus (Ab		NDIR (A	vps)	Baseline (Abs)	Pressure (psig)	Run Time
_1	l l	TOC	0.0000		0.0000		7.23		10.93	3.70	50.12	10:28
2	2	TOC	0.0000		0.0000		6.73		10.14	3.40	50.11	10:25
	<u> </u>	<u> Dilution</u>	Blank Contrib	ution	Me	ethod		Calibra	<u>tion</u>			
		1:10	(TC) 8.7842 ( (v1323)	(IC)	_	alt_0107 (v4)	11	CAS_salt_ (v30		1		

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / I		Result		Std. Dev	. RSD	Start Ti	me
•	В	тос	25.0000	1:2	[TOC] CCV 29 ppm [25 ppm	5 0 / infi	nity	24.16 pp (PAS	m	0.000 pp	-	2019/11/25	06:19
P	os A	Base nalysis Type	i ID	Rep	ppm	hã	Ad	justed	N	IDIR	Baseline	Pressure	Run Time
E	3	TOC	25 ppm	1	24.1613	241.6131		173.47	***************************************	177.17	3.70	50.11	10:33
		oletion ess - Ci met.		ess A	Action ning CA	Method \S_salt_01 (v4)	0711			<b>ration</b> t_010711		Conc - Pos 50 ppmC	<u>s B</u>

Sa	mple	Type:	Check Standard -	> CC	В						From	Schedule V	ersion
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / (% d		Resu	lt	Std. Dev	. RSD	Start Ti	ime
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / inf ( NA /	- ;		000 pm SS)	0.000 pp		2019/11/25	5 06:34
P	1	Base nalysis Type	i ID	Rep	ppm	þg	Adj	usted	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	NDIR	Baseline	Pressure	Run Time
]	)	TOC	0 ppm	1	0.0000	0.0000		5.86		9.52	3.65	50.12	10:29
	Comp	oletion	State Succ	ess A	Action	Method		9	Calit	oration	STD	Conc - Pos	s D
	Succ	ess - Cr met.	riteria Do	Noth	ing CA	S_salt_01 (v4)	0711	CAS		lt_010711 /30)		0 ppmC	

## Meta Data Used in this Report

### **Blanks**

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1322	1.2997	0.8410	0.0000	0.0000	0.0000	2019/11/21 13:13	Fusion1 (Fusion1)
v1323	1.3397	1.1360	0.0000	0.0000	0.0000	2019/11/23 16:30	Fusion1 (Fusion1)

## Calibrations

Name: CAS\_salt\_010711 (TOC)

Version:

v30

Calibration curve

TOC: y = 6.788x + 9.463

formula:

r<sup>2</sup> value:

TOC:  $r^2 = 0.99963$ 

Comment:

Ver Creation:

Operator:

Fusion1 (Fusion1)

2019/03/05 17:42

Basic Analysis

TOC

Type

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

## **Methods**

Name: CAS\_salt\_010711 (TOC)

Version:

v4

2019/02/21 17:57

Operator:

Fusion1 (Fusion1)

Comment:

Ver Creation:

Parameter	Value	Advanced Parameter
SampleVolume	10.0 mL	NeedleRinseVolume
Dilution	1:10	VialPrimeVolume
AcidVolume	0.5 ml	ICSamplePrimeVolume
ReagentVolume	2.0 ml	ICSpargeRinseVolume
UVReactorPrerinse	Off	BaselineStabilizeTime
UVReactorPrerinseVolume	5.0	DetectorPressureFlow
NumberOfUVReactorPrerinses	1	SyringeSpeedWaste
ICSpargeTime	1.00 mins	SyringeSpeedAcid
DetectorSweepFlow	500 ml/min	SyringeSpeedReagent

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/mir
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7

Report History

PreSpargeTime	2.00 mins	SyringeSpeedDIWater	7
SystemFlow	500 ml/min	NDIRPressurization	60 psig
		SyringeSpeedSampleDispense	5
		SyringeSpeedSampleAspirate	4
		SyringeSpeedUVDispense	5
		SyringeSpeedUVAspirate	5
		SyringeSpeedICDispense	5
		SyringeSpeedICAspirate	5
		NDIRPressureStabilize	1.75 min
		SampleMixing	Off
		SampleMixingCycles	1
		SampleMixingVolume	10.0
		LowLevelFilterNDIR	Off

## Acceptance / Approval

Electronic Signat	tures				****
Report Version	User Name	Acceptance	Reason	Date	
<u></u>	······································				w.J

## **Report History**

User Name	System Reason	User Reason	Date
Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/25 06:49
and the second second			

## ALS Environmental

StarLIMS Run:	661076, 661077, 661078, 661079	
Analysis:	DOC/TOC	
Method:	SM 5310 C, 9060A, 415.1, 9060	
CCV: 11-GEN-05-82C 50	) ppm	
ICAL Date: 3/6/19		
ICAL ID: 11-GEN-05-761	<del>1</del>	
ICS ID: 11-GEN-05-78M		
ICS TV: 25.0 ppm	ICS % R < 1	
Spike ID: 11-GEN-05-82C	0.05 ml of 5000 ppm stock> 10.0 ml	= 25.0 ppm x dilution factor
Sodium Persulfate: 11-GE	N-05-83D	
21 % H3PO4: 11-GEN-05-	-83B	
Equipment ID: K-TOC-03		
PIPETTE ID: 124276B, 12	29001F, N11314F, Marge	***************************************
FILTER ID: 16967789		***************************************

	23 Rep 1 V
Analyzed By: W	Date Analyzed: 11/26/19
Reviewed By: Fuufu	Date Reviewed: 4/26/19
J	

Tier:	k Request # ( ) K1910803, 847, b37, b50, b84, b85, b96,96;  IV IV II II II II II	
Date	Analyzed: 11/26/19	70c:661464 661463
Anal	yst: _BN	Run # Doc: 661466
Anal	ysis: 109/10C	
	DATA QUALITY REPORT INORGANICS	
Expla	ain any "no" responses to questions below, and any corrective actions in the c	comments section below.
	Is the method name and number correct and appropriate?	<b>y∂</b> s/no/NA
2.	Holding times met for all analyses and for all samples?	√es/no/NA
•	Are calculations correct?	Øs/no/NA
	Is the reporting basis correct? (Dry Weight)	<b>y</b> €s/no/NA
	All quality control criteria met?	y@s/no
	Is the calibration curve correlation coefficient ≥ 0.995?	Øs/no/NA
•	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	√es/no/NA
•	Are ICVs, CCVs, and CCBs all within acceptance limits?	Øs/no/NA
	Are results for methods blanks all ND?	yes/no/NA
).	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/@/NA
l.	Are all exceptions explained?	Øes/no/NA
	Have all applicable service requests been reviewed?	Øes/no/NA
	Are all samples labeled correctly?	yes/no/NA
	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	y⊕s/no/NA
	Are detection limits and units reported correctly?	ves/no/NA
	Is the unused space on the benchsheet crossed out?	y@s/no/NA
	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA
IMC	MENTS: K1911037-3/3d report a Wigh DESD. Hornera, to less than Sx the MRL.	hese samples one

DQREPORT

Instrument Name: K-TOC-03 Analyst: BDITZLER **Analysis Lot:** 661464 Method/Testcode: SM 5310 C/TOC T

KO1917720-08 Car	KQ1917720-07 Ca	KQ1917720-06 Ca	KQ1917720-05 Ca	KQ1917720-04 Ca	KQ1917720-03 Ca		KQ1917720-01 Ca			K1911085-003 Ca	K1911085-002 Ca		K1911084-005 Ca	K1911084-004 Ca	K1911084-003 Ca	K1911084-002 Ca	K1911084-001 Ca	K1911050-005 Ca	K1911050-001 Ca	K1911037-003 Ca	K1911037-002 Ca	K1911037-001 Ca	K1910847-004 Ca		K1910803-004 Ca	K1910803-003 Ca	Lab Code Ta K1910803-002 Ca	
	Carbon, Total Organic Co	Carbon, Total Organic Co	Carbon, Total Organic Co	Carbon, Total Organic C	Carbon, Total Organic Co	Carbon, Total Organic C	Carbon, Total Organic Co		Carbon, Total Organic N	Carbon, Total Organic N/A	Carbon, Total Organic N			Carbon, Total Organic N.	Carbon, Total Organic N		Carbon, Total Organic N.	Carbon, Total Organic N.	Carbon, Total Organic N.		Carbon, Total Organic N	Carbon, Total Organic N	Carbon, Total Organic N	Carbon, Total Organic N	Total Organic	Carbon, Total Organic N	Target Analytes Q Carbon, Total Organic N	
CCD	CCB G	CCB G	CCB G	CCV G	CCV G		CCV G		N/A G		N/A G	N/A G	N/A W	N/A W	N/A W	N/A W	N/A W	N/A G	N/A G	N/A W	N/A W	N/A W	N/A G	N/A W	N/A W	N/A W	OC Parent Sample W	
	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Water	Ground Water	Ground Water	Ground Water	Ground Water	Water	Water	Water	Water	Water	Ground Water	Ground Water	Water	Water	Water	Ground	Water	Water	Water	Matrix R Water	
0 00 ma/I	0.00 mg/L	$0.00~\mathrm{mg/L}$	0.00 mg/L	24.59 mg/L	24.37 mg/L	24.84 mg/L	24.38 mg/L	0.79  mg/L	0.44 mg/L	0.73 mg/L	1.28 mg/L	1.17 mg/L	0.14 mg/L	0.43  mg/L	10.56 mg/L	0.18 mg/L	0.12 mg/L	1.98 mg/L	16.22 mg/L	$0.63~\mathrm{mg/L}$	25.83 mg/L	5.79 mg/L	3.25 mg/L	16.70 mg/L	13.03 mg/L	14.27 mg/L	Raw Result S 0.90 mg/L	
10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	Sample Amt. 10 ml	Analysis Lot:
0 < 0 = 2/1   1   1	0.50 mg/L U 1	$0.50~\mathrm{mg/L}~\mathrm{U}$	0.50 mg/L U 1	24.6 mg/L 1	24.4 mg/L 1	24.8 mg/L 1	24.4 mg/L 1	0.79  mg/L 1	0.44 mg/L J 1	0.73 mg/L 1	1.28 mg/L 1	1.17 mg/L 1	$0.50~\mathrm{mg/L}~\mathrm{U}~\mathrm{1}$	0.50 mg/L U 1	10.6 mg/L 1	0.50 mg/L U 1	$0.50~\mathrm{mg/L}~\mathrm{U}$	1.98 mg/L 1	16.2 mg/L 1	0.63  mg/L 1	25.8 mg/L 1	5.79 mg/L 1	65 mg/L 20	16.7 mg/L 1			Final Result Dil 180 mg/L 200	001404
0.07	0.07	0.07	0.07					0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	2	0.07	7	0.07	MDL 20	letnod/ j
0.50	0.50	0.50	0.50					0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	10	0.50	50	0.50	POL % Rec %	Method/Testcode: SM 3310 C/10C 1
11/27/10 02:00	11/26/19 22:26	11/26/19 17:15	11/26/19 12:59	11/27/19 02:54	11/26/19 22:11	11/26/19 17:01	11/26/19 12:44	11/26/19 18:54	11/26/19 18:26	11/26/19 17:58	11/26/19 17:30	11/26/19 16:18	11/26/19 21:15	11/26/19 20:47	11/26/19 20:19	11/26/19 19:51	11/26/19 19:23	11/27/19 00:34	11/27/19 00:06	11/26/19 23:38	11/26/19 23:10	11/26/19 21:43	11/26/19 13:58	11/26/19 15:50	11/26/19 15:22	11/26/19 14:54	% RSD Date Analyzed 11/26/19 14:26	0 0/1001
z	Z	Z	z	Z	Z	Z	Z	Z	Z	Z Pag	ge 85	of 1	1 <del>2</del> 16	Z	z	Z	Z	z	Z	Z	z	Z	Z	z	Z:	Z	Z C.	

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Instrument Name: K-TOC-03	ne: K-TOC-03		Analyst: BDITZLER	「ZLER		Analysis Lot:	661464	/Tethod/	Method/Testcode: SM 5310 C/TOC T	5310 C/T	OC T	_
<u>Lab Code</u> KQ1917720-09	Target Analytes Carbon, Total Organic	MB (C	Parent Sample	Matrix Ground Water	Raw Result 0.00 mg/L	Sample Amt. 10 ml	Final Result Dil 0.50 mg/L U 1	MDL 0.07	<b>PQL</b> % Rec 0.50	% RSD	<b>Date Analyzed</b> 11/26/19 13:13	<u>QC?</u>
KQ1917720-10	Carbon, Total Organic	LCS		Ground Water	25.01 mg/L	10 ml	25.0 mg/L 1	0.07	0.50 100		11/26/19 13:28	z
KQ1917720-11	Carbon, Total Organic	SW	K1911085-001	Ground Water	27.01 mg/L	10 ml	27.0 mg/L 1	0.07	0.50 103		11/26/19 16:46	z
KQ1917720-12	Carbon, Total Organic	DUP	K1910803-002	Water	$0.92~\mathrm{mg/L}$	10 ml	180 mg/L 200	20	100	ယ	11/26/19 14:26	z
KQ1917720-13	Carbon, Total Organic	DUP	K1910803-003	Water	$15.17 \mathrm{mg/L}$	10 ml		0.07	0.50	6	11/26/19 14:54	Z :
KQ1917720-14	Carbon, Total Organic	DUP	K1910803-004	Water	12.36 mg/L	10 ml	1240 mg/L 100	7	50	5	11/26/19 15:22	z
KQ1917720-15	Carbon, Total Organic	DUP	K1910803-005	Water	16.52 mg/L	10 ml		0.07	0.50	_	11/26/19 15:50	z
KQ1917720-16	Carbon, Total Organic	DUP	K1910847-004	Ground Water	3.24 mg/L	10 mL	65 mg/L 20	2	10	<u>^</u>	11/26/19 13:58:00	z
KQ1917720-17	Carbon, Total Organic	DUP	K1911037-001	Water	5.88 mg/L	10 ml	5.88 mg/L 1	0.07	0.50	-	11/26/19 21:43	z R
KQ1917720-18	Carbon, Total Organic	DUP	K1911037-002	Water	26.23 mg/L	10 ml	26.2  mg/L 1	0.07	0.50	2	11/26/19 23:10	Z NE
KQ191//20-19	Carbon, Total Organic	DUP	K1911037-003	Water	0.41 mg/L	10 ml	0.41 mg/L J 1	0.07	0.50	43*	11/26/19 23:38	Z
KQ1917720-20	Carbon, Total Organic	DUP	K1911050-001	Ground Water	16.34 mg/L	10 ml	16.3 mg/L 1	0.07	0.50		11/27/19 00:06	Z PA
KQ1917720-21	Carbon, Total Organic	DUP	K1911050-005	Ground Water	1.94 mg/L	10 ml	1.94 mg/L 1	0.07	0.50	2	11/27/19 00:34	Z 102 GH
KQ1917720-22	Carbon, Total Organic	DUP	K1911085-002	Ground Water	1.21 mg/L	10 ml	1.21 mg/L 1	0.07	0.50	5	11/26/19 17:30	of T16
KQ1917720-23	Carbon, Total Organic	DUP	K1911085-001	Ground Water	1.26 mg/L	10 ml	1.26 mg/L 1	0.07	0.50	∞	11/26/19 16:18	86 ION
KQ1917720-24	Carbon, Total Organic	DUP	K1911085-003	Ground Water	0.71 mg/L	10 ml	0.71  mg/L 1	0.07	0.50	ω	11/26/19 17:58	Page
KQ1917720-25	Carbon, Total Organic	DUP	K1911085-004	Ground Water	0.42 mg/L	10 ml	0.42 mg/L J 1	0.07	0.50	5	11/26/19 18:26	z T SOI
KQ1917720-26	Carbon, Total Organic	DUP	K1911084-001	Water	0.13 mg/L	10 ml	0.13 mg/L J 1	0.07	0.50	NC	11/26/19 19:23	Z GH
KQ1917720-27	Carbon, Total Organic	DUP	K1911084-005	Water	$0.06~\mathrm{mg/L}$	10 ml	0.50~mg/L~~U~~1	0.07	0.50	NC	11/26/19 21:15	Z RI
KQ1917/20-28	Carbon, Total Organic	DUP	K1911084-002	Water	0.17 mg/L	10 ml	0.17 mg/L J 1	0.07	0.50	NC	11/26/19 19:51	z
KQ1917720-29	Carbon, Total Organic	DUP	K1911084-003	Water	10.56 mg/L	10 ml	10.6 mg/L 1	0.07	0.50	<u>^</u>	11/26/19 20:19	z
KQ1917720-30	Carbon, Total Organic	DUP	K1911084-004	Water	0.32  mg/L	10 ml	0.32  mg/L  J  1	0.07	0.50	NC	11/26/19 20:47	Z
KQ191//20-31	Carbon, Total Organic	PUP	K1911096-001	Water	0.83 mg/L	10 ml	0.83 mg/L 1	0.07	0.50	5	11/26/19 18:54	Z

<sup>#</sup> indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

KQ191//21-20	KQ191//21-19	KQ1917/21-18	KQ1917721-17	KQ191//21-16	KQ1917/21-15	KQ1917721-14	KQ191//21-13	KQ1917721-12	KQ1917721-11	KQ1917721-10	KQ1917721-09	KQ1917721-08	KQ1917721-07	KQ1917721-06	KQ1917721-05	KQ1917721-04	KQ1917721-03	KQ1917721-02	KQ1917721-01	K1911034-010	K1911034-009	K1911034-008	K1911034-007	K1911034-006	K1911034-005	K1911034-004	K1911034-003	K1911034-002	K1911034-001	K1910963-001	Lab Code	Instrumen
Carbon, Total Organic	Carbon, Lotal Organic						Carbon, Total Organic			Carbon, Total Organic		8 Carbon, Total Organic	7 Carbon, Total Organic	6 Carbon, Total Organic	5 Carbon, Total Organic	4 Carbon, Total Organic			l Carbon, Total Organic			Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic		Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Carbon, Total Organic	Target Analytes	Instrument Name: K-TOC-03
DUP	UP	DUP	DUP	PUP	DUP	DUP	אטם	DUP	DUP	DUP	SM	LCS	MB	ССВ	ССВ	ССВ	CCV	CCV	CCV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	00	
K1911034-010	K1911034-009	K1911034-008	K1911034-007	K1911034-006	K1911034-005	K1911034-004	K1911034-003	K1911034-002	K1911034-001	K1910963-001	K1910963-001																				Parent Sample	Analyst: BDITZLER
Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Matrix	ΓZLER
4.60 mg/L	3.55 mg/L	4.76 mg/L	3.62 mg/L	6.43 mg/L	2.84 mg/L	12.37 mg/L	4.26 mg/L	5.09 mg/L	4.16 mg/L	$0.00~\mathrm{mg/L}$	25.13 mg/L	24.70 mg/L	$0.00~\mathrm{mg/L}$	$0.00~\mathrm{mg/L}$	$0.00~\mathrm{mg/L}$	0.00 mg/L	24.12 mg/L	24.59 mg/L	24.37 mg/L	4.73 mg/L	3.59 mg/L	4.73 mg/L	3.58  mg/L	6.47 mg/L	2.85 mg/L	12.66 mg/L	4.26 mg/L	5.08 mg/L	4.16 mg/L	$0.00~\mathrm{mg/L}$	Raw Result	
10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	10 ml	Sample Amt.	Analysis Lot:
4.60 mg/L	3.55 mg/L	4.76 mg/L	3.62 mg/L	6.43 mg/L	$2.84~\mathrm{mg/L}$	12.4 mg/L	4.26 mg/L	$5.09~\mathrm{mg/L}$	4.16 mg/L	0.50~mg/L~U	25.1  mg/L	24.7 mg/L	$0.50~\mathrm{mg/L}~\mathrm{U}$	0.50 mg/L U	0.50 mg/L U	$0.50~\mathrm{mg/L}~\mathrm{U}$	24.1  mg/L	24.6 mg/L	24.4 mg/L	4.73 mg/L	3.59 mg/L	4.73 mg/L	3.58 mg/L	6.47 mg/L	2.85  mg/L	12.7 mg/L	4.26 mg/L	5.08  mg/L	4.16 mg/L		Final Result	661465
_	1	_	-	1	-		_	_	-	-	_		-	_	-		_		_	_		-		-	-	_	-	_	_	-	Dil	
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07				0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	MDL	ethod/1
0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50				0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		estcod
i											101	99																			% Rec	le: 41
3	1	<u>^</u>	-	Δ	$\triangle$	2	<u>^</u>	<u>^</u>	<u>^</u>	NC																					c % RSD	Method/Testcode: 415.1/TOC T
11/27/19 05:44	11/27/19 05:16	11/27/19 04:48	11/27/19 04:20	11/27/19 03:52	11/27/19 03:24	11/27/19 02:26	11/27/19 01:58	11/27/19 01:30	11/27/19 01:02	11/27/19 06:12	11/27/19 06:40	11/26/19 22:55	11/26/19 22:41	11/27/19 07:38	11/27/19 03:09	11/26/19 22:26	11/27/19 07:24	11/27/19 02:54	11/26/19 22:11	11/27/19 05:44	11/27/19 05:16	11/27/19 04:48	11/27/19 04:20	11/27/19 03:52	11/27/19 03:24	11/27/19 02:26	11/27/19 01:58	11/27/19 01:30	11/27/19 01:02	11/27/19 06:12	Date Analyzed	
Z	z	z	z	z	z	z	z	z	z	Z <sub>P</sub>	z age	Z8/7	Z Of 72	Zi e		z	Z	z	z	Z	z	Z	<b>z</b> :	Z	z	Z:	z	Z:	<b>z</b> :	z	ر ا	

<sup>#</sup> indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

KQ1917722-11		KQ1917722-10	KQ1917722-09		KQ1917722-06 KQ1917722-06	KQ1917722-05	KQ1917722-05	KQ1917722-04	KQ1917722-03 KQ1917722-03	KQ1917722-02	KQ1917722-02	KQ1917722-01	KQ1917722-01	K1911043-002	<u>Lab Code</u> K1910963-002	Instrument Name: K-TOC-03
	Carbon, Dissolved Organic DUP	Carbon, Dissolved Organic N/A (DOC)	Carbon, Dissolved Organic DUP Carbon, Dissolved Organic DUP (DOC)	Carbon, Dissolved Organic MS	Carbon, Dissolved Organic LCS Carbon, Dissolved Organic LCS (DOC)	Carbon, Dissolved Organic MB (DOC)	(DOC) Carbon, Dissolved Organic MB	Carbon, Dissolved Organic CCB	Carbon, Dissolved Organic CCV Carbon, Dissolved Organic CCV (DOC)	Carbon, Dissolved Organic CCB (DOC)	Carbon, Dissolved Organic CCB	Carbon, Dissolved Organic CCV (DOC)	Carbon, Dissolved Organic CCV	Carbon, Dissolved Organic N/A (DOC)	Target Analytes QC Carbon, Dissolved Organic N/A	: K-TOC-03
	KQ1917722-10		K1910963-002 K1911043-002	'											Parent Sample	Analyst: BDITZLER
117	Water	Water	Water Water	Water	Water Water	Water	Water Water	Water	Water Water	Water	Water	Water	Water	Water	Matrix Water	ZLER
25 49 mg/I	0.00 mg/L	$0.00~\mathrm{mg/L}$	0.00 mg/L 1.75 mg/L	25.49 mg/L	24.76 mg/L 24.76 mg/L	0.00 mg/L	0.00 mg/L	0.00 mg/L	24.23 mg/L 24.23 mg/L	0.00 mg/L	$0.00~\mathrm{mg/L}$	24.12 mg/L	24.12 mg/L	1.70 mg/L	Raw Result 0.00 mg/L	
10 ml	10 mL	10 mL	10 mL 10 mL	10 mL	10 mL 10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	10 mL	Sample Amt. 10 mL	Analysis Lot:
25.5 mg/L	0.50 mg/L U	$0.50~{ m mg/L}~{ m U}$	0.50 mg/L U 1.75 mg/L	25.5 mg/L	24.8 mg/L 24.8 mg/L	0.50 mg/L U	0.50 mg/L U	0.50 mg/L U	24.2 mg/L 24.2 mg/L	0.50 mg/L U	0.50 mg/L U	24.1 mg/L	24.1 mg/L	1.70 mg/L	Final Result 0.50 mg/L U	: 661466
0	1 0	1 0	1 0	1 0	1 0	1 0		0		1 0	1 0	-	_	1 0	- Dii M	
0 07 6	0.07	0.07 (	0.07 (	0.07 (	0.07 (		0.07 (	0.07 (			0.07				0.07 I	od/Tes
0 < 0 102	0.50	0.50	0.50 0.50	0.50 102	0.50 99 0.50 99	0.50	0.50	0.50		0.50	0.50			0.50	POL % Rec 0.50	Method/Testcode: 415.1/TOC D
	NC		NC 3												c % RSD	5.1/TOC
11/27/10 08-51-00	11/27/19 08:23:00	11/27/19 08:23:00	11/27/19 08:23:00 11/27/19 09:20:00	11/27/19 08:51:00	11/27/19 08:08:00 11/27/19 08:08:00	11/27/19 07:53:00		11/27/19 10:31:00	11/27/19 10:17:00 N 11/27/19 10:17:00 N	11/27/19 07:38:00	11/27/19 07:38:00	11/27/19 07:24:00	11/27/19 07:24:00	11/27/19 09:20:00	<b>Date Analyzed</b> 11/27/19 08:23:00	Ď
Z	z	Z	Z Z Page	88 o	f 718	Z	ZZ	z	zz		Z	z	Z	Z	<u>QC?</u> ∶	

<sup>#</sup> indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.383	0.0000	24.3827	24.3827	24.4	11/26/2019
3	ccb	1	0.000	0.0000	0.0000	0	< 0.5	11/26/2019
4	mb	1	0.000	0.0000	0.0000	0	<0.5	11/26/2019
5	lcs	1	25.010	0.0000	25.0096	25.0096	25.0	11/26/2019
6	K1910847-004	20	3.251	0.0000	3.2507	65.014	65.01	11/26/2019
7	K1910847-004	20	3.241	0.0000	3.2405	64.81	64.8	11/26/2019
8	K1910803-002	200	0.898	0.0000	0.8975	179.5	180	11/26/2019
9	K1910803-002	200	0.925	0.0000	0.9249	184.98	184.98	11/26/2019
10	K1910803-003	1	14.267	0.0000	14.2670	14.267	14.27	11/26/2019
11	K1910803-003	1	15.165	0.0000	15.1650	15.165	15.2	11/26/2019
12	K1910803-004	100	13.033	0.0000	13.0326	1303.26	1303.26	11/26/2019
13	K1910803-004	100	12.361	0.0000	12.3610	1236.1	1236.10	11/26/2019
14	K1910803-005	1	16.696	0.0000	16.6964	16.6964	16.70	11/26/2019
15	K1910803-005	1	16.522	0.0000	16.5216	16.5216	16.5	11/26/2019
16	K1911085-001	1	1.165	0.0000	1.1654	1.1654	1.2	11/26/2019
17	K1911085-001	1	1.261	0.0000	1.2605	1.2605	1.26	11/26/2019
18	KQ1917720-11	1	27.011	0.0000	27.0105	27.0105	27.0	11/26/2019
19	ccv	1	24.839	0.0000	24.8385	24.8385	24.8	11/26/2019
20	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/26/2019
21	K1911085-002	1	1.276	0.0000	1.2760	1.276	1.28	11/26/2019
22	K1911085-002	1	1.208	0.0000	1.2081	1.2081	1.2	11/26/2019
23	K1911085-003	1	0.733	0.0000	0.7327	0.7327	0.7	11/26/2019
24	K1911085-003	1	0.715	0.0000	0.7146	0.7146	0.71	11/26/2019
25	K1911085-004	1	0.442	0.0000	0.4422	0.4422	<0.5	11/26/2019

CAL	Date 10/20/16	ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

Analyzed By: But Date Analyzed | 700/9

Analyzed By: Date Analyzed 1/20/19

Reviewed By: Date Reviewed 12/2/19

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPIATE\TOCwaterLIMS

## Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1911085-004	1	0.421	0.0000	0.4205	0.4205	<0.5	11/26/2019
27	K1911096-001	1	0.788	0.0000	0.7884	0.7884	0.79	11/26/2019
28	K1911096-001	1	0.831	0.0000	0.8314	0.8314	0.8	11/26/2019
29	K1911084-001	1	0.122	0.0000	0.1219	0.1219	<0.5	11/26/2019
30	K1911084-001	1	0.126	0.0000	0.1262	0.1262	<0.5	11/26/2019
31	K1911084-002	1	0.175	0.0000	0.1751	0.1751	<0.5	11/26/2019
32	K1911084-002	1	0.172	0.0000	0.1718	0.1718	< 0.5	11/26/2019
33	K1911084-003	1	10.564	0.0000	10.5636	10.5636	10.6	11/26/2019
34	K1911084-003	1	10.562	0.0000	10.5616	10.5616	10.6	11/26/2019
35	K1911084-004	1	0.431	0.0000	0.4313	0.4313	<0.5	11/26/2019
36	K1911084-004	1	0.316	0.0000	0.3155	0.3155	<0.5	11/26/2019
37	K1911084-005	1	0.144	0.0000	0.1438	0.1438	<0.5	11/26/2019
38	K1911084-005	1	0.059	0.0000	0.0587	0.0587	<0.5	11/26/2019
39	K1911037-001	1	5.794	0.0000	5.7939	5.7939	5.8	11/26/2019
40	K1911037-001	1	5.877	0.0000	5.8773	5.8773	5.9	11/26/2019
41	ccv	1	24.373	0.0000	24.3729	24.3729	24.4	11/26/2019
42	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/26/2019
43	K1911037-002	1	25.829	0.0000	25.8285	25.8285	25.8	11/26/2019
44	K1911037-002	1	26.233	0.0000	26.2334	26.2334	26.2	11/26/2019
45	K1911037-003	1	0.631	0.0000	0.6306	0.6306	0.6	11/26/2019
46	K1911037-003	1	0.406	0.0000	0.4058	0.4058	<0.5	11/26/2019
47	K1911050-001	1	16.222	0.0000	16.2221	16.2221	16.2	11/27/2019
48	K1911050-001	1	16.339	0.0000	16.3389	16.3389	16.3	11/27/2019
49	K1911050-005	1	1.977	0.0000	1.9767	1.9767	2.0	11/27/2019
50	K1911050-005	1	1.935	0.0000	1.9351	1.9351	1.9	11/27/2019

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	24.586	0.0000	24.5857	24.5857	24.59	11/27/2019
52	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<b>&gt;0.5</b>	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0 /	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	< 0.5	
62		1		0.0000	0.0000	0	< 0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1 /		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: VV	Date Analyzed 1/26/19
Reviewed By:	Date Reviewed 12 2 19

Matrix: WATER

Analysis: Total Organic Carbon (WATER)

Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.373	0.0000	24.3729	24.3729	24.4	11/26/2019
3	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/26/2019
4	mb	1	0.000	0.0000	0.0000	0	<0.5	11/26/2019
5	lcs	1	24.702	0.0000	24.7023	24.7023	24.7	11/26/2019
6	K1911034-001	1	4.162	0.0000	4.1616	4.1616	4.16	11/27/2019
7	K1911034-001	1	4.162	0.0000	4.1619	4.1619	4.2	11/27/2019
8	K1911034-002	1	5.084	0.0000	5.0839	5.0839	5	11/27/2019
9	K1911034-002	1	5.087	0.0000	5.0872	5.0872	5.09	11/27/2019
10	K1911034-003	1	4.263	0.0000	4.2629	4.2629	4.26	11/27/2019
11	K1911034-003	1	4.258	0.0000	4.2581	4.2581	4.3	11/27/2019
12	K1911034-004	1	12.665	0.0000	12.6646	12.6646	12.66	11/27/2019
13	K1911034-004	1	12.375	0.0000	12.3749	12.3749	12.37	11/27/2019
14	ccv	1	24.586	0.0000	24.5857	24.5857	24.59	11/27/2019
15	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
16	K1911034-005	1	2.851	0.0000	2.8509	2.8509	2.9	11/27/2019
17	K1911034-005	1	2.841	0.0000	2.8414	2.8414	2.84	11/27/2019
18	K1911034-006	1	6.468	0.0000	6.4677	6.4677	6.5	11/27/2019
19	K1911034-006	1	6.427	0.0000	6.4268	6.4268	6.4	11/27/2019
20	K1911034-007	1	3.577	0.0000	3.5774	3.5774	3.58	11/27/2019
21	K1911034-007	1	3.619	0.0000	3.6185	3.6185	3.62	11/27/2019
22	K1911034-008	1	4.732	0.0000	4.7321	4.7321	4.7	11/27/2019
23	K1911034-008	1	4.765	0.0000	4.7648	4.7648	4.8	11/27/2019
24	K1911034-009	1	3.591	0.0000	3.5914	3.5914	3.59	11/27/2019
25	K1911034-009	1	3.548	0.0000	3.5484	3.5484	3.55	11/27/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51.	A
LCS =24.0 ppm APG 4013 Lot #010615	(REF# 11-GEN-05-50N)
CCV = 25.0 ppm (Ref.#11-GEN-05-52E)	
Spike: 0.05 ml of 5000 ppm stock> 10.0 ml	=25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)
	date time

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOC\waterLIMS

Analyzed By: Ku

Reviewed By:

Date Analyzed ) / 16/19

Date Reviewed

## Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1911034-010	1	4.735	0.0000	4.7348	4.7348	4.73	11/27/2019
27	K1911034-010	1	4.602	0.0000	4.6022	4.6022	4.60	11/27/2019
28	K1910963-001	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
29	K1910963-001	1	0.000	0.0000	0.0000	0	< 0.5	11/27/2019
30	KQ1917721-09	1	25.134	0.0000	25.1340	25.134	25.1	11/27/2019
31	ccv	1	24.121	0.0000	24.1211	24.1211	24.1	11/27/2019
32	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	< 0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<b>√</b> 0.5	
38		1		0.0000	0.0000	0 /	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	< 0.5	·
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		$\sqrt{1}$		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	00	< 0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	Date Analyzed 11/26/19	
Reviewed By:	Date Reviewed 12219	

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method: Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
СВА	RB	1			0.0000	0	<0.5	
2	ccv	1	24.121	0.0000	24.1211	24.1211	24.1	11/27/2019
3 .	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
4	mb	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
5	lcs	1	24.756	0.0000	24.7562	24.7562	24.8	11/27/2019
6	K1910963-002	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
7	K1910963-002	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
8	K1910963-002 ms	1	25.491	0.0000	25.4906	25.4906	25	11/27/2019
9	K1911043-002	50	1.697	0.0000	1.6970	84.85	84.85	11/27/2019
10	K1911043-002	50	1.748	0.0000	1.7483	87.415	87.42	11/27/2019
11	ccv	1	24.234	0.0000	24.2344	24.2344	24.2	11/27/2019
12	ccb	1	0.000	0.0000	0.0000	0	<0.5	11/27/2019
13		<del>1</del>		0.0000	0.0000	-0-	<del>~0,5</del>	
14		1		0.0000	0.0000	0	<0.5	
15		1		0.0000	0.0000	0_	<0.5	
16		1		0.0000	0.0000	0	<0.5	
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25				0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16	ICAL ID#:	:11-GEN-05-51 <i>A</i>	<u>.</u>			
LCS =24.0 ppm AP0	G 4013	Lot #010615 (	REF# 11-GEN-0	05-50N)		
CCV = 25.0  ppm (Re	f.#11-GEN-	·05-52E)				
Spike: 0.05 ml of 5000	) ppm stock	> 10.0 ml	=25.0 ppm x D	ilution Fa	actor (Ref.#	11-GEN-05-51M)
					1.	•
			15	100	date	time
Analyzed By:	****		Date Analyzed	11/16/	19	
Reviewed By:		- Ot	Date Reviewed	12/2/19		
Revision 1, 2010	R:\WET\A	ANALYSES	OC\TEMPLA		CwaterLIM	S
			Daga 90 a	f 100	\$45000000000000000000000000000000000000	

TOC: 661464, 661465 DOC: 661466

Schedule: 11262019

Version: 5

**Instrument:** Fusion1

Last Saved by: Fusion1 (Fusion1)

Last Saved on: 2019/11/26 11:38 - Tuesday

	Sample Type	Sample ID	Method ID (Calibration ID)	Reps		State
(Clean)	Clean	Clean		1	(compression construction)	Ready
(Clean)	Clean	Clean		1	Constitution for the second second	Ready
(Clean)	Clean	Clean		1	mark dark bencemen	Ready
(Blank)	Blank	Reagent/Acid Blank		1		Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	ajo iroteen aracistikas eies	Ready
В	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
С	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1910847-004.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1910803-002.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K1910803-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K1910803-004.01 100x	CAS salt 010711 (CAS salt 010711)	2	True	Ready
7	Sample	K1910803-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1911085-001.01	CAS salt 010711 (CAS salt 010711)	2	sensionane en en en en en	Ready
9	Sample	K1911085-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	and the second second	Ready
В		[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
D		[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
10	Sample	K1911085-002.01	CAS_salt_010711 (CAS_salt_010711)	2	**********	Ready
11	Sample	K1911085-003.01	CAS_salt_010711 (CAS_salt_010711)	2	***********	Ready
12	Sample	K1911085-004.01	CAS_salt_010711 (CAS_salt_010711)	2	nancale relations and a	Ready
13	Anna aire an aireann an aireann an an ann an an an an an an an an an		CAS_salt_010711 (CAS_salt_010711)	2	percepanguages a secondario	Ready
14	Sample	K1911096-001.01		browniamonood	demonstration and the	distribution and commence of
	Sample	K1911084-001.04	CAS_salt_010711 (CAS_salt_010711)	2	-	Ready
15	Sample	K1911084-002.04	CAS_salt_010711 (CAS_salt_010711)	2	ALCOHOLOGIC CONTRACTOR	Ready
16	Sample	K1911084-003.04	CAS_salt_010711 (CAS_salt_010711)	2		Ready
17	Sample	K1911084-004.04	CAS_salt_010711 (CAS_salt_010711)	2	contractive services and	Ready
18	Sample	K1911084-005.04	CAS_salt_010711 (CAS_salt_010711)	2		Ready
19	Sample	K1911037-001.02	CAS_salt_010711 (CAS_salt_010711)	2	\$46554556666546655466666	Ready
3	agricus de compresa de la compresa de comp	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1911037-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1911037-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1911050-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1911050-005.09	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1911034-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1911034-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1911034-003.02	CAS_salt_010711 (CAS_salt_010711)	2	ACCORDING TO THE PARTY OF THE P	Ready
28	Sample	K1911034-004.02		2	True	Ready
3		ITOCI CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
)		[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1		Ready
29	Sample	K1911034-005.02	La construir de la construir d	2	ex-re-bounded-low-low-low-ratio	Ready
30	Sample	K1911034-006.02		2		Ready
31	Sample	K1911034-007.02		2	Artestockets bird colockets in	Ready
32	Sample	K1911034-007.02		2	all all the second second second	Ready
33	Sample	K1911034-009.02		2	OMMONTH OF THE PARTY OF THE PAR	Ready
34	Sample	K1911034-009.02		2	****	Ready
35	Sample	K1910963-001.08		2	STANDARD STANDARD STANDARD	Ready
and the second s		K1910963-001.08 ms		processor and a second		CONTRACTOR DESIGNATION OF THE PARTY OF THE P
36	Sample		CAS_salt_010711 (CAS_salt_010711)	1	Sental printers are a sentence of	Ready
37	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	graderation in electronic and a	Ready
38	Sample	FB 11/22/19	CAS_salt_010711 (CAS_salt_010711)	1	armonic communicació	Ready
3	Uneck Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

## **Schedule: 11262019**

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
С	Check Standard	[TOC] LCS [25.0 ppm]	CAS salt 010711 (CAS salt 010711)	referencement of the real	and the second second	Ready
40		K1910963-002.10 doc	CAS_salt_010711 (CAS_salt_010711)	2		Ready
41	Sample	K1910963-002.10 ms doc	CAS_salt_010711 (CAS_salt_010711)	1		Ready
42	Sample	RB	CAS salt 010711 (CAS salt 010711)	miliono montro con con con con con con con con con co	True	Ready
43	Sample	K1911043-002.01 doc 50x	CAS_salt_010711 (CAS_salt_010711)	2		Ready
44	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
В	Check Standard	[TOC] CCV 25 ppm [25 ppm]		Name and the second	Surger Surger Surger Surger	Ready
D		[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True True True True True True True True	Ready
***************************************					False	****

#### Fusion Report - 11262019 Tuesday, November 26, 2019 10:48 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History) Printed on 2019/11/27 12:19 -Wednesday

#### **Report Summary Information**

Company Location:

Gen Chem Lab

Schedule Name:

11262019

Engine

1.1.5.1

Instrument Name:

Fusion1

Version:

1.2.0696

Report Version:

1 of 1

Firmware Version:

Connection: RS232 COM1

Report Creation by Operators (schedule

Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3)

version):

Fusion1 (Fusion1) (v4)

Fusion1 (Fusion1) (v5)

Comment:

#### **Report Results**

San	nple Typ	<u>e</u> : Cle	ean			From	Schedule Version
	Pos		nalysis Type	Sample II	D	Start	Time
*	* (clean)			Clean		2019/11/	26 10:48
Re #	Base Analysis Type		nalysis Adjusted NDIR (		Baseline (Abs)	Pressure (psig)	Run Time
1	IC CI	ean	14.10	17.92	3.82	49.80	05:22
2	тсс	lean	10.56	14.21	3.66	50.06	04:02
3	тс с	lean	2.88	6.61	3.72	50.11	03:48
4	тс с	lean	2.30	5.98	3.68	50.04	03:46

	PAS	nalysis Type	Sample II	Start	Start Time			
*	(clean)		Clean		2019/11/	2019/11/26 11:10		
Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time		
1	IC Clean	11.69	15.35	3.66	49.64	05:11		
2	TC Clean	4.38	8.07	3.69	50.07	04:02		
3	TC Clean	1.75	5.60	3.85	50.06	03:46		

Page 97 of 116

4 TC Clean 1.69 5.44	3.75	50.04	03:46
----------------------	------	-------	-------

	Pos	Analysis Type	Sample II	D	Star	Start Time		
* (0	clean)		Clean	2019/11/26 11:33				
Rep Bas # Analy Typ		s Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time		
1	IC Clea	n 11.94	15.55	3.61	49.82	05:24		
2	TC Clea	n 4.50	8.40	3.90	50.14	04:02		
3	TC Clea	n 1.90	5.70	3.81	50.15	03:57		
4	TC Clea	n 1.54	5.37	3.83	50.13	03:56		

	Λ.	nalysis						
		тагуыз Туре	Sample II	)	Start	Time		
* (	blank)		Reagent/Acid l	d Blank 2019/11/26 11:56				
Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time		
1	IC Clean	0.95	4.60	3.65	49.63	05:20		
	•							
2	TC Clean	5.07	8.76	3.70	50.08	04:02		
3	TC Clean	2.11	5.67	3.55	50.12	03:49		
4	TC Clean	2.00	5.72	3.72	50.10	03:45		
5	Reagent Blank	4.00	7.73	3.74	50.16	05:07		
	···							
6	Acid Blank	1.33	4.87	3.54	49.64	05:27		

<u> </u>	mpie	Type: Sample							From	Schedule V	ersion
	Pos	Analysis Type	Sample ID	Result (	ppmC)		. Dev. omC)	RSE	)	Start Time	•
>	D	тос	RB	0.34	149 ppm	0.0	0000 ppm	0.0000	0% 20	19/11/26 12	2:29
	ep # Aı	Base nalysis Type	ppm	µg	Adjust (Abs		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	0.3449	3.4494		11.12		14.98	3.86	50.33	10:31
	ַ	<u> Dilution</u>	Blank Contribution	M	lethod		Calibra	ition			
		1:10	(TC) 8.7826 (IC) (v1324)	CAS_s	 alt_01071 <i>*</i> (v4)	1	 _CAS_salt_ (v30	•	I		

#### Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 5

		Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
·	•	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]		24.3827 ppm (PASS)	0.0000 ppm	0%	2019/11/26 12:44

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time	-
В	TOC	25 ppm	1	24.3827	243.8273	174.97	178.89	3.92	50.40	10:31	-

Completion State
Success - Criteria
met.

Success Action
Do Nothing

<u>Method</u> CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30) STD Conc - Pos B

50 ppmC

#### Sample Type: Check Standard --> CCB

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
*	D	тос	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity ( NA / NA )	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/26 12:59

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.52	11.31	3.79	50.39	10:33

Completion State
Success - Criteria
met.

Success Action
Do Nothing

<u>Method</u> CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30) STD Conc - Pos D 0 ppmC

#### Sample Type: Sample

From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/26 13:13

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.58	10.65	4.06	50.39	10:32

Dilution 1:10 Blank Contribution (TC) 8.7826 (IC)

(v1324)

Method CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

#### Sample Type: Check Standard --> LCS

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	С	ТОС	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity ( NA / NA )	25.0096 ppm (PASS)	0.0000 ppm	0%	2019/11/26 13:28

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	***************************************
С	TOC	25.0 ppm	1	25.0096	250.0957	179.23	183.05	3.83	50.39	10:30	

**Completion State** Success - Criteria met.

**Success Action** Do Nothing

**Method** CAS\_salt\_010711 (v4)

**Calibration** CAS\_salt\_010711 (v30)

STD Conc - Pos C 25 ppmC

Sample Type: Sample

From Schedule Version 5

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
2	TOC	ICS	0.5966 ppm	0.0000 ppm	0.0000%	2019/11/26 13:43

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	Year or the second
1	TOC	0.5966	5.9656	12.83	16.66	3.83	50.42	10:31	-

**Dilution** 

**Blank Contribution** 

**Method** 

**Calibration** CAS\_salt\_010711

1:10 (TC) 8.7826 (IC) CAS salt 010711 (v1324)(v4)(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
Ľ	3	TOC	K1910847-004.01 20x	3.2456 ppm	0.0072 ppm	0.2200%	2019/11/26 13:58

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	3.2507	32.5068	30.85	34.44	3.59	50.32	10:28
2	TOC	3.2405	32.4052	30.78	34.52	3.74	50.36	10:29

**Dilution** 1:10

**Blank Contribution** (TC) 8.7826 (IC) (v1324)

<u>Method</u> CAS\_salt\_010711

 $(v\overline{4})$ 

**Calibration** CAS salt 010711  $(v3\overline{0})$ 

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
4	TOC	K1910803-002.01 200x	0.9112 ppm	0.0194 ppm	2.1300%	2019/11/26 14:26

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	· TOC	0.8975	8.9754	14.88	18.48	3.60	50.30	10:25
2	TOC	0.9249	9.2494	15.06	18.56	3.50	50.32	10:28

**Dilution** 1:10

**Blank Contribution** (TC) 8.7826 (IC) (v1324)

**Method** CAS\_salt\_010711 (v4)

**Calibration** CAS\_salt\_010711 (v30)

		Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
-	•	5	TOC	K1910803-003.01	14.7160 ppm	0.6350 ppm	4.3200%	2019/11/26 14:54

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	14.2670	142.6698	105.63	109.34	3.72	50.29	10:27
2	тос	15.1650	151.6504	111.72	115.38	3.65	50.36	10:27

	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7826 (v1324)	(IC)		<u>lethod</u> salt_0107 (v4)	11	<u>Calibr</u> CAS_salt (v3	_01071	1		
Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. pmC)	RSI	)	Start Time	•
<b>♦</b> 6	TOC	K1910803-004.01	l 100x	12.69	968 ppm	0.	4749 ppm	3.740	0% 20	19/11/26 15	5:22
Rep	Base Analysis Type	ppm		µg	Adju: (Ab		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.0326		130.3259		97.25		100.87	3.62	50.25	10:29
2	TOC	12.3610		123.6095		92.69		96.45	3.76	50.27	10:27
	Dilution 1:10	Blank Contrib (TC) 8.7826			lethod salt_0107	11	Calibra CAS_salt	_01071	1		
Pos	Analysis	(v1324) Sample ID	and the state of t	Result (	(v4)		. <b>Dev</b> .	O) RSE		Start Time	
	Туре			-			omC)				
* 7	TOC	K1910803-005	.UI	16.60	90 ppm		1237 ppm	0.7400	ו%ן 20	19/11/26 15	:50
Rep #	Base Analysis Type	ppm	l	hā	Adjus (Ab		NDIR (/	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.6964		166.9644		122.12		125.79	3.68	50.24	10:29
2	TOC	16.5216		165.2157		120.93		124.49	3.56	50.25	10:25
Pos	Analysis Type	(v1324) Sample ID		Result (	(v4)		(v30 . <b>Dev</b> .	)) RSD		Start Time	dalance com ricogas c qual con segue
<u> </u>			3			/nr	nmC1	3	1	Start Time	!
<b>♦ 8</b>	TOC	K1911085-001.	.01	1.21		~~~~~~~	omC) 0673 ppm	5.5500	0% 20	MATTER TO THE TOTAL PROPERTY OF THE TOTAL PR	
Rep	Base	K1911085-001		1.21 µg	29 ppm Adjus	0.0	0673 ppm NDIR (A		Baseline	19/11/26 16	::18 Run
Rep					29 ppm	0.0	0673 ppm			19/11/26 16	:18 Run Time
Rep /	Base Analysis Type	ppm		hā	29 ppm Adjus	0.0 sted s)	0673 ppm	\bs)	Baseline (Abs)	19/11/26 16 Pressure (psig)	Run Time 10:31
Rep # # # 1 2	Base Analysis Type TOC	1.1654 1.2605 Blank Contrib (TC) 8.7826	ution	11.6536 12.6053 M CAS_s	29 ppm   Adjus (Ab ethod alt_0107	0.0 sted s) 16.69 17.34	NDIR (A	20.36 20.94 20.971	Baseline (Abs) 3.67 3.60	19/11/26 16  Pressure (psig)  50.28	::18 Run
Rep # # # 1 2	Base Analysis Type TOC TOC Dilution 1:10 Analysis	1.1654 1.2605 Blank Contrib (TC) 8.7826 (v1324)	ution	11.6536 12.6053 <b>M</b> CAS_s	29 ppm   Adjus (Ab (Ab (Ab (Ab (Ab (Ab (Ab (Ab (Ab (Ab	0.0 sted s) 16.69 17.34	NDIR (A  Calibra CAS_salt_ (v30) Dev.	20.36 20.94 20.94 ation 010711	Baseline (Abs) 3.67 3.60	19/11/26 16  Pressure (psig)  50.28  50.25	Run Time 10:31 10:25
Rep # A	Base Analysis Type TOC TOC  Dilution 1:10  Analysis Type	1.1654 1.2605 Blank Contrib (TC) 8.7826 (v1324) Sample ID	ution (IC)	11.6536 12.6053 M CAS_s	29 ppm  Adjus (Ab  ethod alt_0107 (v4)  ppmC)	0.0 sted s) 16.69 17.34	Calibra CAS_salt_ (v30	20.36 20.94 20.94 ation 010711	Baseline (Abs) 3.67 3.60	19/11/26 16  Pressure (psig) 50.28 50.25  Start Time	Run Time 10:31 10:25
Rep # 1 2 Pos 9 Rep	Base Analysis Type TOC TOC Dilution 1:10  Analysis Type TOC Base	1.1654 1.2605 Blank Contrib (TC) 8.7826 (v1324)	ution (IC)	11.6536 12.6053 M CAS_s	29 ppm  Adjus (Ab  ethod alt_0107 (v4)  ppmC) 05 ppm  Adjus	0.0  sted s) 16.69 17.34  11  Std. (pp 0.0  ted	NDIR (A  Calibra CAS_salt_ (v30) Dev.	20.36 20.94 ation 010711 0) RSD	Baseline (Abs) 3.67 3.60  % 20	19/11/26 16  Pressure (psig) 50.28 50.25  Start Time 19/11/26 16	Run Time 10:31 10:25
Rep # 1 2 Pos 9 Rep	Base Analysis Type TOC TOC  Dilution 1:10  Analysis Type TOC	ppm 1.1654 1.2605  Blank Contrib (TC) 8.7826 (v1324)  Sample ID  K1911085-001.0	ution (IC)	11.6536 12.6053 M CAS_s Result (p	29 ppm  Adjus (Ab  ethod alt_0107 (v4)  ppmC) 05 ppm  Adjus (Ab	0.0  sted s) 16.69 17.34  11  Std. (pp 0.0  ted	Calibra CAS_salt_ (v30 Dev. bmC) 0000 ppm	20.36 20.94 ation 010711 0) RSD	Baseline (Abs) 3.67 3.60	19/11/26 16  Pressure (psig) 50.28 50.25  Start Time 19/11/26 16  Pressure (psig)	Run Time 10:31 10:25
Pos   9   Rep   4   1   1   1   1   1   1   1   1   1	Base Analysis Type TOC Dilution 1:10  Analysis Type TOC  Base Analysis Type	ppm 1.1654 1.2605  Blank Contrib (TC) 8.7826 (v1324)  Sample ID  K1911085-001.0	ution (IC)	11.6536 12.6053 M CAS_s Result (p 27.01 19 270.1046	29 ppm  Adjus (Ab  ethod alt_0107 (v4)  ppmC) 05 ppm  Adjus (Ab	0.0 sted s) 16.69 17.34 11 Std. (pp 0.0 ted s)	Calibra CAS_salt_ (v30 Dev. bmC) 0000 ppm	20.36 20.94 stion 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Baseline (Abs) 3.67 3.60  % 20  Baseline (Abs) 3.44	19/11/26 16  Pressure (psig) 50.28 50.25  Start Time 19/11/26 16	Run Time 10:31 10:25
Rep # 1 2 Pos 9 Rep # 1 1	Base Analysis Type TOC Dilution 1:10  Analysis Type TOC  Base Analysis Type TOC  Dilution 1:10	ppm 1.1654 1.2605  Blank Contrib (TC) 8.7826 (v1324)  Sample ID  K1911085-001.0  ppm 27.0105  Blank Contrib (TC) 8.7826	ution (IC)	11.6536 12.6053 M CAS_s Result (p 27.01 1g 270.1046	29 ppm  Adjus (Ab  ethod alt_0107 (v4)  05 ppm  Adjus (Absented) alt_01071	0.0 sted s) 16.69 17.34 11 Std. (pp 0.0 ted s)	Calibra CAS_salt_ O0000 ppm  NDIR (A	20.36 20.94 stion 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Baseline (Abs) 3.67 3.60  % 20  Baseline (Abs) 3.44	19/11/26 16  Pressure (psig) 50.28 50.25  Start Time 19/11/26 16  Pressure (psig)	Run Time 10:31 10:25

	Pos	ВАТ	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
*	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	, , ,	24.8385 ppm (PASS)	0.0000 ppm	0%	2019/11/26 17:01

Pos	Base Analysis Type	ID	Rep #	ppm	þg	Adjusted	NDIR	Baseline	Pressure	Run Time	
В	TOC	25 ppm	1	24.8385	248.3854	178.06	181.67	3.60	50.28	10:33	-

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 Calibration CAS\_salt\_010711 (v30) STD Conc - Pos B 50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 5

0.0000 4.4 (700) 000 50 (0.4) 5.4	
*         D         TOC         0.0000         1:1         [TOC] CCB [0         0 / infinity         0.0000         0.0000           ppm]         (NA / NA )         ppm         ppm           (PASS)         (PASS)	 % 2019/11/26 17:15

Pos	Base Analysis Type	ID	Rep #	ppm	hâ	Adjusted	NDIR	Baseline	Pressure	Run Time	p
D	TOC	0 ppm	1	0.0000	0.0000	7.91	11.57	3.66	50.23	10:31	Annua de

**Completion State** 

met.

Success - Criteria

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos D 0 ppmC

Sample Type: Sample

From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	10	TOC	K1911085-002.01	1.2420 ppm	0.0480 ppm	3.8700%	2019/11/26 17:30

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2760	12.7600	17.44	21.14	3.70	50.29	10:27
2	TOC	1.2081	12.0809	16.98	20.57	3.58	50.24	10:27

Dilution 1:10 Blank Contribution (TC) 8.7826 (IC)

(v1324)

<u>Method</u> CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

				`	` '	`	,	
		Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
-	•	11	TOC	K1911085-003.01	0.7236 ppm	0.0128 ppm	1.7700%	2019/11/26 17:58

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7327	7.3269	13.76	17.23	3.47	50.29	10:31
2	тос	0.7146	7.1457	13.63	17.20	3.56	50.29	10:27

Dilution 1:10 Blank Contribution (TC) 8.7826 (IC) Method CAS\_salt\_010711

Calibration CAS\_salt\_010711

Page 102 of 116

			(v1324)			(v4)		(v3	0)			
	Pos	Analysis Type	Sample ID	ak ngi katanga Maningalan na ngi na ing maningan ng	Result	(ppmC)		l. Dev. pmC)	RS	D	Start Time	)
•	12	TOC	K1911085-004	.01	0.4	313 ppm	0.	0153 ppm	3.550	0% 20	19/11/26 18	3:26
Re #		Base nalysis Type	ppm		µg	Adju (At		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.4422		4.4217		11.78		15.35	3.56	50.28	10:27
2		TOC	0.4205		4.2051	<u></u>	11.64	<u> </u>	15.08	3.44	50.24	10:26
	<u></u>	Dilution 1:10	Blank Contrib (TC) 8.7826 (v1324)			<u>flethod</u> salt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v3	_01071	1		
1	Pos	Analysis Type	Sample ID		Result (	(ppmC)		. Dev. omC)	RSI	D	Start Time	•
•	13	TOC	K1911096-001	.01	0.80	099 ppm	0.	0304 ppm	3.760	0% 20	19/11/26 18	3:54
Re #		Base nalysis Type	ppm		hã	Adju (Ab		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.7884		7.8837		14.13		17.80	3.66	50.36	10:27
2		TOC	0.8314		8.3139	<u> </u>	14.43		18.14	3.71	50.35	10:25
		1:10 Analysis	(TC) 8.7826 (v1324)		CAS_s	lethod salt_0107 (v4)	***************************************	Calibra CAS_salt_ (v30	 _01071 D)	•		
1	Pos	Туре	Sample ID		Result (	ppmC)	(pp	omC)	RSI		Start Time	
•	14	TOC	K1911084-001	.04	0.12	240 ppm	0.0	0030 ppm	2.440	0% 20°	19/11/26 19	:23
Re <sub>l</sub>		Base nalysis Type	ppm		μg	Adjus (Ab	1	NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.1219		1.2190		9.61	-20000000000000000000000000000000000000	13.15	3.54	50.37	10:26
2		TOC	0.1262	***************************************	1.2617		9.64		13.19	3.55	50.38	10:29
		1:10	Blank Contrib (TC) 8.7826 (v1324)			lethod salt_0107 (v4)		Calibra CAS_salt_ (v30	01071	1		
F	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSE	)	Start Time	
•	15	тос	K1911084-002	.04	0.17	'35 ppm	0.0	0023 ppm	1.3200	0% 201	19/11/26 19	:51
Rep #		Base nalysis Type	ppm		µg	Adjus (Ab		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.1751		1.7508		9.97		13.43	3.46	50.37	10:27
2		TOC	0.1718		1.7184	***************************************	9.95		13.43	3.48	50.37	10:26
	<u>D</u>	<u>Pilution</u> 1:10	Blank Contrib (TC) 8.7826 (v1324)		CAS_s	ethod alt_0107 (v4)	11 (	<u>Calibra</u> CAS_salt_ (v30	01071	1		
F	Pos	Analysis Type	Sample ID		Result (	ppmC)		Dev. mC)	RSE	)	Start Time	
•	16	тос	K1911084-003.	04	10.56	26 ppm	0.0	0015 ppm	0.0100	)% 201	9/11/26 20	:19
Rep		Base	ppm		µg Page 1	Adjus	ted	NDIR (A	vps)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	тос	10.5636	105.6365	80.49	84.23	3.74	50.34	10:27
2	TOC	10.5616	105.6159	80.47	84.07	3.59	50.31	10:28

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7826 (IC) (v1324)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	17	TOC	K1911084-004.04	0.3734 ppm	0.0819 ppm	21.9300%	2019/11/26 20:47

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4313	4.3127	11.71	15.33	3.62	50.32	10:25
2	TOC	0.3155	3.1548	10.92	14.83	3.91	50.28	10:26

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7826 (IC) (v1324)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	18	TOC	K1911084-005.04	0.1013 ppm	0.0602 ppm	59.4500%	2019/11/26 21:15

Re #	p Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	тос	0.1438	1.4385	9.76	13.29	3.53	50.29	10:31
2	тос	0.0587	0.5870	9.18	12.97	3.79	50.26	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7826 (IC) (v1324)
 CAS\_salt\_010711 (v30)
 CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	19	тос	K1911037-001.02	5.8356 ppm	0.0590 ppm	1.0100%	2019/11/26 21:43

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.7939	57.9387	48.11	51.69	3.57	50.25	10:27
2	TOC	5.8773	58.7725	48.68	52.12	3.45	50.26	10:27

 Dilution
 Blank Contribution
 Method
 Calibration

 1:10
 (TC) 8.7826 (IC)
 CAS\_salt\_010711
 CAS\_salt\_010711

 (v1324)
 (v4)
 (v30)

#### Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2		0 / infinity (NA / NA)	24.3729 ppm (PASS)	0.0000 ppm	0%	2019/11/26 22:11

Po	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time	
	···•	***************************************	ł	·			<u> </u>	ŧ	······································	<u> </u>	•

В <u>С</u> с	TOC ompletio	n State	25 ppm <b>Suc</b>	cess	Action		Method	<u>i</u>	<u>Cali</u>	oration	<u>ST</u>	D Conc - Po	<u>s B</u>
Sı	uccess - ( met.		ı D	o No	thing	CA	S_salt_0 <sup>-</sup> (v4)	10711		ilt_01071 /30)	1	50 ppmC	***
Samı	ole Type	Chec	ς Standard	> C	СВ						Fron	n Schedule V	ersion
Р	os BAT	3	centration (ppm)	Dil	Saı	nple ID	Min / (% d		Result	Std. De	v. RSC	Start T	ime
	Э ТОС		0.0000	1:1	-	C] CCB [0 opm]	0 / inf ( NA /		0.0000 ppm (PASS)	0.00 pp	00 0% om	2019/11/20	3 22:26
Pos	Base Analys Type	s	ID	Re #		opm	µg	Adjus	ted	NDIR	Baselin	e Pressure	Run Time
D	тос		0 ppm	1		0.0000	0.0000		6.16	9.80	3.6	4 50.22	10:31
	mpletion ccess - ( met.			cess o Not	Action hing	CA	Method S_salt_01 (v4)	-	CAS_sa	oration lt_01071 30)		<b>D Conc - Po</b> 0 ppmC	<u>s D</u>
Sı	ıccess - (	Criteria	D			CA	 S_salt_01	-	CAS_sa	It_01071	1		
St	nccess - (met.	Criteria	D.		hing		 S_salt_01	., s	CAS_sa	It_01071	From	0 ppmC	ersion
Su	nccess - (met.	Samp	le Sar	o Not	hing	Resu	S_salt_01 (v4)	) s	CAS_sa (\ td. Dev.	RSE	From	0 ppmC	ersion
Samp P	nccess - (met.	Samp lysis pe DC	Die Sar	mple	hing	Resu	S_salt_01 (v4)	) s	td. Dev. ppmC) 0.0000 ppi	RSE	From	0 ppmC Schedule V Start Time 019/11/26 22	ersion
Samp Per 2	ole Type:  Ana Ty  O TO	Samp lysis pe DC se s Type	le Sar	mple	ID	Resu	S_salt_01 (v4)	in S	td. Dev. ppmC) 0.0000 ppi	RSE 0.0000	From 0 0 2 Baseline	O ppmC  Schedule V  Start Time  019/11/26 22  Pressure (psig)	ersion ::41
Samp Po * 2 Rep #	ole Type:  DIS Ana Ty  O TO  Ba  Analysi	Samp lysis pe DC se s Type	le Sar ppr Blank	mple MB2 n 0.000	ID  iributio 26 (IC)	Resu   С   µg   0.000	S_salt_01 (v4)	S m djusted (Abs)	td. Dev. ppmC) 0.0000 ppi  NDIR CAS_sa	RSE 0.0000	From 0 2 Baseline (Abs) 3.68	O ppmC  Schedule V  Start Time  019/11/26 22  Pressure (psig)	ersion ::41 Run Time
Samp Po * 2 Rep #	ole Type:  os Ana Ty 0 TO  Ba Analysi  Dilutio	Samp lysis pe DC se s Type	le Sar ppr Blank	mple MB2 0.000 Cont	ID  iributio 26 (IC)	Resu   С   µg   0.000	S_salt_01 (v4)  olit (ppmC) 0.0000 pp  Ac (00)  Method S_salt_01	S m djusted (Abs)	td. Dev. ppmC) 0.0000 ppi  NDIR CAS_sa	RSE m 0.0000  (Abs) 9.08	From 0 2 Baseline (Abs) 3.68	O ppmC  Schedule V  Start Time  019/11/26 22  Pressure (psig)	ersion ::41 Run Time
Samp Po 2 Rep #	ole Type:  os Ana Ty 0 T(  Analysi  Dilutio 1:10	Samp lysis pe DC se s Type DC	le Sar ppr Blank	mple MB2 0.000 Cont 8.78: (v132	ID OO cributio 26 (IC) (14)	Resu   С   µg   0.000	S_salt_01 (v4)  olit (ppmC) 0.0000 pp  Ac (00)  Method S_salt_01	S m djusted (Abs)	td. Dev. ppmC) 0.0000 ppi  NDIR CAS_sa	RSE m 0.0000  (Abs) 9.08	From  % 2  Baseline (Abs)  3.68	O ppmC  Schedule V  Start Time  019/11/26 22  Pressure (psig)	ersion ::41 Run Time 10:29
Samp Po 2 Rep #	ole Type:  OS Ana Ty  O TO  Ba Analysi  TO  Dilutio 1:10	Samp lysis pe OC se s Type OC n	le Sar ppr Blank (TC)	mple MB2 0.000 Cont 8.78: (v132	ID  cributio 26 (IC) 4)	Resu   С   µg   0.000	S_salt_01 (v4)  olit (ppmC) 0.0000 pp  Ac (00)  Method S_salt_01	(m) Sijusted (Abs) 5.4 0711	td. Dev. ppmC) 0.0000 ppi  NDIR CAS_sa	RSE m 0.0000  (Abs) 9.08	From 3.68	O ppmC  Schedule V  Start Time  019/11/26 22  Pressure (psig)  50.22	ersion  Run Time 10:29

	Pos	s BAT	Concentration (ppm)	Dil	Sample ID	Min / I (% de		Resul	lt	Std. De	v.	RSD	Start Ti	me
*	С	TOC	25.0000	1:1	[TOC] LCS [24 ppm]	.0 0 / infi ( NA /	.,	24.70 p (PAS	pm	0.00 pr	00 om	0%	2019/11/26	22:55
P	os /	Base Analysis Type	ID	Rep	ppm	hã	Ad	justed	•	NDIR	Bas	seline	Pressure	Run Time
(		TOC	25.0 ppm	1	24.7023	247.0227		177.14		180.67		3.53	50.21	10:30
;		n <b>pletion</b> cess - Cr met.		ess /	<b>Action</b> hing CA	Method AS_salt_01 (v4)		-	S_sa	<u>bration</u> alt_010711 /30)	1		Conc - Pos 25 ppmC	<u>s C</u>

		<u>Type</u> : Sample		***************************************	T	······································	1		T			ersion
	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSI	<b>)</b>	Start Time	)
•	21	TOC	K1911037-002	2.02	26.03	309 ppm	0.3	2863 ppm	1.100	0% 20	19/11/26 23	3:10
Re #		Base analysis Type	ppm		hã	Adju (Al		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	25.8285		258.2851		184.10		187.69	3.59	50.23	10:26
2	2	TOC	26.2334		262.3335		186.85		190.55	3.70	50.22	10:26
	ļ	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7826 (v1324)			lethod salt_0107 (v4)	711	Calibra CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID		Result (p	opmC)	Std. (ppi		RSD		Start Time	)
*	22	тос	K1911037-003.	.02	0.518	32 ppm	0.1	590 ppm	30.680	0% 20	19/11/26 23	3:38
Re #		Base nalysis Type	ppm		hã	Adju (Al		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.6306		6.3059		13.06		16.67	3.61	50.22	10:31
2	<u>:                                    </u>	TOC	0.4058		4.0578		11.54		15.13	3.59	50.21	10:28
	<u>[</u>	<u>Dilution</u>	Blank Contrib	ution	<u>M</u>	ethod		Calibra	ation			
		1:10	(TC) 8.7826 (v1324)	(IC)	CAS_s	alt_0107 ( <b>v4</b> )	'11	CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID		Result (	ppmC)		. Dev. omC)	RSD	)	Start Time	
•	23	тос	K1911050-001	.08	16.28	05 ppm	0.0	0826 ppm	0.5100	)% 20	19/11/27 00	:06
Re #		Base nalysis Type	ppm		µg	Adju (Ab		NDIR (A	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	16.2221		162.2207		118.90	1	22.49	3.59	50.22	10:30
2		TOC	16.3389		163.3889		119.69	1	23.24	3.55	50.22	10:28
econogra		Dilution 1:10	Blank Contrib (TC) 8.7826 (v1324)		CAS_s	<u>ethod</u> alt_0107 (v4)	'11 (	<u>Calibra</u> CAS_salt_ (v30	010711			iddianath (in <b>s</b> hunni <b>sh</b> un shunnga
	Pos	Analysis Type	Sample ID		Result (	٥.	614	Dev.	RSD		Start Time	
_		TOC					(pp	mC)				
_	24	100	K1911050-005.	.09		59 ppm	(pp	- {	1.5000	)% 20 <sup>-</sup>	19/11/27 00	:34
∗ Re #	р	Base nalysis Type	K1911050-005.	•			(pp 0.0 sted	mC)	1.5000	Baseline (Abs)		:34 Run Time
<ul><li>Re</li><li>#</li><li>1</li></ul>	p Aı	Base nalysis Type	<b>ppm</b> 1.9767	•	1.95 <b>µg</b> 19.7666	59 ppm Adju	(pp 0.0 sted os) 22.20	omC) 0294 ppm NDIR (A	1.5000 <b>Abs)</b> 25.66	Baseline (Abs)	Pressure (psig) 50.20	Run Time 10:27
∗ Re #	p Aı	Base nalysis Type	ppm	•	1.95 <b>µg</b>	59 ppm Adju	(pp 0.0 sted os)	omC) 0294 ppm NDIR (A	1.5000	Baseline (Abs)	19/11/27 00 Pressure (psig)	Run Time
<ul><li>Re</li><li>#</li><li>1</li></ul>	PAI	Base nalysis Type	<b>ppm</b> 1.9767		1.95 <b>µg</b> 19.7666  19.3511	59 ppm Adju	(pp 0.0 sted os) 22.20	omC) 0294 ppm NDIR (A	1.5000 <b>Abs)</b> 25.66 25.52	Baseline (Abs)	Pressure (psig) 50.20	Run Time 10:27
<ul><li>Re</li><li>#</li></ul>	PAI	Base nalysis Type TOC	ppm 1.9767 1.9351	ution	1.95  pg 19.7666 19.3511  Mac CAS_s	59 ppm Adju: (Ab	(pp 0.0 sted os) 22.20 21.92	mC) 0294 ppm NDIR (A	1.5000 <b>(bs)</b> 25.66 25.52 <b>(tion</b> 010711	Baseline (Abs) 3.46 3.60	Pressure (psig) 50.20	Run Time 10:27
Re # 1 2	PAI	Base nalysis Type TOC TOC	1.9767 1.9351 Blank Contrib (TC) 8.7826	ution	1.95  pg 19.7666 19.3511  Mac CAS_s	Adjus (Absented of the control of th	(pp 0.0 sted os) 22.20 21.92	NDIR (A  Calibra CAS_salt_	1.5000 <b>(bs)</b> 25.66 25.52 <b>(tion</b> 010711	Baseline (Abs) 3.46 3.60	Pressure (psig) 50.20	Run Time 10:27
Re # 1 2	PAI	Base nalysis Type TOC TOC Oilution 1:10  Analysis	1.9767 1.9351 Blank Contrib (TC) 8.7826 (v1324)	ution (IC)	1.95  Pg  19.7666  19.3511  Mac  CAS_s  Result (p	Adjus (Absented of the control of th	(pp 0.0 sted os) 22.20 21.92 11 (std. (pp	NDIR (A  Calibra CAS_salt_ (v30  Dev. mC)	1.5000 <b>(bs)</b> 25.66 25.52 <b>tion</b> 010711	Baseline (Abs) 3.46 3.60	Pressure (psig) 50.20 50.19	Run Time 10:27 10:28

From Schedule Version 5

1	тос	4.1616	41.6156	37.03	40.51	3.48	50.18	10:27	
2	тос	4.1619	41.6186	37.03	40.56	3.53	50.19	10:28	

<b>Dilution</b>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.7826 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1324)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	26	TOC	K1911034-002.02	5.0856 ppm	0.0023 ppm	0.0500%	2019/11/27 01:30

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.0839	50.8393	43.29	46.91	3.62	50.22	10:29
2	TOC	5.0872	50.8717	43.31	46.84	3.52	50.20	10:26

lank Contribution	<u>Method</u>	<u>Calibration</u>
` ' ' ' '	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)
	(TC) 8.7826 (IC) (v1324)	(TC) 8.7826 (IC)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	27	TOC	K1911034-003.02	4.2605 ppm	0.0034 ppm	0.0800%	2019/11/27 01:58

R	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
	1	TOC	4.2629	42.6292	37.72	41.27	3.55	50.18	10:30
	2	TOC	4.2581	42.5806	37.69	41.21	3.53	50.18	10:27

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	Calibration
1:10	(TC) 8.7826 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1324)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	28	TOC	K1911034-004.02	12.5198 ppm	0.2048 ppm	1.6400%	2019/11/27 02:26

	Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
l	1	TOC	12.6646	126.6458	94.75	98.26	3.51	50.20	10:26
	2	TOC	12.3749	123.7495	92.78	96.37	3.58	50.17	10:25

<b>Dilution</b>	<b>Blank Contribution</b>	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.7826 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1324)	(v4)	(v3 <del>0</del> )

#### Sample Type: Check Standard --> CCV 25 ppm

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]		24.5857 ppm (PASS)	0.0000 ppm	0%	2019/11/27 02:54

Pos	Base Analysis Type	iD	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
В	тос	25 ppm	1	24.5857	245.8573	176.35	180.01	3.66	50.20	10:33

<b>Completion State</b>
Success - Criteria
mot

**Success Action** Do Nothing

**Method** CAS\_salt\_010711  $(v\overline{4})$ 

<u>Calibration</u> CAS salt 010711 (v30)

STD Conc - Pos B 50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity ( NA / NA )	0.0000 mqq	0000.0 mqq	0%	2019/11/27 03:09
L						,	(PÁSS)	• •		

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.59	9.21	3.62	50.20	10:29

**Completion State** Success - Criteria met.

**Success Action** Do Nothing

<u>Method</u> CAS salt 010711 (v4)

**Calibration** CAS\_salt\_010711 (v30)

STD Conc - Pos D 0 ppmC

Sample Type: Sample

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
L	29	TOC	K1911034-005.02	2.8461 ppm	0.0067 ppm	0.2300%	2019/11/27 03:24	

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8509	28.5085	28.13	31.62	3.49	50.18	10:28
2	TOC	2.8414	28.4143	28.07	31.70	3.63	50.17	10:28

**Dilution** 1:10

**Blank Contribution** (TC) 8.7826 (IC) (v1324)

<u>Method</u> CAS salt 010711 (v4)

**Calibration** CAS\_salt\_010711 (v30)

Sansanananananananananananananananananan		Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
	•	30	TOC	K1911034-006.02	6.4472 ppm	0.0290 ppm	0.4500%	2019/11/27 03:52	

Rep	Base Analysis Type ppm		þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4677	64.6771	52.68	56.17	3.48	50.19	10:29
2	TOC	6.4268	64.2675	52.41	55.95	3.55	50.21	10:29

**Dilution** 1:10

**Blank Contribution** (TC) 8.7826 (IC) (v1324)

<u>Method</u> CAS\_salt\_010711  $(v\overline{4})$ 

**Calibration** CAS\_salt\_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time	
•	31	TOC	K1911034-007.02	3.5980 ppm	0.0291 ppm	0.8100%	2019/11/27 04:20	

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5774	35.7744	33.07	36.76	3.69	50.19	10:28

2	2	TOC	3.6185	36.1854	.	33.34	án de la companya de	36.91	3.56	50.19	10:26
		<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7826 (v1324)		Method salt_010711 (v4)	ļ ·	Calibra CAS_salt_ (v3	_01071	1		
	Pos	s Analysis Type	Sample ID	Result	(ppmC)		l. Dev. pmC)	RSI	D	Start Time	•
•	32	TOC	K1911034-008.	02 4.7	485 ppm	0.	0231 ppm	0.490	0% 20	19/11/27 04	1:48
Re #		Base Analysis Type	ppm	hā	Adjuste (Abs)		NDIR (/	Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	4.7321	47.3213	4	40.90		44.39	3.48	50.17	10:27
2	2	TOC	4.7648	47.6484		41.13		44.66	3.53	50.23	10:25
		<u>Dilution</u> 1:10	Blank Contribution (TC) 8.7826 (v1324)		<u>//ethod</u> salt_010711 (v4)		Calibra CAS_salt_ (v30	01071	1		
_	Pos	Type	Sample ID		(ppmC)	(pj	. Dev. omC)	RSI		Start Time	
*	33	TOC	K1911034-009.0	02 3.50	699 ppm	0.	0304 ppm	0.850	0% 20	19/11/27 05	5:16
Re #		Base Analysis Type	ppm	þg	Adjuste (Abs)		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	3.5914	35.9143	ļ	33.16		36.78	3.62	50.21	10:32
2		TOC	3.5484	35.4841	3	32.87		36.46	3.59	50.23	10:28
		<u>Dilution</u> 1:10	(TC) 8.7826 (v1324)		<u>flethod</u> salt_010711 (v4)		<u>Calibra</u> CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID	Result (	(ppmC)		. Dev. omC)	RSE	)	Start Time	
	34	TOC	K1911034-010.0	02 4.66	385 ppm	0.0	0938 ppm	2.0100	0% 20°	19/11/27 05	:44
Re #		Base Analysis Type	ppm	hā	Adjuste (Abs)	d	NDIR (A	vps)	Baseline (Abs)	Pressure (psig)	Run Time
1	_	TOC	4.7348	47.3478	4	10.92	***************************************	44.47	3.54	50.21	10:31
2		TOC	4.6022	46.0219	4	10.02		43.57	3.55	50.21	10:29
		<u>Dilution</u> 1:10	Blank Contribu (TC) 8.7826 (l (v1324)		<mark>lethod</mark> salt_010711 (v4)		<u>Calibra</u> CAS_salt_ (v30	01071	1		
	Pos	Analysis Type	Sample ID	Result (			Dev. mC)	RSD	)	Start Time	
<u> </u>	35	тос	K1910963-001.0	0.00	000 ppm	0.0	0000 ppm	0.0000	)% 201	19/11/27 06	:12
Re #		Base Analysis Type	ppm	hā	Adjuste (Abs)	d	NDIR (A	bs)	Baseline (Abs)	Pressure (psig)	Run Time
1		TOC	0.0000	0.0000		5.60		9.13	3.53	50.20	10:27
2		TOC	0.0000	0.0000		5.48		9.09	3.61	50.20	10:25
		<u>Dilution</u> 1:10	Blank Contribu (TC) 8.7826 (I (v1324)		l <u>ethod</u> salt_010711 (v4)		Calibra CAS_salt_ (v30	010711			
ı	Pos	Analysis Type	Sample ID	Result (	ppmC)		Dev. mC)	RSD	77.77	Start Time	and the state of t

* 3	6 TOC	K1910963-001.0	8 ms	25.13	340 ppm	0.	0000 ppm	0.000	0% 20	19/11/27 06	6:40	
Rep #	Base Analysis Type	ppm		hа	Adju (Al		NDIR (	Abs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	25.1340		251.3405		179.39		183.06	3.67	50.18	10:30	
	<u>Dilution</u>	Blank Contrib	ution	N	lethod		Calibra	ation			•	
	1:10	(TC) 8.7826 (v1324)			'11	CAS_salt_010711 (v30)		1				
Pos Analysis Type		Sample ID		Result (ppmC)			. Dev. omC)	RSI	<b>o</b>	Start Time		
* 37 TOC		RB		0.00	000 ppm	0.	0000 ppm	0.000	0% 20	19/11/27 06:55		
Rep Base # Analysis Type		ppm		μg Adju			NDIR (Abs)		Baseline (Abs)	Pressure (psig)	Run Time	
1 TOC		0.0000		0.0000		6.20 9.8		9.87	3.67	50.20	10:31	
	<u>Dilution</u>	Blank Contrib	oution M		lethod		Calibra	ation				
	1:10	(TC) 8.7826 (v1324)			alt_0107 ( <b>v4</b> )	11	CAS_salt_ (v30		1			
P	Analysis Type	Sample ID		Result (	ppmC)	Std. Dev. (ppmC)		RSD		Start Time		
<b>♦</b> 3	B TOC	FB 11/22/19		0.00	000 ppm	0.0	0000 ppm	0.0000	0% 20°	19/11/27 07	:09	
Rep Base # Analysis Type		ppm		hā	Adjus (Ab		NDIR (A	\bs)	Baseline (Abs)	Pressure (psig)	Run Time	
1	TOC	0.0000		0.0000		5.41		9.05	3.64	50.19	10:33	
 ~~~~	<u>Dilution</u> 1:10	Blank Contrib (TC) 8.7826 (v1324)		CAS_s	<u>ethod</u> alt_0107 (v4)	11	<u>Calibra</u> CAS_salt_ (v30	01071	1			

•	Sample	Type:	Check Standard	> C	CV 25 ppm
	Pos	RΔT	Concentration	Dil	Sample

(ppm)

Dil

Sample ID

Pos BAT

From Schedule Version 5

**Start Time** 

*	В	TOC	25.0000	1:2	[TOC] CCV 2 ppm [25 ppm			24.12 pp (PAS	m pp	1 1	2019/11/27	' 07:24
Ро		Base nalysis Type	ID	Rep #	ppm	þд	Ad	justed	NDIR	Baseline	Pressure	Run Time
В		TOC	25 ppm	1	24.1211	241.2109		173.20	176.64	3.44	50.16	10:33

Min / Max

(% dev)

Result

Std. Dev.

**RSD** 

Completion State	Success Action	<u>Method</u>	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
*	D	тос	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/27 07:38

P	os	Base Analysis Type	ID	Rep #	ppm	þд	Adjusted	NDIR	Baseline	Pressure	Run Time
[	D	TOC	0 ppm	1	0.0000	0.0000	5.36	8.98	3.61	50.19	10:31

Completion State
Success - Criteria
met.

Success Action
Do Nothing

<u>Method</u> CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30) STD Conc - Pos D 0 ppmC

Sample Type: Sample

From	Schedule	Version	5
------	----------	---------	---

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/27 07:53

-	Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	Marriageneral
	1	TOC	0.0000	0.0000	4.44	8.13	3.69	50.14	10:32	***************************************

Dilution 1:10 Blank Contribution (TC) 8.7826 (IC) (v1324)

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

Sample Type: Check Standard --> LCS

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	С	тос	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity ( NA / NA )	24.7562 ppm		0%	2019/11/27 08:08
					ppmj	(NA/NA)	(PASS)	ppm		nan-reason.

Pos	Base Analysis Type	ID	Rep #	ppm	μg	Adjusted	NDIR	Baseline	Pressure	Run Time
С	TOC	25.0 ppm	1	24.7562	247.5618	177.51	181.18	3.68	50.13	10:30

Completion State
Success - Criteria
met.

Success Action
Do Nothing

Method CAS\_salt\_010711 (v4) Calibration
CAS\_salt\_010711
(v30)

STD Conc - Pos C 25 ppmC

Sample Type: Sample

From Schedule Version 5

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
40	TOC	K1910963-002.10 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/27 08:23

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.50	11.12	3.62	50.20	10:29
2	TOC	0.0000	0.0000	7.53	11.19	3.66	50.15	10:28

Dilution 1:10 Blank Contribution (TC) 8.7826 (IC) (v1324)

Method CAS\_salt\_010711 (v4) Calibration CAS\_salt\_010711 (v30)

Page 111 of 116

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
*	41	TOC	K1910963-002.10 ms doc	25.4906 ppm	0.0000 ppm	0.0000%	2019/11/27 08:51

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time	-
1	TOC	25.4906	254.9056	181.81	185.37	3.56	50.16	10:29	

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.7826 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1324)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	42	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/27 09:06

Rep #	Base Analysis Type	ppm	μg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.58	9.04	3.47	50.18	10:34

<u>Dilution</u>	<b>Blank Contribution</b>	<u>Method</u>	<b>Calibration</b>
1:10	(TC) 8.7826 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1324)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	43	тос	K1911043-002.01 doc 50x	1.7227 ppm	0.0363 ppm	2.1000%	2019/11/27 09:20

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6970	16.9704	20.30	23.88	3.58	50.17	10:26
2	тос	1.7483	17.4831	20.65	24.23	3.58	50.23	10:30

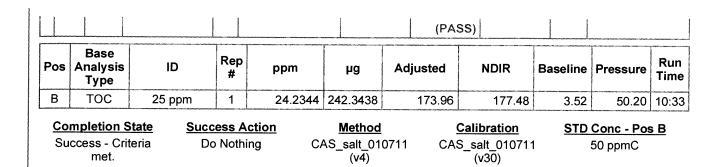
<b>Dilution</b>	Blank Contribution	<u>Method</u>	Calibration
1:10	(TC) 8.7826 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1324)	(v4)	(v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
•	44	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/27 09:48

Rep #	Base Analysis Type	ppm	þg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.12	8.91	3.79	50.22	10:25
2	TOC	0.0000	0.0000	5.28	8.95	3.67	50.19	10:30

<b>Dilution</b>	Blank Contribution	<u>Method</u>	<u>Calibration</u>
1:10	(TC) 8.7826 (IC)	CAS_salt_010711	CAS_salt_010711
	(v1324)	(v4)	(v30)

Sa	mple		Check Standard		•				From	Schedule Version 5
	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
•	В	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity ( NA / NA )	24.2344 ppm	0.0000 ppm	0%	2019/11/27 10:17



Sa	amp	<u>le Type</u> :	Check Standard	> CC	В							From S	Schedule V	ersion
	Po	s BAT	Concentration (ppm)	Dil	Sample ID	Min /		Resu	lt	Std. Dev	v.	RSD	Start Ti	me
•	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	1	finity NA)		000 pm SS)	0.00 pq	00 om	0%	2019/11/27	10:31
P	os	Base Analysi Type	s ID	Rep	ppm	þg	Adjı	usted		NDIR	Bas	seline	Pressure	Run Time

Completion State
Success - Criteria
met.

TOC

Success Action
Do Nothing

0 ppm

<u>**Method</u>** CAS\_salt\_010711 (v4)</u>

0.0000

0.0000

Calibration
CAS\_salt\_010711
(v30)

8.99

5.35

STD Conc - Pos D 0 ppmC

50.23 10:30

3.64

#### Meta Data Used in this Report

#### **Blanks**

D

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1323	1.3397	1.1360	0.0000	0.0000	0.0000	2019/11/23 16:30	Fusion1 (Fusion1)
v1324	1.3317	1.3300	0.0000	0.0000	0.0000	2019/11/26 12:29	Fusion1 (Fusion1)

#### Calibrations

Name: CAS\_salt\_010711 (TOC)

Version:

v30

Calibration curve

TOC: y = 6.788x + 9.463

Ver Creation:

2019/03/05 17:42

formula: r<sup>2</sup> value:

TOC:  $r^2 = 0.99963$ 

Comment:

Operator:

Fusion1 (Fusion1)

Basic Analysis

TOC

Type

Basic Analysis Type: TOC									
Sample ID	Y Raw Value	X Expected	Message	End Time					
DI Water	7.8970	0.0000		2019/03/05 16:15					
0.500 ppm	11.5280	0.5000		2019/03/05 16:29					
1.0 ppm	14.9760	1.0000		2019/03/05 16:44					
5.0 ppm	43.6500	5.0000	ļ	2019/03/05 16:58					
10 ppm	79.6020	10.0000		2019/03/05 17:12					
25 ppm	183.3580	25.0000		2019/03/05 17:26					
50 ppm	346.3230	50.0000		2019/03/05 17:40					

#### Methods

Name: CAS\_salt\_010711 (TOC)

Version:

v4

Operator:

Fusion1 (Fusion1)

Ver Creation:

2019/02/21 17:57

Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

#### Acceptance / Approval

**Electronic Signatures** 

Report Version User Name Acceptance Reason Date								
			·					
Report History								
Report F	listory							
Report Version		System Reason	User Reason	Date				
4	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/27 10:46				

#### ALS Environmental

StarLIMS Run:	661464, 661465, 661466	
Analysis:	DOC/TOC	
Method:	SM 5310 C, 9060A, 415.1, 9060	
CCV: 11-GEN-05-82C 56	50 ppm LCS: 11-GEN-05-79J 25.0 ppm	
ICAL Date: 3/6/19		
ICAL ID: 11-GEN-05-76H	Н	
ICS ID: 11-GEN-05-78M		
ICS TV: 25.0 ppm	ICS % R < 1	
Spike ID: 11-GEN-05-820	C 0.05 ml of 5000 ppm stock> $10.0 \text{ ml} = 25.0 \text{ ppm}$	x dilution factor
Sodium Persulfate: 11-GE	EN-05-83D	
21 % H3PO4: 11-GEN-05	5-83E	
Equipment ID: K-TOC-03	3	
PIPETTE ID: 124276B, 12	29001F, N11314F, Marge	
FILTER ID: 16967789		

		25 ROP 11/10/
Analyzed By: 🕏	Date Analyzed:	11/36/19
Reviewed By:	Date Reviewed:	/ 1

# Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • April 2021

# Appendix E Quality Control Summary Report

#### **ACRONYMS AND ABBREVIATIONS**

% percent

%D percent difference

ALS Environmental Laboratories

CCB continuing calibration blank

DQSR Data Quality Summary Report
DoD U.S. Department of Defense

ELAP Environmental Laboratory Accreditation Program

EPA U.S. Environmental Protection Agency

LCS laboratory control sample

LCSD laboratory control sample duplicate
LHAAP Longhorn Army Ammunition Plant

LOQ limit of quantitation

MS matrix spike

MSD matrix spike duplicate

NELAP National Environmental Laboratory Accreditation Program

QAPP Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant,

Karnack Texas: Appendix A: Standard Operating Procedures and Appendix B:

Basewide Uniform Federal Policy-Quality Assurance Project Plan

QC quality control

QSM Quality Systems Manual

RARC Remedial Action Completion Report

RPD relative percent difference RRF relative response factor

SDG sample delivery group SM standard method

SOP standard operating procedure

TOC total organic carbon

USACE U.S Army Corps of Engineer

VOC volatile organic compound

#### 1. DATA QUALITY SUMMARY REPORT

This Data Quality Summary Report (DQSR) describes the findings of the review of data for groundwater sampling activities conducted from January 21, 2019 through November 13, 2019, and is provided to document the quality of the analytical data used in the *Remedial Action Completion Report (RACR)*, *LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack Texas*. Sampling procedures and overall quality control (QC) and quality assurance protocols for groundwater sampling are presented in the *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant, Karnack Texas (IWWP): Appendix A: Standard Operating Procedures and Appendix B: Basewide Uniform Federal Policy-Quality Assurance Project Plan (QAPP) (Bhate 2018).* 

This DQSR focuses on the data quality and usability of the samples collected from the following sampling events:

- January 2019 Groundwater Sampling Event
- November 2019 Baseline Groundwater Sampling Event
- November 2019 Post Injection Groundwater Sampling Event

During the period from January 21, 2019 through November 13, 2019, groundwater samples were collected and submitted to the primary laboratory, ALS Environmental Laboratories (ALS) located in Houston, Texas. ALS in Houston performed all analyses in house with the exception of the following:

- Total organic carbon (TOC) analysis was performed by ALS in Kelso, Washington; and
- Perchlorate analysis was conducted by ALS in Salt Lake, Utah.

ALS Laboratories in all three locations are accredited by the U.S. Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) Version 5.1 and National Environmental Laboratory Accreditation Program (NELAP) in the State of Texas to perform the analyses throughout the project duration.

Groundwater samples from the sampling events were analyzed for one or more of the following list of parameters:

- Perchlorate EPA Method 6850
- TOC Standard Method (SM) 5310C
- Anions (Nitrate and Nitrite as nitrogen and sulfate) EPA Method 9056A
- Alkalinity SM 2320B

Specific analyses performed for each sample and for each sampling event are presented on the table included as Attachment E-1. All analytical results from January 21, 2019 through November 13, 2019 sampling activities were received in sample delivery groups (SDGs). Appendix D presents laboratory data packages. Attachment E-1 (provided at the end of this report) summarizes SDG numbers, sample numbers, sample locations, sample collection dates, analysis methods, analysis dates, and laboratories. An APTIM project chemist manually performed EPA Level III data review on 100% of the groundwater sample results. EPA Level III data review was performed in accordance with the guidelines and control criteria specified in the following documents:

- QAPP (Bhate 2018)
- DoD Quality Systems Manual for Environmental Laboratories, Version 5.1 (DoD 2017)
- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (2006), SW-846 (EPA 1996 and updates)
- Standard Methods for the Examination of Water and Wastewater (21st Edition) (American Public Health Association et al. 2005)
- USEPA Contract Laboratory Program, National Functional Guidelines for Organic Superfund Methods Data Review (EPA 2017)
- USEPA Contract Laboratory Program, National Functional Guidelines for Inorganic Superfund Methods Data Review, Final (EPA 2017)

The following QC elements were included in the EPA Level III data review:

- Sample preservation and sample extraction and analysis holding times
- Laboratory method blanks
- Initial and continuing calibration blanks (anions and TOC analyses only)
- Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) recoveries
- Matrix spike (MS)/matrix spike duplicate (MSD) recoveries
- Relative percent differences (RPDs)
- Initial calibration and initial calibration verifications (ICVs)
- Continuing calibration verifications (CCVs)
- Field blanks

Analytical data were reviewed in terms of precision, bias, representativeness, comparability, and completeness as follows:

- Bias is demonstrated by recovery of target analytes from fortified blank and sample matrices, LCS/LCSD, and MS/MSD, respectively. For organic methods, bias is also demonstrated through recovery of surrogates from each field and QC sample. The recovery of target analytes from fortified samples is compared with the acceptance criteria defined in the QAPP (Bhate, 2018) and DoD Quality Systems Manual (QSM). When the acceptance criteria are not available in the QAPP or DoD QSM, results are compared with the laboratory in-house control limits. When these criteria are not met, the data are qualified accordingly.
- Precision is expressed as the RPD between the results of replicate sample analyses: sample
  duplicates, LCSDs, and MSDs. When analyte RPDs exceed the acceptance criteria, the data are
  qualified accordingly.
- *Representativeness* of the samples submitted for analysis is ensured by adherence to standard sampling techniques and protocols.
- Comparability of sample results is ensured through the use of approved sampling and analysis methods.
- *Completeness* is expressed as a ratio of the number of usable data points to the total number of analytical data results.

The following sections present the EPA Level III data review findings. The discussion summarizes data quality exceedances and their potential impact on the quality and usability of analytical results.

Attachment E-2 presents definitions of data qualification. Attachment E-3 summarizes the qualified data.

#### 1.1 Data Quality Outliers

## 1.1.1 Sample Preservation and Sample Extraction and Analysis Holding Times (Reason Codes 02, 02A and 02B)

The sample coolers and samples contained within were received intact at the laboratory and were held within the required 0 to 6 degrees Celsius, and when required, were chemically preserved in accordance with EPA and SM preservation requirements.

Sample holding times were evaluated by comparing the sample collection dates to the sample extraction and analysis dates. Extraction and analysis holding times were reviewed for all samples to determine the validity of the sample results.

One groundwater sample from monitoring well (04WW05) was collected from the November 2019 baseline groundwater sampling event and submitted to the laboratory for perchlorate, TOC, anions and

alkalinity analyses. All sample containers were received in good condition by the laboratory; however due to laboratory login error, the anions analysis was not logged into the system for analysis. When the oversight was discovered, the 48-hour holding time for nitrate and nitrite as nitrogen was missed. The following table summarizes the affected sample number, analysis, holding time exceedance and holding time requirement:

SDG Number	Analytical Method	Sample Number	Holding Time Outlier (days)	Holding Time Requirement (days)	Data Qualification
HS19110320	EPA9056A	04WW05-191106	Nitrate/Nitrite: 19	2	X

Nitrate and nitrite as nitrogen in the sample was analyzed 19 days after the 48-hour holding time had expired. Because the holding time was grossly exceeded, the non-detected result for nitrate and nitrite as nitrogen in the sample was not usable and was consequently rejected (X). Sulfate in the same sample met the analysis holding time requirement and the sulfate result was not affected and qualified. Except as noted, analysis holding time requirements were achieved for all other samples and for all other analyses.

It should be noted that the sample login oversight was an isolated incidence. The laboratory has since taken corrective actions to ensure that the login errors will not reoccur in the future. Upon sample receipt, the laboratories checked the sample containers against the chain of custody forms and notified APTIM if discrepancies between the sample containers and chain of custody forms were identified. Discrepancies were resolved before the laboratories started analysis. Sample conditions such as cooler temperatures, chemical preservatives, and headspace were documented on the sample receipt form and included in the laboratory data packages. After analysis, department managers reviewed the data to verify that method requirements were followed and target analytes were correctly identified and quantified. Prior to data reporting, the laboratories performed internal QC review to ensure the accuracy and completeness of analytical results.

#### 1.1.2 Laboratory Method Blanks (Reason Code 06A)

The field sample results were evaluated with respect to the laboratory method blank prepared and analyzed for each analytical batch and for each analytical method. All laboratory method blanks were free of perchlorate, TOC, anions, and alkalinity.

#### 1.1.3 Initial and Continuing Calibration Blanks (Reason Code 06B)

In addition to the laboratory method blanks for anions and TOC analyses, initial and continuing calibration blank (CCB) results were reviewed to ensure that the instrument was free of contamination prior to the analysis. All initial and continuing calibration blanks were free of TOC and anions.

### 1.1.4 Laboratory Control Sample/Laboratory Control Sample Duplicate Recoveries and Precisions (Reason Codes 11, 11A, and 11B)

The LCS is an aliquot of analyte-free matrix spiked with target analytes that is prepared with each analytical batch and for each analytical method. The recovery of target analytes from the LCS analysis is a measurement of method performance in an interference-free sample matrix. The review indicated that LCS recoveries and precisions met the established QC requirements for perchlorate, TOC, anions, and alkalinity analyses.

In addition to the LCS analysis, the laboratory performed sample duplicate analysis on project-specific groundwater samples to assess precisions of sample results. The laboratory duplicate analysis was performed for LHAAP-04 samples submitted for TOC analysis. Acceptable precision results were achieved for all laboratory duplicate samples.

# 1.1.5 Matrix Spike/Matrix Spike Duplicate Recoveries and Precisions (Reason Codes 08, 08A, and 08B)

The MS and MSD samples are a portion of a field sample spiked with target analytes that are prepared with each analytical batch and with each method. The MS/MSD results are used to evaluate any bias introduced to the method due to matrix interference, and to measure bias and precision for each analytical batch.

In accordance with the QAPP requirements (Bhate 2018), the MS/MSD samples are to be collected at a rate of 1 per 20 samples or 5%. During the January and November baseline groundwater sampling events, 5% MS/MSD samples were collected achieving the MS/MSD sample frequency requirement. The following site-specific groundwater samples were spiked for MS/MSD analysis:

SDG Number	Sample Number	Sample Date	MS/MSD Analysis
HS1911045/1902392	LHSMW01-190122	1/22/2019	Perchlorate
HS19110320/1931753	04WW11-191106	11/6/2019	Perchlorate
HS19110320	04WW05-191106	11/6/2019	Nitrate and Nitrite as Nitrogen

The MS bias and precision results met the established QC requirements for perchlorate and nitrate and nitrite as nitrogen analyses for all three spiked samples.

#### 1.1.6 Initial Calibration (Reason Codes 04, 04A, and 04B)

Instrument calibration is performed for perchlorate, TOC, and anions analyses according to the EPA method requirements (EPA 1996). The linear analytical range is established for each method by analysis of calibration standards prepared at increasing concentrations that cover the expected sample concentrations. The acceptability of the initial calibration is determined by calculation of a percent relative standard deviation or coefficient. The initial calibration results were acceptable for all the listed analyses.

Immediately after the initial calibration for each analysis, initial calibration verification was conducted at the mid-point of instrument calibration range by using a second-source calibration standard to verify the accuracy of the initial calibration. The review indicated acceptable initial calibration verification results for perchlorate, TOC and anions analyses.

#### 1.1.7 Continuing Calibration Verification (Reason Codes 05, 05A, and 05B)

Routinely during sample analysis, the stability of the analytical system is monitored by analysis of continuing calibration standards at concentrations near the mid-point of the instrument calibration range. The review indicated that CCVs were conducted at proper frequencies and that the percent difference (%D) values between the relative response factor (RRF) in the initial calibration and the RRF in the continuing calibration met the calibration requirements for perchlorate, TOC and anions analyses.

#### 1.1.8 Trip Blanks (Reason Code 06D)

Trip blanks were prepared by the laboratory and stored with the groundwater samples collected for volatile organic compounds (VOCs) analysis. During January 11, 2019 through November 13, 2019 sampling activities, no groundwater samples were collected for VOC analysis, and therefore no trip blanks were required.

#### 1.1.9 Field Duplicates

In accordance with the QAPP requirements (Bhate 2018), field duplicate samples are to be collected at a minimum rate of 10% of the total number of groundwater samples. Field duplicate samples are evaluated by calculating the RPD between the parent sample and its duplicate. The RPD is calculated using the following equation:

$$RPD = \frac{(S-D)}{(S+D)/2} \frac{1}{x} 100$$

Where:

S = sample result

D = duplicate result

Acceptable precision control criteria are established at less than or equal to 30% for water samples. The RPD is calculated between pairs of field duplicate samples when both results are reported at or above the LOQ.

A total of three field duplicates were collected from the period of January 21, 2019 through November 13, 2019. Field duplicates were collected using the same sampling technique and analyzed for the same analytical parameters as their associated parent samples, Attachment E-4 presents the field duplicate results. As presented on the table, perchlorate was detected above the LOQ in a field duplicate pair (04WW09-190122) from the January 2019 groundwater sampling event. The RPD for the analyte was 9.09% achieving the 30% field precision goal. Field duplicates were also collected from monitoring well (04WW02) from the January and November 2019 baseline groundwater sampling events and analyzed for perchlorate only. Perchlorate was not detected in both pairs and therefore field precisions were not evaluated for the two pairs. Overall, the field duplicate results demonstrated acceptable field sampling and analytical precision for perchlorate analysis.

#### 1.2 Completeness

The following sections present a discussion of technical completeness for the LHAAP-04 groundwater sampling events. Completeness results are calculated for groundwater and field duplicate samples that are used for project decisions. Completeness results are presented in Attachment E-5.

#### 1.2.1 Technical Completeness

Technical completeness is a quantitative measure of the data usability based on the number of rejected data compared to the total number of sample results. The technical completeness goal for each method is

established at equal to or greater than 95%. The technical completeness calculation considers all data that are not rejected to be usable. The technical completeness is calculated as follows:

As discussed in the previous sections, the result of nitrate and nitrite as nitrogen in one sample (04WW05) from the November 2019 baseline groundwater sampling event was rejected (X) due to the holding time exceedance. The data quality and usability of the sulfate result in the same sample however was not affected as the sulfate was analyzed within the holding time requirement. The technical completeness for EPA Method 9056A was 50% and did not meet the 95% technical completeness objective. With the exception of EPA Method 9056A, the technical completeness was 100% for all other methods for the LHAAP-04 groundwater sampling activities, exceeding the 95% technical completeness objective. Therefore, the project data quality objectives were achieved for EPA Method 6850 and Standard Methods 2320 and 5310C for the LHAAP-04 groundwater sampling events.

#### 1.3 Representativeness and Comparability

During sampling, samplers followed the approved QAPP requirements (Bhate 2018) and established sampling SOPs to collect, preserve, document, and ship samples to off-site laboratories, thus ensuring the representativeness of the groundwater samples collected for the sampling events.

Upon sample receipt, the laboratory reviewed sample conditions to ensure that sample containers, preservatives (when applicable), and requested analyses matched the chain-of-custody requirements. Discrepancies between the chain-of-custody forms and sample containers were brought to the attention of the APTIM project chemist and resolved prior to sample analysis.

ALS Laboratories are DoD and NELAP certified and adhered to the most current EPA Methods, QAPP (Bhate 2018), and DoD QSM (DoD 2017) requirements to prepare, analyze, and report the data. This ensures the comparability of the analytical results between different samples and different sampling events. APTIM project chemist performed EPA Level III data validation on 100% of the analytical data obtained from the January 2019 through November 2019 sampling events to verify that the laboratories complied with the DoD QSM, QAPP, and method requirements. Analytical results that were outside the established QC requirements were qualified and the data quality and usability were discussed in the previous sections. Based on a review of the chain-of-custody forms, sample receipt forms, and laboratory data packages, the analytical data reported for LHAAP-04 sampling events has met the comparability requirements.

#### 1.4 Summary

The analytical data has been reviewed for precision, bias, representativeness, comparability, and completeness. With the exception of nitrate and nitrite as nitrogen in one sample, all other QC elements met their respective QC requirements. The result of nitrate and nitrite as nitrogen in one sample was rejected as a result of the holding time exceedance. In order to verify the presence or absence of nitrate and nitrite as nitrogen, it is recommended that monitoring well (04WW05) be re-sampled for nitrate and nitrite as nitrogen during the next sampling event. With the exception of EPA Method 9056A, the 95% technical completeness goal was exceeded for all other methods for all the sampling events. All data except nitrate and nitrite as nitrogen in one sample, are usable for their intended purposes.

#### **REFERENCES**

- American Public Health Association, American Water Works Association, and Water Environment Federation. 2005. *Standard Methods for the Examination of Water and Wastewater*, 21st Edition. American Public Health Association: Washington, DC.
- Bhate 2018. Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant, Karnack Texas Appendix A: Standard Operating Procedures and Appendix B: Basewide Uniform Federal Policy-Quality Assurance Project Plan.
- EPA. 2017. USEPA Contract Laboratory Program, National Functional Guidelines for Inorganic Superfund Methods Data Review, Office of Superfund Remediation and Technology Innovation, OLEM 9355.0-135 and EPA-540-R-2017-001. January.
- EPA. 2017. USEPA Contract Laboratory Program, National Functional Guidelines for Organic Superfund Methods Data Review. Office of Superfund Remediation and Technology Innovation, OLEM 9355.0-136 and EPA-540-R-2017-002. January
- EPA. 1996. Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (2006), SW-846 On-line. Office of Solid Waste, Washington D.C. http://www.epa.gov/osw/hazard/testmethods/sw846.
- United States Department of Defense (DoD). 2017. DoD Quality Systems Manual for Environmental Laboratories, Version 5.1. January.

#### **List of Attachments**

Attachment E-1: Summary of Samples Collected, Sample Date, Sample Location, and Analysis Method

Attachment E-2: Data Qualification Flags

Attachment E-3: Qualified Data Summary

Attachment E-4: Summary of Field Duplicate Results

Attachment E-5: Technical Completeness

Attachment E-1: Summary of Sample Collected, Sample Date, Sample Location, and Analysis Method

					Sample	Analytical	Analysis	
SDG Number	Task Code	Sample Number	Location ID	Sample Date	Type	Method	Date	Lab
1902253	04 JAN 2019	04WW03-190121	04WW03	01/21/2019	REG	SW6850	01/28/2019	ALSS
1902253	04 JAN 2019	04WW02-190121	04WW02	01/21/2019	REG	SW6850	01/28/2019	ALSS
1902253	04 JAN 2019	04WW02-190121-FD	04WW02	01/21/2019	FD	SW6850	01/28/2019	ALSS
1902253	04 JAN 2019	LHSMW02-190121	LHSMW02	01/21/2019	REG	SW6850	01/28/2019	ALSS
1902253	04 JAN 2019	04WW04-190121	04WW04	01/21/2019	REG	SW6850	01/28/2019	ALSS
1902253	04 JAN 2019	04WW05-190121	04WW05	01/21/2019	REG	SW6850	01/28/2019	ALSS
1902253	04 JAN 2019	04WW06-190121	04WW06	01/21/2019	REG	SW6850	01/28/2019	ALSS
1902392	04 JAN 2019	04WW11-190122	04WW11	01/22/2019	REG	SW6850	01/28/2019	ALSS
1902392	04 JAN 2019	04WW09-190122	04WW09	01/22/2019	REG	SW6850	01/28/2019	ALSS
1902392	04 JAN 2019	04WW09-190122-FD	04WW09	01/22/2019	FD	SW6850	01/28/2019	ALSS
1902392	04 JAN 2019	04WW10-190122	04WW10	01/22/2019	REG	SW6850	01/28/2019	ALSS
1902392	04 JAN 2019	LHSMW01-190122	LHSMW01	01/22/2019	REG	SW6850	01/28/2019	ALSS
1902392	04 JAN 2019	04WW07-190122	04WW07	01/22/2019	REG	SW6850	01/28/2019	ALSS
1902392	04 JAN 2019	04WW01-190122	04WW01	01/22/2019	REG	SW6850	01/28/2019	ALSS
1931753	04 BASELINE NOV 2019	04WW02-191105	04WW02	11/05/2019	REG	SW6850	11/19/2019	ALSS
	04 BASELINE NOV 2019	04WW02-191105-FD	04WW02	11/05/2019	FD	SW6850	11/19/2019	ALSS
1931753	04 BASELINE NOV 2019	LHSMW02-191105	LHSMW02	11/05/2019	REG	SW6850	11/19/2019	ALSS
1931753	04 BASELINE NOV 2019	04WW03-191106	04WW03	11/06/2019	REG	SW6850	11/19/2019	ALSS
	04 BASELINE NOV 2019	04WW06-191106	04WW06	11/06/2019	REG	SW6850	11/19/2019	ALSS
	04 BASELINE NOV 2019	04WW11-191106	04WW11	11/06/2019	REG	SW6850	11/19/2019	ALSS
1931753	04 BASELINE NOV 2019	04WW05-191106	04WW05	11/06/2019	REG	SW6850	11/19/2019	ALSS
HS19110320	04 BASELINE NOV 2019	04WW05-191106	04WW05	11/06/2019	REG	SM2320B	11/09/2019	ALSHT
HS19110320	04 BASELINE NOV 2019	04WW05-191106	04WW05	11/06/2019	REG	SW9056	11/27/2019	ALSHT
K1910576	04 BASELINE NOV 2019	04WW05-191106	04WW05	11/06/2019	REG	SM5310C	11/16/2019	ALS
1931753	04 BASELINE NOV 2019	04WW08-191106	04WW08	11/06/2019	REG	SW6850	11/19/2019	ALSS
1931753	04 BASELINE NOV 2019	04WW04-191106	04WW04	11/06/2019	REG	SW6850	11/19/2019	ALSS
1931753	04 BASELINE NOV 2019	LHSMW01-191106	LHSMW01	11/06/2019	REG	SW6850	11/19/2019	ALSS
1931753	04 BASELINE NOV 2019	FIRE STATION WELL-191106	Fire Station Well	11/06/2019	REG	SW6850	11/19/2019	ALSS
K1910847	04 POST INJ NOV 2019	04WW09-191113-POST-INJ	04WW09	11/13/2019	REG	SM5310C	11/23/2019	ALS
K1910847	04 POST INJ NOV 2019	04WW05-191113-POST-INJ	04WW05	11/13/2019	REG	SM5310C	11/23/2019	ALS
	04 POST INJ NOV 2019	04WW07-191113-POST-INJ	04WW07	11/13/2019	REG	SM5310C	11/23/2019	ALS
K1910847	04 POST INJ NOV 2019	04WW010-191113-POST-INJ	04WW10	11/13/2019	REG	SM5310C	11/26/2019	ALS

Notes:

SDG - sample delivery group

REG - regular samples shipped to the laboratory

FD - field duplicate samples shipped to the laboratory

ALS/ALSHT/ALSS - ALS Laboratories in Houston, Salt Lake, Kelso

#### Attachment E-2. Data Qualification Flags

#### Data Qualifier Definitions for Organic and Inorganic Data Review

Qualifier	Definition
	No Qualifier indicates that the data are acceptable both qualitatively and quantitatively.
U	The analyte was analyzed for but was not detected above the reported limit of detection.
J	The analyte was analyzed for and was positively identified, but the reported numerical value may not be consistent with the amount actually present in the environmental sample. Results are estimated, although the data are considered usable and may be used as appropriate to meet project objectives. Results are qualitatively acceptable and quantitatively uncertain.
J-	The analyte was positively identified; the associated numerical value is its approximate concentration with a low bias in the sample.
J+	The analyte was positively identified; the associated numerical value is its approximate concentration with a high bias in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified," and the associated value represents its approximate concentration.
UJ	The analyte was not detected above the reported limit of detection. However, the reported limit of detection is approximate and may or may not represent the actual limit of detection necessary to accurately and precisely measure the analyte in the sample.
X	The analyte was analyzed for, but the presence <u>or</u> absence of the analyte has not been verified. Re-sampling and re-analysis may be necessary to confirm or deny the presence of the analyte. Results are rejected, and data are <u>unusable</u> for any purposes.

#### **Attachment E-3: Qualified Data Summary**

Sample	Sample Type	Sample Date	Analyte	SDG	Result	LOQ	Units	Qualifier
Reason Code 02A		Method SW9056						
04WW05-191106	REG	11/06/2019	Nitrogen	HS19110320	0.5	1.00	mg/L	Χ

Note:

Please see Attachment E-2 for definitions of qualifiers

mg/L - milligrams per liter

LOQ - limit of quantitation

REG - regular samples shipped to the laboratory

SDG - sample delivery group

#### **Attachment E-4: Summary of Field Duplicate Results**

	04WW02					04WW02							
Sample Number:			04WW02-190121		04WW02-190121-FD			04WW02-191105		04WW02-191105-FD			
Sample Date:			01/21/2019		01/21/2019			11/05/2019		11/05/2019			
	Sample Purpose:			REG		FD			REG		FD		
Sample Type:			GW		GW			GW		GW			
Depth:			6.47 - 6.69 ft		6.47 - 6.69 ft			0 - 0 ft		0 - 0 ft			
								Relative					Relative
								Percent					Percent
Test Group	Parameter	Units	Filtered	Result	VQ	Result	VQ	Difference	Result	VQ	Result	VQ	Difference
PERCHLORATE	Perchlorate	ug/L	Yes	2	U	2	U	NC	2	U	2	U	NC

Notes:

Please see Attachment E-2 for definitions of qualifiers

ug/L - micrograms per liter

REG - regular samples shipped to the laboratory

FD - field duplicate samples shipped to the laboratory

VQ - validation qualifiers

NC - not calculated. Field precision results are calculated when target compounds are detected above the limit of quantitation in both primary and duplicate samples

**Attachment E-4: Summary of Field Duplicate Results** 

		Loc	ation Code:	04WW09					
		Samp	ole Number:	04WW09-1	190122	04WW09-1901			
		Sa	ample Date:	01/22/2	019	01/22/201			
		Samp	le Purpose:	REG	à	FD			
		Sa	ample Type:	GW		GW			
	6.5 - 6.74 ft		6.5 - 6.74 ft						
								Relative	
								Percent	
Test Group	Parameter	Units	Filtered	Result	VQ	Result	VQ	Difference	
PERCHLORATE	Perchlorate	ug/L	Yes	2100		2300		9.09	

Notes:

Please see Attachment E-2 for definitions of qualifiers

ug/L - micrograms per liter

REG - regular samples shipped to the laboratory

FD - field duplicate samples shipped to the laboratory

VQ - validation qualifiers

NC - not calculated. Field precision results are calculated when target compounds are detected above the limit of quantitation in both primary and duplicate samples

#### **Attachment E-5: Technical Completeness**

Analytical Method	Number of Analytes	Number of Samples	Number of Results	Number of Rejected Results	Number of Useable Results	Technical Completeness [Goal = 95 %] (percent)				
GW Environmental Samples										
SM2320B	1	1	1	0	1	100%				
SM5310	1	5	5	0	5	100%				
SW6850	1	25	25	0	25	100%				
SW9056	2	1	2	1	1	50%				

Notes:

Not all samples have equal analytes per method