LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 10 of 13

2009

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Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2009

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

VOLUME 10 of 13
2009

A. Title: Report – Final Feasibility Study, LHAAP-35A(58), Shops Area, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Shaw Environmental, Inc., Houston, Texas
Recipient: All Stakeholders
Date: December 21, 2009
Bate Stamp: 00079300 - 00080173

FINAL
FEASIBILITY STUDY
LHAAP-35A(58), SHOPS AREA, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Shaw®

ON THE LINE

DECEMBER 2009

Shaw® Shaw Environmental, Inc.

Date: ***December 21, 2009***

Project No.: ***117591***

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: **Final Feasibility Study, LHAAP-35A(58), Shops Area, Group 4**
Longhorn Army Ammunition Plant, Karnack, Texas

Contract No. W912QR-04-D-0027/DS02

For: Review X As Requested ____ Approval ____ Corrections ____ Submittal ____ Other ____

Item No:	***No. of Copies***	***Date:***	***Document Title***
1	2	December 2009	**Final Feasibility Study, LHAAP-35A(58), Shops Area, Group 4,** Longhorn Army Ammunition Plant, Karnack, Texas

Aaron – Enclosed please find the final version of the above-named report for your records.

The document has been distributed according to the list below. Please call if any questions or comments.

Sincerely:

Praveen Srivastav
Project Manager

Distribution List:
Ms. Rose Zeiler – BRAC-LHAAP
Mr. Matthew Mechenes – AEC
Ms. Fay Duke – TCEQ (2)
Mr. Steve Tzhone – EPA (2)
Mr. Dale Vodak - TCEQ
Mr. Paul Bruckwicki –USFWS
Mr. John Lambert/Scottie Fiehler (distributed by A. Williams) - USACE

3010 Briarpark Drive, Suite 400, Houston, Texas 77042 ***Phone: (713) 996-4522/Fax: (713) 996-4436***

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

December 21, 2009

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Feasibility Study for LHAAP-35A(58), Shops Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas, December 2009

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your files. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

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

Copies furnished:
F. Duke, TCEQ, Austin, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert/S. Fiehler, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Mechenes, USAEC, MD
P. Srivastav, Shaw – Houston, TX (for project files)

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

December 21, 2009

DAIM-ODB-LO

Ms. Fay Duke
Texas Commission on Environmental Quality
TCEQ Environmental Cleanup Section I, Team 2, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Feasibility Study for LHAAP-35A(58), Shops Area, Group 4,
Longhorn Army Ammunition Plant, Karnack, Texas, December 2009
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your files. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

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Sincerely,

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

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P. Srivastav, Shaw, Houston, TX (for project files)

Comments on Draft Final Feasibility Study Report, LHAAP-35(A)58 (published in September 2007)
Longhorn Army Ammunition Plant, Karnack, Texas

Received April 15, 2009

Reviewer: Stephen L. Tzhone, USEPA
Respondents: Praveen Srivastav, Susan Watson, Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

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1	1-16	Section 1.3.5	It appears that detection of methylene chloride in deep well 35AWW02 is dismissed as a "common laboratory contaminant." If this is the case, please make at least a basic case for that being the likely source, rather than only a simple statement that is a common contaminant.	C	Statements about methylene chloride will be deleted since the detected level was low at 0.97 µg/L versus the MCL of 5 µg/L.	A	Just state that methylene chloride, at 0.97 µg/L, is below MCL of 5.0 µg/L.	C	Text will be added.	A See note at end of table
2	6-6	Section 6.3.2.1	There is no time estimate for the assertion that Alternative 2 (MNA) would achieve the RAO. The issue is addressed in Section 6.3.2.2 (page 6-7) only as "the time frame may be long." Estimates are provided for Alternative 3 (In-Situ Bio) in Section 6.3.3 (page 6-10) and others.	C	From the MNA evaluation, it is concluded that attenuation is occurring, but time was not calculated. The revised MNA evaluation will include an estimate of time to reach clean up goals.	A	Note that all MNA remedies should clearly state the time-to-completion, as well as, estimates of the kinetics (VC degradation, ethene production, etc.).	C	Time estimates are included in the natural attenuation evaluation, submitted under separate cover.	A
3	6-7	Section 6.3.2.2	Regarding the expected time needed for Alternative 2 to achieve the RAO, the report asserts that "the time frame... is not an issue for use as a water supply." That may be true, assuming adequate LUCs and other restrictions on use and access to water, however, it is unclear whether this is meant to imply that it is likewise not an issue for the purpose of completing the RAO in a reasonable time. Otherwise the MNA simply becomes a no-action action, with associated confirmation sampling.	D	The statement implies that a long timeframe to achieve the RAO of restoration should have no significance because the site will be a part of a wild life refuge for the foreseeable future. An act of Congress is required to change the land use from wild life refuge to something else. LUCs will be implemented to restrict access to the contaminated water. The LUCs will remain in place until the cleanup goals for the groundwater are met.	A/D	The wildlife refuge aspect allows EPA to consider MNA as a potential remedy, but what remains unclear are: the remedy timeframes and whose responsibility it would be to ensure that LUCs remain in place during the remedy timeframes.	C	See response to RTC Comment No. 2. It is Army's responsibility to ensure that LUCs are operational, even though the implementation activities are expected to pass to the transferee. Details of LUC implementation will be outlined in the Land Use Control Management Plan.	A
4	6-11	Section 6.3.3.3 and following:	The constraints described (contact, organism activity, interferences from the clay matrix, low mobility etc.) to support disqualification of Alternative 3 apply as well to the recommended Alternative 2. In theory, most of the constraints are overcome by time, which remains to evaluated and estimated.	C	The constraints apply directly for MNA of the untreated plume for both Alternatives 2 and 3. For the active portion of Alternative 3, the subsurface conditions will be altered by application of a carbon source and micro organisms. This will stimulate enhanced biodegradation.	A				
5	6-16	Section 6.4.3.2	The FFS makes numerous references to the "USEPA statutory preference for remedial actions that permanently reduce... and utilize treatment as a principle (sic) element." This issue is evaluated in 6.4.3.32 for the three considered alternatives. It is noted that only Alternative 3 (later disqualified) satisfies this preference.	C	Text will be revised to reflect that MNA is a recognized active treatment remedy that is expected to permanently reduce contaminant concentrations over time. The biotreatment described in Alternative 3 will shorten the duration of contaminants in the plume area where treatment is conducted, which will shorten the time frame to meet cleanup goals.	A			Note: Text throughout will be revised to state MNA is a passive treatment.	A
6	6-16	Section 6.4.3.3	Section 6.4.3.3 asserts that "Alternative 2 would provide almost immediate protection because the land use controls could be implemented relatively quickly..." How is this any different (or quicker) than the implementation of LUCs for Alternative 3? Under either alternative, would not the same LUCs be implemented at the same point in time?	D	The LUCs for Alternative 3 would be later than Alternative 2. Execution of Alternative 3 will likely require a treatability study work plan, treatability study, design, biotreatment work plan, biotreatment, and then monitoring and LUCs based on the result of the biotreatment.	A				

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7	6-18	Section 6.5	Section 6.5 recommends Alternative 2 (MNA with LUCs) in part because "the alternative is effective in reducing the concentrations... over time..." and "the acceleration of the reduction of concentrations is not critical." With the lack of an established or reasonably estimated time frame, the alternative could easily by construed as taking no action. As it certainly does nothing to satisfy Criterion 4 (reduction through treatment) is becomes critical to be able to demonstrate a compelling case that MNA essentially achieves a similar result, and thus can be fairly asserted as a form of treatment.	D	MNA is a recognized active treatment remedy and as Appendix A concludes, MNA is a viable remedial approach for LHAAP-58. Alternative 2 also includes LUCs to protect human exposure to the contaminated groundwater. A “no action alternative” would not involve implementation of LUCs to prevent exposure to the contaminated groundwater or performance of groundwater monitoring for MNA parameters.	A/D	Yes, MNA is a recognized active treatment remedy; however, information regarding remedy timeframes must be given.	C	See response to RTC Comment No. 2 and note in response to RTC Comment No. 5.	A
8		Appendix A	Appendix A (Natural Attenuation Evaluation) indicates inconsistent data regarding favorable conditions for NA (i.e., pages 3-3/4).		Appendix A will be revised.	A				
9	3-4	Section 3.3	Appendix A, asserts that the presence of target microorganisms indicates potential for NA. However, the organisms are found in only three wells, and not in some wells with VOCs (i.e., LHSMW05). Also, there is no indication of what are considered to be viable or effective organism concentrations for this environment and these COCs.		Appendix A will be revised.	A				

Note: USEPA concurred with all responses and proposed revisions in an email on 12/11/2009 from S. Tzhone/USEPA to R. Zeiler/U.S. Army.

Comments on Draft Final Focused Feasibility Study
LHAAP-35(A)58, Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas
Dated September 2007

Reviewer: Fay Duke, TCEQ
Respondents: Praveen Srivastav, Susan Watson, Shaw Environmental, Inc.

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1		Section 1.2.1 Site Description & Figure 1-2	There have been some discrepancies regarding the boundaries of site LHAAP-35A(58). To address the discrepancies, an evaluation of different boundaries depicted in various historical reports was conducted in November 2006. It was recommended that the boundaries of LHAAP-35A(58) include areas described as the Shop Area as shown in Figure 1-2. We note that the revised boundaries only include a portion of LHAAP-60. Based on the Proposed Plan for LHAAP-60, groundwater at LHAAP-60 was deferred and was to be addressed under site LHAAP-35A(58). Please address this discrepancy. If groundwater assessment for site LHAAP-60 is to be addressed under site LHAAP-35A(58), we recommend pesticide sampling be conducted for wells located adjacent to site LHAAP-60. Our recommendation is based on our review of the 2002 Remedial Investigation Report for site LHAAP-60 which states: "Wells LHSMW06 and LHSMW02, part of Site 35A investigation, are located adjacent to the pesticide buildings…Pesticide analysis has not been conducted on samples from these wells…" If pesticide sampling has been conducted since the published of the RI report, please provide the sampling result.	C	The Army has decided to address groundwater associated with LHAAP-60 separately under that site because the revised boundary of LHAAP-58 does not include all parts of LHAAP-60. As recommended by the reviewer, sampling of wells LHSMW02 and LHSMW06 was conducted and results were reported to TCEQ as part of the LHAAP-60 Decision Document (DD). TCEQ concurred with the DD for LHAAP-60 recommending no further action. The Final DD was submitted on December 17, 2008.	A	As long as groundwater in this vicinity are appropriately address, the TCEQ has no objection how the groundwater is divided. However, we have some reservations regarding the consistent application of this approach. For example, in the revised Section 2 (submitted along with the RTC), it states that perchlorate and RDX contamination found in LHSMW01 and LHSMW03 are considered outside of the LHAAP-35A(58) boundary used for this FFS. Therefore, perchlorate and RDX was eliminated as COCs for LHAAP-35A(58). Please clarify how perchlorate, RDX or other compounds found in these wells will be addressed. Recently well 03WW01 was installed as part of the evaluation of LHAAP-03. Since LHAAP-003 is located within the foot print of LHAAP-35A(58), it is our understanding that the contaminated groundwater will be addressed as part of LHAAP-35A(58).	C C C	 LHSMW01 is located near LHAAP-04. Even though there may have been detections of perchlorate in the past, 10/22/07 results indicate that the perchlorate concentration is <1 µg/L. Perchlorate is being handled as a COC for LHAAP-04. Therefore, it would not be a COC for LHAAP-35A(58). The RDX in LHSMW03 was detected at 88.3 µg/L in August 1996. Prior to this (November 1994 and January 1996) it was not detected. Subsequently, in May 1998, the concentration was 1.3 UJ µg/L. RDX will not be carried as a COC for LHAAP-35A(58) because: (1) there was only the one elevated reading; (2) RDX was not detected in the most recent data; (3) the 1996 detection was at LHSMW03, which is outside the site boundary; and (4) RDX is not a site-related contaminant at LHAAP-35A(58). The VOC contamination at LHAAP-03 will be addressed as part of LHAAP-35A(58).	 A See Note 1 at end of table. A
2		Section 1.3 Summary of Sampling Investigation	Various groundwater sampling events from 1993 to 2007 have been conducted at the site. We note that only the groundwater gradient map (Figure 1-3) developed using the 2004 water level data is presented. An integral part of evaluating the fate and transport of the groundwater contamination is to understand the groundwater gradients over a period of time to ensure no changes in groundwater flow direction or seasonal variations. We recommend additional evaluation of groundwater flow with presentation of additional gradient maps.	C	**Section 1.2.1**, 5th paragraph, will be deleted. The following text will be replaced under a new **Section 1.2.3**, Geology and Hydrogeology,: "The soil at LHAAP-35A(58) consists of clays and silty clays with thin lenses of sand. The sand lenses are approximately 3 to 5 feet thick. The depth to the sand lenses varies across the site. Groundwater is present in shallow and intermediate zones at LHAAP-35A(58). The top of the shallow groundwater zone has been encountered at elevations ranging from approximately 206 to 197 feet above mean sea level. The hydraulic conductivities in the shallow zone ranges from 1.4 x 10^{-3} to 3.5 x 10^{-5} centimeters per second (Jacobs, 2002). Shaw installed additional monitoring wells and piezometers at the site in September – December 2008. Groundwater elevation readings were collected in November/December 2008 and indicated that the groundwater flows radially from near the central southwestern part of the site with an	A				A See Note 2

Comments on Draft Final Focused Feasibility Study
LHAAP-35(A)58, Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas
Dated September 2007

Reviewer: Fay Duke, TCEQ
Respondents: Praveen Srivastav, Susan Watson, Shaw Environmental, Inc.

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					east flow on the eastern side of the site and a south/southeast flow on the western side of the site. Groundwater contours based on the 2008 data are shown on **Figure 1-3**. A data table of field measurements is included in **Appendix C.** A cross-section across the site from west to east is depicted on the fence diagram in **Figure 1-4**. Historically, the boring log description of the lithology for each well location in fence diagram A to A' has noted that the soil has been moist throughout the column. This indicates the interconnectivity of the water bearing unit is continuous from the western most well of the fence diagram, 35AWW06 to the eastern most well of the fence diagram, 35AWW07. Though the subsurface soil varies between silty and sandy clays, clayey silts, and clayey sands, there seems to be enough sand content in the horizon 204 feet above MSL to 180 feet above MSL to have a continuous water bearing unit throughout the site. No dry clay has been observed and most of the zones have intermittent sand for the water to travel horizontally without being impeded by any completely confining layers." The revised Figure 1-3 and new Figure 1-4 are attached. The next version of the FS will include a time series for Figure 1-3 including the November 2007 groundwater elevations. *Additionally, the following will be added –* On **Table 1-1**, the last bullet will be revised as follows: "In 2007, Shaw collected samples for natural attenuation evaluation (**Appendix A**) and for pesticide analysis (**Appendix B**), and collected water elevation measurements (**Appendix B**). Additional bullets will be added to **Table 1-1** as follows: • In March 2008, Shaw collected additional samples for the shallow and intermediate zones to define the eastern plume (**Appendix B**).] • In November/December 2008, Shaw installed piezometers using direct push technology to better delineate the groundwater plumes, followed by the installation of 5 new wells and a round of groundwater sample collection and groundwater elevation readings (**Appendix B**).					

Comments on Draft Final Focused Feasibility Study
LHAAP-35(A)58, Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas
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3		Section 1.3.5	The additional soil and groundwater samples collected in 2006 are evaluated against the Texas risk based screening values (RBSV) and the exposure point concentrations used in the 2003 baseline risk assessment. We believe that the risk evaluation associated with the data collected post 2003 risk assessment should be combined and discussed under section 2.0 – Risk and Site Assessment. See our comments regarding the risk evaluation.	C	A new **Section 2.2** will be added, "Post Risk Assessment Data Evaluation". Subsequent sections will be renumbered. Please see the attached revised **Section 2**.	A	See our comments on the revised Section 2.	C	Text will be revised.	A
4		Section 1.3.5	It is stated that manganese and aluminum concentrations in soil near sample location S-117, at a depth of 10 feet below ground surface (bgs), were above the soil maximum concentrations and exposure point concentrations (EPC) used in the 2003 risk assessment. Furthermore, it is stated that groundwater samples collected in 1994 from monitoring well LHSMW07, located southeast of sample location, contain concentrations less than the groundwater EPCs for manganese and aluminum. Finally, it is concluded that at this depth, there is no elevated risk in groundwater resulting from the elevated soil concentrations associated with this soil sample. We have several concerns regarding this rationale. 1. We are not certain that LHSMW07 is located downgradient of the location of elevated soil concentration. 2. If LHSMW07 is confirmed to be a down gradient well, a more up- to-date sample should be collected and evaluated. 3. It may not be appropriate to compare sampling results to the individual EPC when the results of the risk assessment indicate that cumulative risk associated with the site exceeds the acceptable levels. Please refer to our comments regarding the risk evaluation below. Please note that in accordance with the 2003 risk assessment, the groundwater EPC for manganese of 5,800 ug/l resulted in a hazard quotient of 1.2 and the groundwater EPC for aluminum of 98,200 ug/l resulted in a hazard quotient of 0.96. Based on the information presented, we do not concur with the conclusion that elevated soil concentrations do not pose a threat to the groundwater.	D	S-117 is a sump sample. Since publication of the Draft Final FFS for LHAAP-35A(58), the data evaluation report for the sumps (Shaw, 2008) was finalized. The sixth sentence of the next to last paragraph of Section 1.3.5 will be revised as follows: "At a depth of 10 feet bgs at S-117, manganese and aluminum concentrations in soil ….used in the Jacobs 2003 risk assessment. Evaluation of the soil in the sump report indicates that the there are negligible increases to the Jacobs 2003 risk assessment cancer risk and noncancer hazard values, and no further action is required for soil associated with the sumps at LHAAP-35A(58) (Shaw, 2008)." 1. Based on the latest potentiometric map, LHSMW07 is cross-gradient of S-117, while the new well 35AWW06 is downgradient. 2. and 3. Please see the revised Section 2 for discussion on aluminum and manganese. Additionally – The last paragraph of Section 1.3.5 will be revised as follows: "In 2007 and 2008, several sampling events were conducted for various purposes. In February 2007, samples were collected to evaluate the attenuation of chlorinated compounds at LHAAP-35A(58). The data was used in the natural attenuation evaluation and is included in **Appendix A**. The laboratory data from the sampling event is included in an attachment in **Appendix A**. In December 2007, a sample was collected from LHSMW06 and analyzed for pesticides for LHAAP-60. The data from this sampling event is included in **Appendix B**. In late November/early December 2007, groundwater level readings were collected from the production area including LHAAP-35A(58) to develop the groundwater gradient across the production area. The field data is included in **Appendix B**. The information was used to generate **Figure 1-3**. In early 2008, samples were collected from three wells in the shallow zone and one intermediate well,	A	The revised text states that there are negligible increases of risks. Please include statements that address how the negligible increases affect the overall cumulative risk. The revised text should also include the installation and sampling of 03WW01 since the well appears to be located in the middle of the groundwater plume.	C	The overall risk did not change, i.e., the risk is still the same for the receptors. For clarity, the text in the last sentence of the previous response will be revised as follows: "Evaluation of the soil data in the sump report do not significantly affect the overall cumulative risk, and no further action…" Text will be added to address installation of monitoring wells 03WW01, 35AWW06 through 35AWW08 and the DPT sampling conducted in October 2008.	A

Comments on Draft Final Focused Feasibility Study
LHAAP-35(A)58, Shop Area, Group 4
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Respondents: Praveen Srivastav, Susan Watson, Shaw Environmental, Inc.

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					35AWW01. The data from the shallow wells was used to delineate the PCE/TCE plume in the shallow groundwater at LHAAP-35A(58). The data from the intermediate zone confirms that the PCE/TCE is not migrating down. The data reports are included in **Appendix B**. ”					
5		Section 2.1 Risk Assessment Summary	It is stated, “if there is no unacceptable risk associated with a medium and the medium is not contributing to a risk or ARAR exceedance of another medium, then the medium is not identified in this FFS for remediation.” Please clarify the meaning of “ARAR exceedance of another medium.”	C	This statement will be deleted. See revised **Section 2**.	A				
6		Section 2.1.2	It is stated, “all chemicals identified as presenting unacceptable cancer risks or noncancer hazards also exceeded their MCL concentrations and are identified for remediation in this FFS.” The TCEQ does not concur with this statement as it is not consistent with objectives established under CERCLA of being protective of human health and the environment, and attains any applicable or relevant and appropriate requirements (ARAR). For example, we note that based on the BRA, the hazard quotient of 1.2 was calculated for manganese. Even though there is not an established MCL for manganese, a preliminary remediation goals must be established to ensure protection of human health. Please also refer to the comments regarding preliminary remediation levels for additional discussions on this issue.	C	See revised **Section 2**.	A				
7		Section 2.2.2 & Table 2-1	Table 2.1 does not list all chemical generating risks greater than 1X10-6 as provided in Section 2.1.2. It is also stated that future maintenance worker exposure to groundwater at LHAAP-35(58) generated an unacceptable HI of 31.4. Based on the 2003 BRA report, exposure to groundwater generated a HI of 38. Please correct. A similar table should be provided for the chemical with HQ greater than 0.1. We noted that the discussions and evaluations of COCs and the associated risks tend to focus on the VOCs. The report needs to be revised to include other COCs that contributes to the non-carcinogenic hazard. We acknowledge that PCE and 1,1-DCE contribute 83% of the unacceptable HI. However, the TCEQ requires a HI of 1 be used to establish media cleanup levels that are protective of exposures to multiple non carcinogenic COCs.	C	See revised **Section 2**.		Table 2.1 – The GW-Ind MSC for RDX is 26 μg/l and GW-Res MSC is 7.7 μg/l EPA’s health advisory for RDX is 2.2 μg/l. Therefore, RDX should not be excluded as COCs. Because of the close proximity of the site to Goose Prairie Creek and the potential discharges into the nearby Caddo Lake (a public drinking water source), residential MSCs should be used as the cleanup levels for groundwater.	D	See response to RTC comment, No. 1.	A

Comments on Draft Final Focused Feasibility Study
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8		Section 2.2.2 & Table 2-1	Elevated concentrations of PCE and TCE have been detected in LHSMW05. Based on the 2004 groundwater gradient, LHSMW04, located down gradient from LHSMW05 had detection of PCE and TCE for the first time since 1994. Additionally, we noted from the boring logs that LHSMW04 and LHSMW05 may not be screened in the same saturated zone. Would this information suggest that the plume is spreading horizontally and vertically?	C	The clay layers within the shallow zone at LHAAP-35A(58) are only semi-confining with perched sand lenses in the subsurface. Though these sand lenses are discontinuous, historical logs have shown the semi-confining clay to be moist in the shallow zone. This suggests that the clays are conducive to transporting groundwater (though not as efficiently) and allows a pathway from one sand lense to another within the shallow zone. The 2008 data also indicates that PCE and TCE plume extends and encompasses LHSMW04. See the new cross-section **Figure 1-4** and revised **Figure 1-3** (groundwater contours) for more recent information. Also, see response to Comment 15 below and the revised Section 2.	A				A
9		Section 2.2.2 & Table 2-1	It is stated that TCE was the maximum level of VOC found in LHSMW07. However, based on historical and current groundwater data, the maximum concentration of VOC detected in this well is 1,1 dichlorothene (1,1-DCE). However, we note that discussions relating to the 1,1-DCE are very much absent. As 1,1-DCE is a primary contributor to the risk at this site, please revise.	C	See revised Section 2.	A				
10		Section 2.2.2 & Table 2-1	It is stated that modeling calculations were completed to assess the potential for the COCs presented in shallow groundwater at LHAAP35A(58) to discharge to Goose Prairie Creek. The report concluded that contaminants presents in the shallow groundwater at LHAAP35A(58) will not adversely impact Goose Prairie Creek. Aside from our previously expressed concerns with the uncertainties associated with the calibration and literature-based degradation rates used in the modeling, we noted from the modeling report that because groundwater flow is assumed to the east, the distance used in the model was 6,319 feet. However, based on the groundwater gradient map in the FFS, the shortest distance to Goose Prairie Creek is 120 feet to the west and southwest from LHSMW007. Elevated concentrations have been detected in well LHSMW07 and the nearest down gradient surface water sample is located more than 1750 feet away. We believe that surface water samples from Goose Prairie Creek in the location immediately down gradient of LHSMW07 should be collected and the model should be reevaluated to verify that contaminants in the shallow groundwater will not adversely impact Goose Prairie Creek.	E	Based on the groundwater elevation and the topography, it is unlikely that the groundwater near LHSMW07 will migrate up to the surface water tributary to Goose Prairie Creek. The nearest creek staff location is approximately 1,000 feet downstream from LHAAP-35A(58) in Goose Prairie Creek. At this location, the creek bottom is approximately 203 feet MSL. It is expected that the creek bottom elevations near LHAAP-35A(58) would be higher than the 203 feet MSL since the tributary near LHAAP-35A(58) is not deep and the surface elevation is approximately 219 feet MSL. The groundwater elevation on the western side of LHAAP-35A(58) near the creek tributaries is approximately 200 feet MSL. Thus, the groundwater from LHAAP-35A(58) is below the creek bottom and would not flow into the surface water at this location. Additionally the main contamination is in the eastern plume. Based on the most recent groundwater gradient, the discussion based on the modeling results remains unchanged.		What is the water level near the creek during the wet season? As TCEQ has previously commented, the lack of calibration in the AT123D modeling introduces inestimable uncertainties in the modeling effort. Therefore, we have reservations and concerns regarding the use of AT123D as a tool for specific prediction. Discussions regarding the uncertainty in the model should be included.	C E	Information is included in the natural attenuation report submitted under a separate cover. The following text will be added to the text: “There are uncertainties in the use of AT123 modeling to estimate the impact of groundwater on surface water. Specifically, the absence of a downgradient well between the site and Goose Prairie Creek precluded the field verification of the model’s results.”	A A

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11		Figure 2-1	As 1,1-DCE is the primary contaminants contributing to the total risks at the site, the figure should depict the estimated contamination plume.	C	**Figure 2-1** was revised to include the 1,1-DCE plume and is attached.	A				
12		Section 3.1 Remedial Action Objectives	The first remedial action objectives should also include other COCs that contribute to site risk and hazard.	C	The remedial action objectives will be revised as follows: Protect human health for the future maintenance worker by preventing exposure to groundwater contaminated with VOCs. Protect human health and the environment by preventing VOC contaminated groundwater from migrating into the nearby surface water Restore groundwater to beneficial uses, where practicable, within a reasonable time period given the particular site circumstances. The Army recognizes USEPA's policy to restore all groundwater to beneficial uses, based on the non-binding programmatic expectation in the NCP.	A			Note: Throughout the FS, appropriate changes will be made to RAOs and compliance with ARAR language to be consistent with the recent changes to the LHAAP-37/67 ROD as a result of comment resolution.	A
13		Section 3.2 ARAR & Table 3-1	It is stated in section 3.2.1 that potential To-Be Considered evaluated are listed in Tables 3-1, 3-2 and 3-3. However, under section 3.2.2, it states that chemical-specific ARARs are summarized in Table 3-1. We were unable to find any chemical-specific ARARs summarized in Table 3-1. Please correct this omission.	C	Text in **Section 3.2.2** will be revised to refer to **Table 3-2**.	A				
14		Section 3.3 Preliminary Remediation Levels & Table 3.5	Remediation levels must be established to achieve all three remedial action objectives listed in section 3.1. We note that preliminary remediation levels listed in Table 3-5 are only a subset of chemicals with concentration in groundwater that presents unacceptable risk. Please establish cleanup levels for all COCs with concentrations in groundwater that pose an unacceptable risk to the human health. The remediation levels established for the chemicals and the corresponding risk levels and hazard quotients should be included in Table 3-5. Furthermore, given that there are multiple contaminants being addressed at this site, discussion should be provided to address how the combination of ARAR-based goals and risk-based goals will achieve cumulative residual risks within the acceptable cancer risk range and hazard index. Additionally, the remediation levels should also be established for any COC that may be a by-product or daughter product of a treatment process such as degradation.	C	Remediation levels will be established for the RAOs. See the revised **Section 2.0** for the selection of COCs. The degradation products for PCE are TCE, cis-1,2-dichloroethene, trans-1,2-dichloroethene, dichloroethene, and vinyl chloride. Of these only two of the compounds are currently not COCs. Thus, remediation levels will be added for the degradation by products of PCE in **Table 3-5** as follows: **Chemical of concern** / **Maximum concentration (µg/L)** / **MCL (µg/L)** cis-1,2-dichloroethene / 11 / 70 trans-1,2-dichloroethene / 0.73J / 100		The daughter products evaluated are limited to the degradation of chlorinated ethenes. The presence of 1,1-DCE is likely the result of degradation of chlorinated ethanes. Are there other breakdown/daughter products from the degradation of chlorinated ethanes? Additionally, there are numerous daughter products as a result of the RDX degradation. Please evaluate.	C	The TCA daughter products include 1,1-DCE (already a COC), 1,1-dichloroethane (DCA), chloroethane, and ethane. Table 3-5 will also have the following added: **Chemical of concern** / **Maximum concentration (µg/L)** / **GW-Ind (µg/L)** 1,1-dichloroethane (TCA daughter product) / 87 / 10,000 chloroethane (TCA daughter product) / 40 / 41,000 RDX and daughter products will not be added (See response to RTC comment 1).	A

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15		Section 4.1 Contaminants and Media of Concern	As we previously commented in the data gap report, we believe the extent of groundwater contamination is not well defined. Therefore, we believe the effort to estimate the total volume of contaminated groundwater at LHAAP35A(58) may be premature and underestimated. The recent detection of PCE and TCE in well LHSMW04 may suggest that the contaminated plume has migrated since 2004. We strongly recommend that groundwater flow direction be evaluated and additional down gradient monitoring wells be installed in order to delineate the extent of groundwater contamination.	E	Additional samples were collected in early 2008 from LHSMW04, LHSMW09 and LHSMW11 to better define the plume. Additional wells were installed and additional samples were collected in November 2008. The extent of the plume has been defined using the most recent data. **Figures 1-3** and **2-1** were revised to indicate the groundwater gradient and provide the VOC plumes. These revised figures are attached as part of this response. The 2008 sample result from LHSMW04 indicates that the PCE and TCE concentrations have increased. The detection limits for PCE and TCE have typically been 5 µg/L (the same value as the MCLs). Since 2004, LHSMW05, the well with the maximum PCE concentration, has been dry. Since no data can be attained from LHSMW05, there can be no strong conclusion about plume migration, just a recent fluctuation at LHSMW04, and a drop in water elevation across the site. Also, See response to Comment 8.	A D		C	A new well, 35AWW08, was installed near LHSMW05. Data collected from the new well was used in this FFS.	A
16		Section 4.1 Contaminants and Media of Concern	It is stated that "TCE is the COC detected most consistently during all sampling events for which the MCL is 5ug/l. Therefore, the total COC concentration limit of 5ug/l was selected as a conservative basis for determining the horizontal and vertical extent of groundwater requiring remedial action at LHAAP-35A(58)." We need additional clarification as to how the above methodology was used to calculate the plume size. Please provide a map depicting the calculated lateral area of the groundwater plume.	C	**Figure 2-1** shows a revised plume extent based on new well data and is attached as part of this response. A plume volume will be calculated based on these latest plumes in the next version of the document.	A				
17		Section 4.3 Screening Process Options	Typically, in this step of the FS process, a universe of potentially applicable technology types is presented. It is stated that containment process is screened out because there is no distinct source area and there are several less costly and more viable options. However, we believe in this step of the feasibility study, the technology type and process option should only be screened based on technical implementability. We do not believe that containment process is only to be used for source control.	C	Engineering judgment along with the site conditions are used to develop potentially applicable technology types. Containment includes technologies that isolate contaminated groundwater by using subsurface barriers and/or engineered caps. The containment technologies are typically used with other options such as removal and treatment to make them a viable alternative. At LHAAP-35(A)58, since we have two distinct plumes with no defined source area to isolate, it was not considered a potential applicable technology to be evaluated further since both plumes would need to be contained.	A				

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18		Section 4.4.1.3 -	This section describes the various mechanisms to implement land use control. In the introduction paragraph, it states that Army will record a notice of land use control with the county and include the notice of land use control in the transfer letter to US Fish and Wildlife Service (USFWS). This statement seems to be out of place. We also noted that in the evaluation of the various type of land use control, deed notice is not evaluated.	D	Since this is a federal facility, there is no deed notice until the land is transferred to a non-federal entity. The statement makes it clear that the Army will file a record of notice with the county that will be available and on file for any future transfers to a non-federal entity.	A				
19		Covenants/Deed Restriction	Under the evaluation of covenants/deed restrictions, it states that deed restrictions would be needed only if the Army releases the property to a non-federal entity. Please elaborate as to who would be responsible for placing the covenants in the deed if in the future the property is to be released by the USFWS? If so, will the transfer letter from the Army include the restrictive covenant provision?	C	Land use restrictions will be specified in the Environmental Provisions included in the ECOP. The Army's transfer letter to USFWS will also include these restrictions which will also be filed as part of the notice with the county as part of the land use controls. If the USFWS (a federal entity) releases the property to a non-federal entity, then a deed recordation with restrictions would accompany the property transfer.	A				
20		Covenants/Deed Restriction	The evaluation of this instrument should include discussions regarding the effectiveness and implementability of restrictive covenants due to the absence of deeds in the property transfer between Army and USFWS and due to the policy which prohibits the placement of deed restriction on federal property by the Army.	C	The following will be added under Effectiveness: "The five year reviews will ensure that the covenants/-deed restrictions are enforced and remain effective." Army/USFWS Property Transfer Clarification: There is no deed restriction for federal to federal agency property transfers because there is no change in the owner of the land – it remains with the U.S. Government – only a change in administrative control takes place from one federal agency to another. The transfer of control is done by letter, in this case from GSA to USFWS. GSA will attach the Environmental Protection Provisions to the letter. Additionally, LUCs and notifications will be recorded in the County and will, therefore, be in the public record. Five year reviews will continue in perpetuity to assure that LUCs are in force. The Five Year Reviews are Army's responsibility and are part of the Environmental Liability presented to Congress each year.	A				
21		Physical Mechanism	It is stated, "the future use of the site is to be part of a refuge under USFWS. It is anticipated that covenants/deed restrictions and administrative controls will be adequate to control access to the contaminated groundwater and physical mechanisms will not be required." First, if physical mechanisms are not required, why are they retained and carried forward? However, it is our understanding that because the transfer is between two federal agencies, a restrictive covenant cannot be filed in the deed. Will physical mechanisms be required without the restrictive covenant?	C	Physical mechanisms will be deleted since there is no carcinogenic risk or non-cancer hazard from the contaminants in the soil. The land use controls for groundwater will be in place and are the Army's responsibility to enforce. The LUCs will include restrictions on drilling wells at LHAAP-35A(58) until contaminant concentrations decrease to cleanup goals. The LUCs will be specified in the ECOP and the letter of transfer to USFWS. Also see property transfer clarification in Response to comment 20.	A				

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22		Section 4.4.1.4 Removal	We recommend the title be renamed from “removal” to “extraction” to better reflect the actual process. We note that most extraction technologies were not retained for the remedial alternatives development mainly because of hydrogeologic conditions. Since there are interim remedies in place at other portion of the facility that utilize extraction technology, extra care should be taken to explain why extraction would not work at this site.	C	Title will be changed. Noted.	A				
23		Extraction Wells	Please elaborate on the statement “extraction wells have been used with mixed result at LHAAP.”	C	Sentence will be deleted. The last sentence of the” Effectiveness” bullet will be replaced with the following: “The low yield from the upper sand lenses (e.g. near LHSMW05) at LHAAP-35A(58) limits the effectiveness of this process option.”	A				
24		Interception Trenches	Please elaborate on the statement “the nature of the permeable lenses which control shallow groundwater will limit the effective use of trenches.”	C	Sentence will be replaced with the following: “The soils at LHAAP-35A(58) consist of clay and silty clay with discontinuous sand lenses, which will limit the effective use of the trenches, since several trenches may need to be installed to effectively remove the TCE from the various sand lenses.”	A				
25		Section 4.4.1.5 In Situ Oxidation	It is stated that this technology is typically used as source-area treatment and is less effective for treatment of large areas of low contaminants concentration (dissolve plumes). We are not aware of this limitation for this technology. Please clarify.	C	Oxidants are typically designed to address a hot spot or point source. They do not have a long retention time (less than 3 months) and must come into direct contact with the contaminant to destroy it. The returns are diminished when treating large areas of low dissolved concentrations.	A				
26		Section 4.4.1.5 Permeable Reactive Barrier	The effectiveness evaluation seems to lack site specific discussions. There are general discussions of problems and concerns experience at other facilities. How are these concerns and issues related to site LHAAP-35A(58)?	C	The following sentence will be added to the Permeable Reactive Barrier implementability paragraph: “It is likely that two separate barriers with two carbon sources may be required at LHAAP-35A(58). Additional treatability studies, characterization, and maintenance efforts would also be required.”	A				
27		Phytoremediation	Phytoremediation is eliminated from further consideration due to the significant time required for treatment. How is the timeframe of this technology compared to the monitoring of natural attenuation process?	E	Based on the most recent water elevation readings, phytoremediation will be eliminated based on the depth of the contaminated groundwater bgs.	A				
28		In Situ Bioremediation	It is stated that the effectiveness of biodegradation is effective in either low oxygen conditions or high oxygen and methane conditions in a permeable media. Based on the geochemical evaluation presented in Appendix A, are the conditions at LHAAP-35A(58) favorable for bioremediation? It also states, “the rate of destruction is typically slower than other competing processes, but fewer and less toxic byproduct result.” Please explain which competing process are being compared and what toxic byproducts result.	C	Biodegradation is being compared to in situ oxidation, which can mobilize metals as it destructs the contaminants. The conditions at LHAAP-35A(58) are expected to be favorable to bioremediation. However, additional studies and evaluation would be required to design the most effective treatment.		Since biodegradation of PCE and TCE produces VC, some might interpret this as a treatment alternative that produces a more toxic byproduct. As for the statement regarding the in-situ oxidation mobilizing metals, we believe that this is only a potential. Therefore, we believe that statement should be deleted.	C	Statement will be deleted.	A

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29		Summary of In Situ Treatment Process Options	All but bioremediation were eliminated from further remedial alternative development. The primary rationales for retaining in situ bioremediation and eliminating the other in situ processes include costs and the production less toxic byproducts. We believe that in this step of the FS, cost should play limited role. Only in the case where costs that are grossly excessive compared to the overall effectiveness, should it be used in the elimination from further evaluation. We believe it is imperative that the FS present a range of remedial alternatives that can address the site contaminants. Additionally, as commented above, please elaborate on what byproduct is expected to be produced by the chemical and physical processes and not by the bioremediation process.	E	In Section 4.4.1.4, removal process options were eliminated because of hydrogeological conditions resulting from the discontinuous nature of the sand lenses. In Section 4.4.1.5, the physical/chemical process options are eliminated due to limitation by the site geology and hydraulic conditions and the required long-term maintenance. In Section 4.4.1.6 and 4.4.1.7, ex situ and disposal processes were eliminated since the removal process options were eliminated. All other process options were retained and then grouped into the two action alternatives.		Although we believe that a broader range of alternatives should be developed, the TCEQ will deferred the determination to EPA and the Army since this is a CERCLA requirement.	C	An additional alternative will be added to the FFS as a result of new data and discussion at the April 27/28 meeting. Alternative 4, its evaluation and comparison are attached. Additionally, minor changes were made to the alternatives per discussions at this same meeting. This text is also provided with tracked changes for sections 5 and 6.	A See Note 3
30		Section 5.1.2	The text states: “in this FFS, the basic strategy is defined by a combination of solutions from a key question that address potential final site conditions. The key question is: What degree of remediation should be achieved for groundwater?” We do not fully understand the above statement. The remedial action objectives should determine the degree of remediation. Please clarify. In accordance with the NCP, “the primary objective of the FS is to ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision maker and an appropriate remedy selected.”	C	The last two paragraphs of Section 5.1.2 will be deleted.	A				
31		Section 5.2.2 Alternative 2	The text states that the goals of this alternative are to protect the on-site maintenance worker and prevent exposure to groundwater. If the goals of this alternative cannot achieve all three remedial action objectives, then, this alternative is deficient. If this alternative cannot comply with MCL, than a waiver must be filed. However, we believe that if properly demonstrated, this alternative can accomplish all three RAOs. The goal to protect the on-site worker and prevent exposure to groundwater can be achieved with an alternative that consists of long term land use control (LUC) and monitoring. Restoration to comply with the MCLs via natural attenuation is the difference between this alternative and a alternatives of just LUC and monitoring.	C	MNA is considered an active treatment remedy and the intent of Alternative 2 is to achieve the goals of the RAOs. Therefore, the following text will be revised: Section 4.4.1.2, A new first sentence will be added as follows: “MNA is an active remedial process option that will achieve the cleanup levels over time.” Section 5.2.2 first paragraph and first two sentences of the 2nd paragraph will be replaced with the following: “Alternative 2 has been developed to provide minimal actions that may be taken to limit public exposure to the contaminated media while demonstrating reduction of contamination. The goals of this alternative are to protect the hypothetical future maintenance worker and prevent exposures to groundwater as well as to restore groundwater. The toxicity, mobility, or volume of groundwater contaminants is reduced through natural processes including biodegradation, dispersion, absorption, volatilization, and dilution	A				

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					over time and with distance from the source. The contaminant attenuation is through intrinsic bioremediation and other physical loss mechanisms which are monitored to ensure that the groundwater contamination remains localized and that the contaminant migration, if any, is minimal." Also, see response to comment 14.					
32		Section 5.2.2.1 & 5.2.2.2	Aside from TCEQ's concern with the effectiveness of the MNA as discussed below, the proposed groundwater monitoring program is deficient. The monitoring program should be sufficient to evaluate the progress and the effectiveness of the MNA. A baseline must be established against which remedy performance can be measured. The monitoring net work should contain multiple attenuation monitoring points (AMP) along the center axis of the contaminated groundwater plume. The TRRP guidance specifies a minimum of four with three located within the contaminated plume and one located up gradient of the source area to evaluate the change in COC over time and distance. The guidance requires that attenuation action levels be developed to provide near-term evidence that the process is responding as expected (time) and to be used to determine if remedy is not effective. Refer to the TRRP guidance for additional information on estimating timeframe of remediation and calculating the attenuation action levels.	D	The monitoring program will follow the EPA technical protocol evaluating natural attenuation of chlorinated solvents in groundwater. The first paragraph of Section 5.2.2.1 will be revised as follows: "For this alternative, a monitoring program would be implemented to address the two areas of contamination as shown on **Figure 2-1**. The monitoring program will be developed as part of the remedial design phase and will define the MNA expectations. The objectives of the monitoring program will include elements such as (USEPA, 1999): • Demonstrate that MNA is occurring according to the expectations • Verify there is no unacceptable impact to downgradient receptors • Verify the plume is not expanding • Demonstrate the effectiveness of LUCs to protect the hypothetical future maintenance worker, and • Verify attainment of RAOs. The sampling program will be designed during the remedial design phase and will be based on the current plume that considers seasonal variations, groundwater direction, and velocity. The performance monitoring frequency will be developed as part of the remedial design. For cost estimating purposes, it is assumed that existing wells will be used for MNA sampling, and the sampling will occur as described in the following paragraphs." For costing purposes, it is assumed that annual sampling will be conducted from years 2 through 5, and sampling every 5 years thereafter." In Section 7, a reference will be added as follows: (USEPA, 1999) *OSWER Directive 9200.4-17P, Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Site*s, Washington DC, April.		We believe that the MNA requirements under the EPA and TRRP are similar. We believe that the monitoring program described in section 5.2.2.1 is deficient. We acknowledge that the sampling program will be developed during the remedial design. However, the use of the deficient program for cost estimated purpose may result in an underestimation of costs for the remedial alternative. We believe that sampling quarterly for year 1 and annually from year 2 through 5 is not sufficient to evaluate the potential seasonal variation at this site.	C C	The monitoring frequency, discussed during the April 27-28, 2009 meeting, of 2 years of quarterly sampling, 3 years of semiannual sampling and 5 years of annual sampling will be used. See revised alternative text. See above response.	A A
33		Section 5.2.2.1 & 5.2.2.2	It is stated that MNA sampling would occur quarterly for the first year. Monitoring will occur annually until the initial Five Year Reviews. Monitoring will be	C	See response to Comment 32. In general, it should be noted that the trends for MNA at LHAAP may not be evident in the short run		See response to RTC Comment 32.	C	See response to RTC Comment No. 32.	A

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			reduced to every 5 years thereafter. We believe that monitoring should be based on the frequency necessary to evaluate the effectiveness and progress of the natural attenuation. At a minimum, quarterly sampling should be conducted to evaluate and ensure that the trend of natural attenuation is occurring as expected. There should not be a reduction in monitoring until such time that data suggests that less frequent sampling is appropriate		since many of the sites have times to attain the cleanup levels estimated at 100 years or more. Other indicators will likely be included in the monitoring program such as how the plume is behaving overall, i.e. is the plume relatively stable or are its boundaries changing?					
34		Section 5.2.2.1 & 5.2.2.2	It is stated, "if sampling results shows unusual trends of perturbation, additional investigation sampling may be performed." What are the criteria in which it will be evaluated and what action would result from the evaluation? With the uncertainty of whether natural attenuation can achieve the RAO, we believe that a contingent remedy should be included if MNA is to be selected as a remedy. Furthermore, evaluation criteria must be established such that contingencies can be employed without modification to the remedy.	C/E	Specific criteria will be developed in the remedial design phase. Generally, concentrations of PCE, TCE and daughter products will be evaluated along with TOC and microorganisms. Data evaluation techniques will follow EPA guidance. In **Section 5.2.2.2** the last sentence of the 1st paragraph will be replaced with the following: "Sampling results will be evaluated in accordance with the monitoring program, and if the results indicate unusual deviations outside of sampling variability or seasonal fluctuations, additional sampling or action will be taken as described in the monitoring program. If MNA is determined to not be effective, then the remedy under Alternative 3 will be implemented as a contingent action. The implementation of the contingent action will be described in the decision documents." In **Section 6.5**, the second bullet will have the following added: "If MNA is not found to be effective, Alternative 3 will be implemented as a contingent action".		Because Alternative 3 is similar to Alternative 2 except for the in-situ bioremediation, is the contingency plan, in-situ bioremediation with or without MNA? Additional clarification is needed.	C	Please see attached revised text based on discussions during the meeting on April 27-28, 2009. Alternative 4 was added with MNA for western plume and in-situ bioremediation/MNA for eastern plume. The contingent action will be deleted from Alternative 2.	A See Note 3
35		Section 5.2.3.1 In Situ Bioremediation for Groundwater Plume	It is stated that this alternative can achieve cleanup levels in the treated area in approximately two years. It further states that COCs are expected to remain in the plumes outside the treated area and will attenuate to levels below MCLs over time. Should the interpretation be that the treated area is limited to the vicinity of the impacted wells? If so, the plume outside of the treat area would employ MNA as the remedy and this remedial alternative should include MNA. Furthermore, as we stated in our previous comment, please include an estimated timeframe in which the RAO would be achieved to support the assumption that monitoring would be conducted for up to 10 years.	C	Text and estimate will be revised to make it clear that the biotreatment will reduce the concentrations within the treated area (areas of higher concentration) in two years and the plume area outside the biotreatment area (lower concentrations) should attenuate in an additional 10 years (i.e. 12 years total). MNA will be added as part of the remedy title.	A				See Note 4

Comments on Draft Final Focused Feasibility Study
LHAAP-35(A)58, Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas
Dated September 2007

Reviewer: Fay Duke, TCEQ
Respondents: Praveen Srivastav, Susan Watson, Shaw Environmental, Inc.

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2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	TCEQ Comments to the RTC	C, D[1], E or X	Response to RTC Comments	A or D[2]
36		Section 5.2.3.2 Long-Term Operation	It is stated that groundwater sampling would occur quarterly for the first year. Annual monitoring will occur for year two through five and reduce to once every 5 years thereafter. The TCEQ cannot concur with the proposed monitoring schedule. We believe that monitoring should be based on the frequency necessary to evaluate the effectiveness and progress of the in-situ bioremediation. At a minimum, quarterly sampling should be conducted until such time that data suggests that less frequent sampling is appropriate.	C	See response to Comment 32. The proposed frequency was mentioned for cost estimating purposes. Specific monitoring frequency will be included in the remedial design.		See response to Comment 31.	C	Please see attached revised text and response to RTC Comment No. 32.	A
37		Section 6.3.2 Alternative 2 – Monitored Natural Attenuation	It is stated that "MNA activities associated with the land use controls would ensure that the COC concentrations in groundwater remain stable or continue to degrade naturally." Please clarify this statement. Land use control serves to prevent exposure to the contaminated groundwater while natural attenuation would reduce the COC concentrations in groundwater to acceptable level (MCLs). Additionally, the statement implies that this alternative would achieve either control of the plume (plume stability) or reduction of concentration. In order to prevent further migration and comply with the ARAR, MNA must achieve both.	C	This sentence will be deleted and replaced with the following: "MNA activities would ensure that the COC concentrations in groundwater remain stable and continue to degrade naturally. Until MNA goals are achieved, land use controls will remain in place."	A				
38		Section 6.3.2.1	The overall protection human health and the environment is evaluated in this section. It is stated that the alternative would achieve the RAO for LHAAP-35A(58). Please refer to our previous comments on the protectiveness of the RAO. It is stated that the "LTM program would monitor groundwater plume migration and ensure that the COCs in groundwater does not migrate beyond the site boundary and that the COCs continue to degrade or remain stable." Please clarify. First, MNA should only be applicable as a remedy if the plume is stable or shrinking. Finally, in order to achieve all the RAO, the COC must attenuate to the levels that are protective of human health and the environment.	C	Preliminary evaluation indicates that MNA is a viable remedy for the site. Additional monitoring data will be obtained to evaluate the effectiveness of MNA during the remedial action operation (RA[O]) phase. MNA will result in attenuation of COCs to cleanup goals. Also see responses to Comments 32 and 37.	A	If LUC is to remain in place, please revise the title to reflect a long-term LUC.	C	Title will be revised.	A
39		Section 6.3.2.1	It is stated that deed restrictions would be placed on the property if transferred out of US government control. Please clarify who is responsible for placing the restrictive covenant.	C	See response to Comment 19.	A				
40		Section 6.3.2.2	It is stated that alternative will achieve ARARs for groundwater but the timeframe may be long. Furthermore, it is stated that since use of groundwater as a water supply is unlikely based on future land use the timeframe for achievement of ARARs is not a issue. The above statements may be considered when selecting MNA as a remedy.	C	See responses to EPA's Comments 3 and 7 and revised **Section 2.0**. **Appendix A** (Attenuation Evaluation) will be revised to include an estimation of the time to reach cleanup goals.		Review and response will be provided when the revise Appendix A is submitted.	C	Appendix A submitted under separate cover.	A See Note 5

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			However, the timeframe in which MNA can achieve the RAO must be estimated. Otherwise, without demonstrating that COC can natural attenuate to an acceptable level within a certain timeframe, how is this different from a no action with long term monitoring? Additionally, the estimated restoration timeframe would serves as a baseline against which remedy performance can be measured. The Texas TRRP MNA guidance provides two methods that can be employed to estimate the remedial timeframe. Please refer to the guidance document for additional information. This section should specify, that the chemical specific ARARs (i.e., MCLs) will be met through monitored natural attenuation in a specified number of years and not result in the contamination of nearby surface waters.							
41		Section 6.3.2.3 Long-Term Effectiveness and Permanence	Please refer to our above comments regarding risk, remedial action objectives and modeling. Our comments regarding MNA are provided below.	C	Noted.					
42		Section 6.3.2.7 Cost	The assumption used to calculate the long term monitoring (LTM) cost is based on conducting monitoring for 30 years. Since the timeframe for restoration was not calculated, is the cost estimate underestimated or overestimated? Additionally, the assumption use in the cost estimate is based on the LTM schedule which we have expressed concerns. Based on the resolution of our comments, the costs must be revised accordingly.	C	The estimates will be revised to reflect changes made by the comments. It is Army policy to establish environmental liability associated with a remedial approach and for evaluation of alternatives is to use 30 years even if the time frames may be longer. As indicated previously (Comment 32), the sampling frequency was used for estimating purposes only. A different frequency of sampling would not affect the relative cost estimate of the alternatives.		Please see our comments regarding cost estimate (Comment No. 31).	C	Estimates were revised using the sampling frequency as described in the revised text.	A
43		Section 6.3.3 Alternative 3 – In Situ Bioremediation with Short-Term LUC and LTM	This remedial alternative includes using bioaugmentation to treat the high concentration groundwater plume and natural attenuation of remaining COC over time until MCLs are met. It is estimated that after the in situ bioremediation, it would take approximately 10 years for site COCs to attenuate to acceptable levels. Please provide more detailed calculations and assumptions used in the calculation. For example: At what COC concentrations will the bioremediation stop and natural attenuation begin?	C	It is expected that the biotreated plume area will fully attenuate to concentrations below MCLs. The in situ biotreatment assumptions will be revisited and any changes to the text or estimates will be made.	A				See Note 4
44		Section 6.5 Recommendation	At this time, the TCEQ cannot concur with the recommended alternatives until our concerns are addressed.	C	These responses to comments include additional information and attachments to address TCEQ concerns.		At this time, the TCEQ cannot concur with the recommended alternative.		It was agreed during the April 27-28, 2009, meeting that a new Alternative 4 will be added to the FFS that includes bioremediation for the eastern plume and MNA with contingency remedy for the western plume. Also, Section 6.5 Recommendation will be deleted. See attached revised text.	A

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Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	TCEQ Comments to the RTC	C, D[1], E or X	Response to RTC Comments	A or D[2]
Appendix A – Natural Attenuation Evaluation for LHAAP-35A(58)										
45		General	Reference is made that the MNA demonstration is performed in accordance with TRRP MNA guidance document. The guidance required that data, graphs and maps support the demonstration of natural attenuation. However, we noted that only certain portions of the guidance are loosely followed. For the purposes of restoring groundwater, the TRRP guidance requires that the contaminated groundwater plume to be shrinking. With concentrations of COCs detected for the first time in LHSMW04 (located downgradient of LHSMW005), and the lack characterization of the mechanisms for and adequate rates of degradation, it is unclear whether the plume is shrinking or whether the plumes will continue to expand.	C	The intent is to follow EPA guidance because LHAAP-35A(58) is an NPL site, and include aspects of TRRP guidance, where possible, because the site is under RRR and TRRP is not directly applicable. The natural attenuation evaluation will be revised based on the most recent data. As part of the revision, comments 45 through 51 will be addressed. Please note that the evaluation presented in the document is a preliminary evaluation. More data will be collected during the RA(O) phase and interpreted to answer reviewer's comments.		Review and response will be provided when the revise Appendix A is submitted.	C	Appendix A submitted under separate cover.	A See Note 5
46		Section 3.1	It is stated that as PCE concentration levels decrease in well LHSMW05, an increase in TCE concentrations occurred. It is stated that since 1994, PCE concentrations have increased and than decreased but appears to be stabilized based on 1998 and 2004 data. However, there is no mention that TCE concentration trend behaves similarly to the PCE concentration trend. We note that based on the historical data, a majority of the time, as PCE concentrations increase, the TCE concentrations also increase. Similarly, as PCE concentration decrease, the TCE concentrations also decrease, except for the 2004 sampling event in which the TCE concentration increase slightly. Please revise and re-evaluate. We note the lack of analysis for the contamination in LHSMW07. We recommend that graphs be prepared to analyze and present the trend analysis of both plume.	C	See response to Comment 45.		Review and response will be provided when the revise Appendix A is submitted.	C	Appendix A submitted under separate cover.	A See Note 5
47			It is stated that concentrations of daughter products 1,1-DCE and VC recorded in temporary well suggest that reductive dechlorination have occurred. We disagree that the presence of these compounds alone is an indication that attenuation is occurring. We also question whether 1,1-DCE can be considered a daughter compound for PCE or TCE especially in absence of cis-1,2-DCE.	C	See response to Comment 45.		Review and response will be provided when the revise Appendix A is submitted.	C	Appendix A submitted under separate cover.	A See Note 5

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48			It is stated that LHSMW10 is downgradient of the primary plume and has not had any detection of LHAAP35A(58). We note that this well is located approximately 900 feet from well LHSMW05 and appear not to be directly downgradient. We believe this may not be the most optimal well for monitoring migration. We also were not able to locate any recent sampling results from this well.	D	See response to Comment 45. LHSMW10 was confirmed to be downgradient from the 2007 and 2008 groundwater gradient.		Review and response will be provided when the revise Appendix A is submitted.	C	Appendix A submitted under separate cover.	A See Note 5
49			It is stated that an increase VC concentrations were observed in the minor secondary plume from 1998 to 2004. We note this observation is based on one datum. It is further suggested that the presence of VC supports the occurrence of reductive dechlorination. We cannot agree. We note that since 1994, for the majority of time, as the concentrations of TCE decreases, the VC concentration also decrease. In order to support reductive dechlorination, as the concentrations of the parent compounds decrease, there should be corresponding increase in the daughter compounds. We recommend that graphs be prepared to analyze and present the trend analysis.	C	See response to Comment 45.		Review and response will be provided when the revise Appendix A is submitted	C	Appendix A submitted under separate cover.	A See Note 5
50			We note that 1,1-DCE is the primary contaminant at the secondary plume. However, there seems to be a lack of discussion whether attenuation of this compound is occurring. Please expand the discussion of observed degradation to include all COCs including the daughter compounds at each of the sites.	C	See response to Comment 45.		Review and response will be provided when the revise Appendix A is submitted.	C	Appendix A submitted under separate cover.	A See Note 5
51		Section 3.0	It is stated that the DO concentrations below 1.0 mg/l are required for the anaerobic microbial degradation of COCs. In accordance with EPA guidance, the DO concentration greater than 0.5 mg/l may prohibit reductive pathway. Please explain. It is also stated that DO concentrations were observed to be below 1.0 at wells LHSMW04 and LHSMW06. The analysis concluded that anaerobic condition exists for the occurrence of reductive dechlorination of the eastern portion of the primary plume where PCE concentrations are above the MCL. However, we note that these wells are not the primary source of PCE contamination. If DO concentrations in the source wells are not ideal for reductive pathway, please state the observation. The remaining discussions on the geochemical indicators as a secondary line of evidence of natural attenuation present inconsistent data to support favorable conditions for reductive degradation. Overall, we feel that the data present do not seem to support the assertion that natural attenuation would achieve the RAO in a reasonable time.	C	See response to Comment 45.		Review and response will be provided when the revise Appendix A is submitted.	C	Appendix A submitted under separate cover.	A See Note 5

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Notes:

1. TCEQ concurred with the approach and had no additional comments in an email on 12/11/2009 from F. Duke/TCEQ to R. Zeiler/U.S. Army.
2. Changes were incorporated and additional figures were added which changed figure numbers referenced in these RTCs.
3. The revised sections and figures noted as "attached" in these RTCs were incorporated into the document and are no longer attached to these RTCs.
4. To have a better comparative analysis of the alternatives, Alternative 3 was revised to be in situ bioremediation of the plume (not just the highest concentration area), while Alternative 4 for the eastern plume is in situ bioremediation of the area of highest concentration. Within Alternative 3, in situ bioremediation of the plume significantly reduces the time to achieve MCL due to the addition of more injection points.
5. Even though TCEQ agreed, they had the following comments on Appendix A:
   - Additionally, we have also reviewed the revised MNA Evaluation. In general we believe the revised report addresses most of our previous comments. However, we have the following concerns regarding the report:
     - We note that under the "first lines of evidence" evaluation, the newly installed 35WW07 is used to support and evaluate the trend of the eastern plume. Without historical data for this well and the increase concentrations in well LHSMW04, we believe it is inappropriate to conclude that the plume is stable. Additional sampling will be conducted for the RD. The RD is assuming the source area will be treated. Once the source area concentrations are reduced, the downgradient concentrations will also decrease. If the plume is not stable, the source area treatment should stabilize the plume.
     - We noted that the evaluation and conclusion regarding the western plume rely and assume that 35AWW04 remains unaffected. However, we noted that there are no recent sampling results for 35AWW04. The last sampling result available for 35AWW04 was in 2004. Based on the recent sampling results of LHSMW04, we are not confident that the assumption that 35AWW04 remains unaffected is a good assumption. During the RD phase, additional data points may be necessary downgradient of 35AWW06 if 35AWW04 remains dry. Because we have concerns regarding the effectiveness of MNA as the sole remedy for the western plume, it is imperative that MNA be evaluated after two years to ensure that nature attenuation is occurring. *Concur*. These requests will be incorporated into the RD.
     - Although these two issues are our major concerns in the MNA evaluation, we believe it does not alter the agreed path forward for the site. We believe as additional data is gathered, the assumptions made in this preliminary MNA evaluation report can be verified or corrected. *Concur*.

General – Editorial text changes were made in this feasibility study such as dropping "focused" from the title to be consistent with more recent LHAAP feasibility studies.

FINAL

FEASIBILITY STUDY
LHAAP-35A(58), SHOPS AREA, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared for

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st Avenue
Tulsa, Oklahoma

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Contract No. W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591

December 2009

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

Table of Contents (continued)

List of Tables

List of Figures

List of Appendices

Acronyms and Abbreviations

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
AOC	area of concern
ARARs	applicable or relevant and appropriate requirements
Army	U.S. Department of the Army
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
CLI	Caddo Lake Institute
COCs	chemicals of concern
CWA	Clean Water Act of 1972
DCE	dichloroethene
DPT	direct-push technology
ELCR	excess lifetime cancer risk
EPC	exposure point concentration
FFA	Federal Facility Agreement
FR	Federal Register
FS	feasibility study
GAC	granulated activated carbon
GRAs	general response actions
HI	hazard index
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LUC	land use control
LTM	long-term monitoring
MARC	Multiple Award Remediation Contract
MCL	maximum contaminant level
MNA	monitored natural attenuation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbons
PCE	tetrachloroethene
pH	potential hydrogen ion concentration

Acronyms and Abbreviations (continued)

PP	Proposed Plan
RAOs	remedial action objectives
RBSV	risk-based screening value
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROD	Record of Decision
RRS	risk reduction standard
Shaw	Shaw Environmental, Inc.
Sverdrup	Sverdrup Environmental, Inc.
SVOC	semivolatile organic compound
TAC	Texas Administrative Code
TBC	to-be-considered
TCA	trichloroethane
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TNRCC	Texas Natural Resources Conservation Commission
TOC	total organic carbon
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VC	vinyl chloride
VOC	volatile organic compound
ZVM	zero-valence metals

Executive Summary

This Feasibility Study (FS) was prepared by Shaw Environmental, Inc. (Shaw), for the U.S. Army Corps of Engineers (USACE), Tulsa District, under the Louisville District's Multiple Award Remediation Contract (MARC), Contract No. W912QR-04-D-0027, for remediation activities at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. This FS presents the analysis of groundwater remediation alternatives for the former Shops Area, designated as LHAAP-35A(58), in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and provides a basis for the groundwater remedy selection consistent with the intended future use of the LHAAP as a wildlife refuge.

LHAAP is an inactive, government-owned, formerly contractor-operated and maintained Department of Defense facility located in central-east Texas. LHAAP-35A(58) is an 11-acre industrial area located in the north-central portion of LHAAP, which provided a wide range of support services to LHAAP's production efforts. Within the LHAAP-35A(58) boundary are other sites: LHAAP-02, vacuum truck overnight parking; LHAAP-03, Paint Shop Building 722 (waste collection); LHAAP-60, pesticide storage building; LHAAP-68, mobile storage tank parking and LHAAP-69, service station underground storage tanks. The Shops Area was established in 1942 as part of the installation's initial construction. Plant-operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical shops served the needs of the overall facility. The site was active throughout LHAAP's mission and became inactive in 1996-1997, along with the entire installation.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. A Federal Facility Agreement (FFA) became effective December 30, 1991, among U.S. Environmental Protection Agency (USEPA), the U.S. Department of the Army (Army), and the Texas Natural Resources Conservation Commission (TNRCC), now the Texas Commission on Environmental Quality (TCEQ). LHAAP-50 was not one of the originally listed NPL sites; however, it is being managed in the same manner because of the presence of contaminated groundwater under the site. The site has been added to the list of NPL sites at LHAAP with concurrence from the Army and USEPA Headquarters.

The entire installation was under the control of the Army until May 5, 2004, when approximately two-thirds of the property was transferred to the U.S. Fish and Wildlife Service (USFWS). Property transfer continues as response is completed at smaller parcels of land. The Army Environmental Command provides funding for the environmental remedial activities through restoration funding from the Defense Environmental Restoration Account. The Base

Realignment and Closure Division is responsible for all aspects of LHAAP including the environmental program, operations, and land transfer.

Goose Prairie Creek is the nearest significant surface water body to LHAAP-35A(58). Runoff from LHAAP-35A(58) drains into Goose Prairie Creek, which eventually flows into Caddo Lake (a drinking water source for multiple communities).

Sampling specific to the LHAAP-35A(58) media was conducted during Phase I through Phase III Remedial Investigations (RIs) by Jacobs Engineering Group, Inc. (Jacobs), and during additional investigations through 2008 conducted by Plexus and Shaw. The baseline human health risk assessment for the Group 4 Sites (Jacobs, 2003), based on data from the RIs and additional investigations through 2000, determined that contaminated groundwater at LHAAP-35A(58) poses a potential exposure in excess of the acceptable cancer risk range of 1×10^{-4} to 1×10^{-6} and non-cancer hazard index (HI) of 1 for a hypothetical future maintenance worker under an industrial scenario. No potential cancer risk or non-cancer hazard from soil was determined for the hypothetical future maintenance worker for industrial use, and no action is planned for soil. Contaminants in groundwater, identified to pose risk, were detected at concentrations exceeding their respective maximum contaminant levels (MCLs) and are considered a chemical of concern (COC). Approximately 99.9 percent of the total cancer risk in groundwater was contributed by tetrachloroethene (PCE) and its daughter products, 1,1-dichloroethene (DCE), trichloroethene (TCE) and vinyl chloride (VC). The primary contributors to the risk are 1,1-DCE and PCE. These two compounds also account for 83% of the hazard index. Two other volatile organic compounds (VOCs), 1,1,2-trichloroethane (TCA) and 1,2-dichloroethane (DCA) also pose a potential risk in excess of 1×10^{-6}. The Installation-Wide Baseline Ecological Risk Assessment identified no potential risk to ecological receptors (Shaw, 2007a).

Remedial action objectives (RAOs) established within this FS addresses potential human health risks for the hypothetical future maintenance worker associated with LHAAP-35A(58) groundwater. The Army recognizes the U.S. Environmental Agency's policy to return usable water to its potential beneficial use, based upon the non-binding programmatic expectation in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The RAOs for LHAAP-35A(58), which take into account the future use of the site as a wildlife refuge, include:

- Protect human health (hypothetical future maintenance worker) by preventing exposure to VOC contaminated groundwater
- Prevent potential impact from site groundwater to the nearby surface water body
- Return groundwater to its potential beneficial use wherever practicable, within a reasonable time period given the particular site circumstances.

The FS identifies and screens groundwater remedial technologies and associated process options that may be appropriate for satisfying the RAOs for LHAAP-35A(58) with respect to effectiveness, implementability, and cost. Select remedial technologies and process options were carried forward after the initial screening and were combined to develop the following remedial alternatives for LHAAP-35A(58):

- **Alternative 1 – No Action.** Leaves the contaminated groundwater in place with no remedial action or additional measures to prevent exposure to the COCs, and serves as a baseline for comparison with the other alternatives. A No Action alternative is required under CERCLA.
- **Alternative 2 – Monitored Natural Attenuation with LUCs.** Implements a monitored natural attenuation (MNA) program to evaluate the natural degradation of COCs in groundwater at the site and land use controls (LUCs) to prevent human exposure to contaminated groundwater.
- **Alternative 3 – In Situ Bioremediation, with Short Term LUCs and Long-Term Monitoring.** Reduces contamination in the areas of highest contamination via in situ bioremediation below preliminary remediation goals. Implements long-term groundwater monitoring and short-term LUCs to monitor the effectiveness of the in situ bioremediation and prevent human exposure to groundwater contaminants until such time that the COCs degrade and preliminary remediation goals are met.
- **Alternative 4 – In Situ Bioremediation for Eastern Plume followed by MNA and LUCs; MNA and LUCs for western plume.** For eastern plume, implements a MNA program to evaluate the natural degradation of COCs in groundwater at the site and LUCs to prevent human exposure to contaminated groundwater. For western plume, reduces contamination in the areas of highest contamination via in situ bioremediation below preliminary remediation goals. Implements long-term groundwater monitoring and LUCs to monitor the effectiveness of the in situ bioremediation and prevent human exposure to groundwater contaminants until such time that the COCs degrade and preliminary remediation goals are met.

Each alternative was evaluated against CERCLA criteria to provide a basis for selecting a preferred alternative in the follow-on Proposed Plan and Record of Decision documents. **Table ES-1** summarizes the comparative analysis of the alternatives presented in this study. Two additional criteria, State acceptance and community acceptance, will be evaluated during the Proposed Plan stage.

Table ES-1
Comparative Analysis of Alternatives

Comparative Analysis of Alternatives Criteria	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation with LUCs	Alternative 3 In Situ Bioremediation with Short Term LUCs and Long-Term Monitoring	Alternative 4 In Situ Bioremediation for Eastern Plume followed by MNA and LUCs; MNA and LUCs for Western Plume
Overall protection of human health and the environment	No protection. Does not achieve RAOs.	Achieves RAOs. Protection of human health and environment provided by maintenance of LUCs. Monitored natural attenuation activities would demonstrate that degradation of plume is occurring.	Achieves RAOs. Protection of human health and environment provided by bioremediation of groundwater COCs. Groundwater monitoring and LUCs will remain in place until remainder of plume degrades to MCLs.	Achieves RAOs. Protection of human health and environment provided by remediation of groundwater COCs in the area of highest contamination in the eastern plume and monitored natural attenuation in the western plume. Groundwater monitoring and LUCs would remain in place until MCLs are met
Compliance with Applicable or Relevant and Appropriate Requirements	No compliance with chemical-specific ARARs.	Complies with ARARs.	Complies with ARARs.	Complies with ARARs.
Long-term effectiveness and permanence	Not effective.	Decrease in contaminant concentrations and presence of degradation products suggests that contaminants are degrading naturally. LUCs would be effective and reliable so long as they are maintained until RAOs are met.	Should be effective and permanent; however, uncertainty exists concerning the effectiveness and time needed for in situ biological treatment and degradation to reduce contaminant concentrations to preliminary remediation goals. A treatability study may be required. Long-term groundwater monitoring will be conducted after treatment. LUCs would be effective and reliable so long as they are maintained until remainder of plume reaches MCLs.	Should be effective and permanent; however, uncertainty exists concerning the effectiveness and time needed for in situ biological treatment and degradation to reduce contaminant concentrations to preliminary remediation goals. A treatability study may be required. Long-term groundwater monitoring will be conducted after treatment. LUCs would be effective and reliable so long as they are maintained until remainder of plume reaches MCLs.

Table ES-1 *(continued)*
Comparative Analysis of Alternatives

Comparative Analysis of Alternatives Criteria	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation with LUCs	Alternative 3 In Situ Bioremediation with Short Term LUCs and Long-Term Monitoring	Alternative 4 In Situ Bioremediation for Eastern Plume followed by MNA and LUCs; MNA and LUCs for Western Plume
Reduction of toxicity, mobility, or volume through treatment	No reduction.	No active reduction would be accomplished through treatment. Reduction through natural processes only.	Provides permanent reduction through in situ bioremediation in the areas of highest contamination provided conditions are favorable.	For western plume, no active reduction would be accomplished through treatment. Reduction through natural processes only. For eastern plume, provides permanent reduction through in situ bioremediation in the areas of highest contamination provided conditions are favorable.
Short-term effectiveness	No short-term impacts.	Minimal impacts to the community, workers, or the environment from short-term activities. Provides almost immediate protection.	Minimal impacts to the community, workers, or the environment from short-term activities. Provides almost immediate protection.	Minimal impacts to the community, workers, or the environment from short-term activities. Provides almost immediate protection.
Implementability	Inherently implementable.	Readily implemented.	Implementable, but uncertainty exists in the effectiveness and time required to reduce contaminants to preliminary remediation goals. Specialized knowledge required for implementation.	Implementable, but uncertainty exists in the effectiveness and time required to reduce contaminants to preliminary remediation goals. Specialized knowledge required for implementation.
• Capital Cost	$0	$61,000	$860,000	$191,000
• Operation and Maintenance Cost	$0	$432,000	$483,000	$594,000
• Present Worth	$0	$493,000	$1,343,000	$785,000

1.0 Introduction

This Feasibility Study (FS) was prepared by Shaw Environmental, Inc. (Shaw), for the U.S. Army Corps of Engineers (USACE), Tulsa District, under the Louisville District's Multiple Award Remediation Contract (MARC) Contract No. W912QR-04-D-0027, for groundwater remediation activities at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. This FS presents the analysis of remediation alternatives for the Shops Area, designated as LHAAP-35A(58), in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and provides a basis for remedy selection consistent with the intended future use of the LHAAP as a national wildlife refuge.

The U.S. Army Environmental Command provides funding for the environmental remedial activities. The Base Realignment and Closure Division is responsible for all aspects of Longhorn including the environmental program, operations, and land transfer.

1.1 Purpose and Organization of Report

The environmental cleanup decision-making process for LHAAP-35A(58) follows the prescribed CERCLA sequence: Remedial Investigation (RI), FS, Proposed Plan (PP), and Record of Decision (ROD). The RI serves as the mechanism for collecting data to characterize site conditions, determine the nature and extent of the contamination, and assess risks to human health and the environment from this contamination. Additional data were gathered subsequent to the RI and baseline risk assessment to further characterize the site for evaluation of alternatives. This investigatory element of decision making for the Group 4 sites, which includes LHAAP-35A(58), has been completed and documented in the RI report (Jacobs, 2002) and the baseline human health risk assessment report (Jacobs, 2003), the environmental site assessment (Plexus, 2005), the data gaps investigation (Shaw, 2007b), the modeling report (Shaw, 2008), evaluation of sumps (Shaw, 2008), and natural attenuation evaluation (**Appendix A**). Additionally, the ecological risk was evaluated in the Installation-Wide Baseline Ecological Risk Assessment (Shaw, 2007a). No potential risk to ecological receptors from the contamination at LHAAP-35A(58) was identified, but risk to a hypothetical future maintenance worker from the contaminated groundwater at LHAAP-35A(58) was identified.

This FS takes the next step of identifying and evaluating remedial solutions to the environmental problems identified for LHAAP-35A(58), which is volatile organic compound (VOC) contamination in the shallow groundwater. The formulation of viable alternatives involves defining remedial action objectives (RAOs), general response actions, volumes or area of media to be addressed, and potentially applicable technologies and process options. After a reasonable number of appropriate alternatives have been formulated, the alternatives undergo a detailed

analysis using nine established evaluation criteria. Detailed analysis profiles individual alternatives against the criteria and compares them with each other to gauge their relative performance. Each alternative that makes it to this stage of analysis, with the exception of the required "No Action" alternative, is expected to be protective of human health and compliant with applicable or relevant and appropriate requirements (ARARs) (unless a waiver is justified), both threshold requirements under CERCLA. Alternatives developed in this FS address the media and chemicals of concern (COCs) at LHAAP-35A(58) through groundwater actions. The main text of this FS is composed of the following sections:

- **Section 1**, "Introduction", summarizes background information including investigations.
- **Section 2**, "Risk and Site Assessment," summarizes the risk assessment approach and conclusions. It also provides the conceptual site model for LHAAP-35A(58) and discusses the LHAAP-35A(58) media contamination assessment.
- **Section 3**, "Remedial Action Objective and Preliminary Remediation Goals," presents the RAO and a discussion of preliminary remediation goals. The chemical-, location- and action-specific ARARs are presented in this section.
- **Section 4**, "Identification and Screening of Technologies and Process Options," summarizes the rationale for selecting technologies and process options for remediation of contamination to meet the RAO.
- **Section 5**, "Development and Description of Alternatives," presents the rationale for developing a range of alternatives as well as a description of each alternative.
- **Section 6**, "Detailed Analysis of Alternatives," evaluates, compares, and contrasts the benefits and costs of the alternatives.
- **Section 7**, "References," presents the references cited in this document.

Appendix A presents an evaluation of natural attenuation of COCs for LHAAP-35A(58). **Appendix B** presents summary tables of data from 2007 and 2008, field documentation including boring logs and well completion reports and electronic copy of analytical reports. **Appendix C** presents the cost basis for the remedial action alternatives.

The preferred alternative for LHAAP-35A(58) will be presented in the PP. The PP will briefly summarize the alternatives studied in this FS, highlighting the key factors that led to identifying the preferred alternative. The U.S. Department of the Army (Army) will submit the PP to the regulatory agencies, Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (USEPA), and then the public for review. After this review,

the Army will release a ROD that documents the selected remedy, certifies that the remedy selection process was carried out in accordance with CERCLA, and addresses public comments on the PP. Relevant documentation, including the RI, FS, and subsequent documents, are or will be available to the public in the Administrative Record for this project. The Administrative Record is housed at LHAAP and at the Marshall Public Library in Marshall, Texas.

1.2 Background

1.2.1 Longhorn Army Ammunition Plant

LHAAP is located in central-east Texas in the northeastern corner of Harrison County. The former installation occupied 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake as shown in **Figure 1-1**. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake, a large freshwater lake situated on the Texas-Louisiana border, bounds LHAAP to the north and east. The industries in the surrounding area consist of agriculture, timber, oil and natural gas production, and recreation.

In December 1941, near the beginning of World War II, when the Army issued a contract to build a six-line production facility for manufacturing TNT. Later industrial operations involved the use of secondary explosives, rocket motor propellants, and various pyrotechnics, such as illuminating and signal flares and ammunition. Explosives included TNT and black powder. Typical composite propellants were composed of a rubber binder, an oxidizer such as ammonium perchlorate, and a powdered metal fuel such as aluminum. Pyrotechnics were generally composed of an inorganic oxidizer, such as sodium nitrate, a metal powder such as magnesium, and a binder. Other materials used in the industrial operations included acids, lubricants, and solvents, particularly trichloroethene (TCE) and methylene chloride. Waste management included sanitary wastewater treatment, industrial wastewater treatment, holding/evaporation ponds, storm water drainage, sanitary and contaminated waste landfills, and demolition/burning grounds. Discharges and releases to surface water, groundwater, and other secondary media have occurred from the historical operations and practices.

LHAAP was placed on the National Priorities List August 9, 1990. A Federal Facility Agreement (FFA) among the USEPA, the Army, and the Texas Natural Resources Conservation Commission (TNRCC), now the TCEQ, became effective December 30, 1991. LHAAP became inactive in July 1997, and a year later the Army issued a contract to remove salvageable property. On May 5, 2004, the Army transferred approximately 5,032 acres to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge. Almost 2,000 acres have been transferred to the USFWS since the initial transfer and the process will continue as response is completed at individual sites. The remaining land is under the

Army's control and includes the Group 2 and 4 sites currently undergoing RI/FS. The Army intends to transfer this land to the USFWS after the environmental response is completed.

1.2.2 LHAAP-35A(58) Background

LHAAP-35A(58) is an industrial area (former maintenance complex, which included the Shops Area) located on approximately 11 acres in the north-central portion of LHAAP that provided a wide range of support services. The Shops Area was established in 1942 as part of the installation's initial construction. Plant operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical shops served the needs of the overall facility. The site was active until 1996-1997. Located within the boundaries of LHAAP-35A(58), are LHAAP-02, vacuum truck overnight parking; LHAAP-03, Paint Shop Building 722 (waste collection); LHAAP-60, pesticide storage buildings; LHAAP-68, mobile storage tank parking; and LHAAP-69, service station underground storage tanks. **Figure 1-2** shows the current site boundary.

The surface features at LHAAP-35A(58) are a mixture of asphalt-paved roads, parking area, and wooded and grassy vegetation-covered areas. The topography in this area is relatively flat with the surface drainage flowing into tributaries of Goose Prairie Creek. Runoff from the site enters Caddo Lake via Goose Prairie Creek.

1.2.3 Geology and Hydrogeology

The soil at LHAAP-35A(58) consists of clays and silty clays with thin lenses of sand. The sand lenses are approximately 3 to 5 feet thick. The depth to the sand lenses varies across the site. Groundwater is present in shallow and intermediate zones at LHAAP-35A(58). The top of the shallow groundwater zone has been encountered at elevations ranging from approximately 206 to 197 feet above mean sea level. The hydraulic conductivities in the shallow zone range from 1.4×10^{-3} to 3.5×10^{-5} centimeters per second (Jacobs, 2002).

Shaw installed additional monitoring wells and piezometers at the site in September – December 2008. Groundwater elevation readings were collected in November/December 2008 and indicated that the groundwater flows radially from near the central southwestern part of the site with an east flow on the eastern side of the site and a south/southeast flow on the western side of the site. A further discussion and associated figures for groundwater contours are included in **Section 1.3.5**, as well as a cross-section across the site from west to east, including data from the most recent well. Historically, the boring log description of the lithology has noted that the soil has been moist throughout the column. This indicates the interconnectivity of the water bearing unit is continuous from the western-most well of the fence diagram, 35AWW06, to the eastern-most well of the fence diagram, 35AWW07. Though the subsurface soil varies between silty and sandy clays, clayey silts, and clayey sands, there seems to be enough sand content in the horizon 204 feet above MSL to 180 feet above MSL to have a continuous water bearing unit throughout

the site. No dry clay has been observed and most of the zones have intermittent sand for the water to travel horizontally without being impeded by any completely confining layers.

1.3 Summary of Sampling Investigations

Site work at the Group 4 sites was performed in a phased approach. **Table 1-1** summarizes the investigation phases. Phase I was initiated to evaluate potentially contaminated sites for possible uncontrolled releases to the environment and to identify site-related contaminants. Phase II investigation work was conducted to further investigate those areas identified in Phase I that required additional investigation to characterize the contaminants present. Because of the large number of sumps and potential sources of contamination, the number of wells installed was not sufficient to delineate the areas of contamination in the groundwater. Therefore, following the Phase II investigation, a Pre-Phase III investigation was conducted by USACE in May 1996. This investigation used direct push groundwater sampling devices to assist in delineating the extent of VOC contamination in the shallow groundwater beneath the Group 4 project area and to help determine additional monitoring well locations. Based upon the results of this Pre-Phase III investigation, the scope of the Phase III investigation was defined. The goal of the Phase III RI was to complete the investigation of the Group 4 sites and establish the extent of groundwater contamination. Activities conducted after Phase III were completed to respond to specific data needs such as the extent of VOC contamination in groundwater and additional data collection for evaluation of potential contamination from the sumps. Throughout these efforts, the USACE collected quarterly surface water samples in Goose Prairie Creek.

The Phase I-III investigations were conducted at LHAAP-35A(58) using the historic site boundary as shown on **Figure 1-2**. In November 2006, USACE evaluated different boundaries for LHAAP-35A(58) that were found in various documents to include the Shops Area and the 200 Area. It was recommended that LHAAP-35A(58) should include only the Shops Area and should not include the 200 Area (USACE, 2006). The site boundary for the Shops Area is also shown on **Figure 1-2**. The subsequent investigation summaries were updated from the previous investigation discussions using only the data from within the current site boundary.

1.3.1 *Pre-Phase I Investigations*

Initial field investigative activities relative to the Group 4 sumps started in November 1991 when BCM Engineers was retained by the LHAAP Operating Contractor, Thiokol, to evaluate the integrity of the sumps system and the industrial wastewater treatment system at LHAAP (BCM, 1992). Although the focus was to develop more efficient wastewater management alternatives, the locations of all 125 sumps at the LHAAP facility were surveyed and limited subsurface investigations were conducted at select sump locations. Four sumps (S-111, S-112, S-113 and S-723) were located within LHAAP-35A(58) and one sump (117) was located just to the west of,

Table 1-1
Summary of Investigations at LHAAP-35A(58) Shops Area

Pre-Phase I (Jacobs, 2002)
BCM, 1992 • Inventory of the waste process sumps at this site
USACE, 1993 • Inventory of the waste process sumps at this site
Phases I-III (Jacobs, 2002)
USACE, Phase I 1993 • Collected sump content sample for laboratory analysis • Completed borings at sump locations and collected soil samples
USACE, Phase II 1994 • Collected soil samples from monitoring well locations and from ditch and drainage ways • Installed monitoring wells and collected groundwater samples from each well
USACE, Pre-Phase III 1996 • Determined locations for Phase III monitoring wells by delineating the plume using site characterization and analysis penetrometer system (eight locations)
Jacobs, Phase III 1998 • Collected soil samples at waste process sump locations • Collected surface water and sediment samples • Collected soil samples from locations • Installed monitoring wells and collected groundwater samples from each of the new wells and existing wells
Additional Investigations
• USACE collected two rounds of groundwater samples in 1996 (Jacobs, 2002). • In 2003, collected groundwater and soil samples at two locations as part of the Phase II Environmental Site Assessment (Plexus, 2005) • In 2004, collected groundwater samples for VOC analysis (Shaw, 2007b) • In 2006, collected additional soil samples from select sumps (Shaw, 2008) • In 2007, Shaw collected samples for natural attenuation evaluation (Appendix A), for pesticide analysis (Appendix B), and collected water elevation measurements (Appendix B). • In January through March 2008, Shaw collected additional samples for the shallow and intermediate zones to define the eastern plume (Appendix B). • From October through December 2008, Shaw installed and sampled eight points using direct push technology, installed four shallow wells (35AWW05 through 35AWW08), installed shallow well 03WW01 (associated with LHAAP-03 located within the LHAAP-35A(58) boundary), collected groundwater elevation readings, and sampled several shallow, intermediate, and deep wells (Appendix B).

the site; however, no subsurface investigations were conducted at sumps located within LHAAP-35A(58) during this initial investigation.

1.3.2 Phase I Remedial Investigation

The Tulsa District USACE conducted the Phase I RI in 1993. The Phase I activities at LHAAP-35A(58) included the collection of surface and subsurface soil samples from 7 soil borings (LHS-111-01, LHS-112-01, LHS-113-01, LHS-117-01, LHS-723-01, LHS-723-02, LHDL-723-01) at sumps S-111, S-112, S-113, S-117, and S-723 (also known as S-125). Sump S-113 contents were sampled and analyzed for total petroleum hydrocarbons (TPH). Sample and sump locations are shown on **Figure 1-3**. The surface and subsurface soil samples were analyzed for VOCs, semivolatile organic compounds (SVOCs), and metals. Additionally, the

surface and subsurface soil samples collected from locations near S-113 and S-117 were analyzed for TPH.

1.3.2.1 Phase I Soil Investigations

Soil sampling results detected concentrations of VOCs, SVOCs, and metals. Three VOCs, including carbon disulfide (33 micrograms per kilogram [µg/kg]), TCE (2.0 µg/kg), and 2-butanone (64 µg/kg) at S-125 in sample depths ranging from 0.5 to 5.0 feet below ground surface (bgs) (USACE 1995). TPH was not detected in soil samples from S-113 and S-117. Two SVOCs were detected near S-125, diethyl phthalate at concentrations of 494 µg/kg and 541 µg/kg, and bis(2-ethylhexyl) phthalate at concentrations of 373 to 380 µg/kg.

The soil sample results for metal analysis showed detections of lead in soil samples near all the sumps at LHAAP-35A(58) with concentrations ranging from 4.8 to 123 mg/kg. Antimony was detected near sump S-112 with a concentration of 8.5 mg/kg. Barium was detected near sump S-117 at a concentration of 255 mg/kg. In addition, arsenic was detected near sump S-125 (or S-723) with an estimated concentration of 17.8J mg/kg.

1.3.2.2 Phase I Sump Contents Investigations

The contents of S-113 were analyzed for TPH to determine whether the sump was a source of gasoline or diesel fuel contamination to the environment. The results showed a concentration of 600,000 micrograms per liter (µg/L) for medium petroleum distillates. The results from the soil adjacent to sump S-113 detected TPH with concentrations ranging from 110 to 430 mg/kg. The level of TPH increased with depth (USACE 1994).

1.3.3 Phase II Remedial Investigation

The Tulsa District USACE conducted the Phase II RI during 1994 and 1995. The purpose of Phase II was to determine the presence or absence of potential contaminants in groundwater and whether past activities had impacted the surrounding environment. To assess groundwater, monitoring wells LHSMW04 through LHSMW07 were installed, and a groundwater sample was collected from each well. A surface soil sample was collected at each monitoring well boring to assess whether the surrounding soil had been impacted. Additionally, surface soil samples were collected from ditches and shallow drainages near selected sump locations to determine whether the surrounding environment was being impacted (USACE 1995a). Soil sample locations and monitoring wells are shown on **Figure 1-3** and **Figure 1-4**.

1.3.3.1 Groundwater Investigations

Groundwater samples were collected at monitoring wells LHSMW04 through LHSMW07 and analyzed for VOCs, SVOCs, explosive compounds, and metals.

The results from the groundwater samples showed that explosive compounds and SVOCs were not present. VOCs were not detected in groundwater samples collected from LHSMW04. VOCs were detected but were below their maximum contaminant level (MCLs) in the samples collected from LHSMW06. VOCs were detected in the samples collected from LHSMW05 and LHSMW07. Only tetrachloroethene (PCE), TCE, and 1,1-dichloroethene (DCE) were detected above their MCLs. The maximum concentration of PCE (870 µg/L) was detected in the sample at LHSMW05 along with the maximum concentration of TCE (49 µg/L). There was only one detection of 1,1-DCE (750 µg/L), and it was above its MCL in the sample collected at LHSMW07. Several metals were detected in the groundwater samples. The maximum concentration for several metals including aluminum (35,400 µg/L), barium (400 µg/L), chromium (2,800 µg/L), and lead (29 µg/L) were detected at LHSMW05.

1.3.3.2 Phase II Soil Investigation

Surface soil samples were collected near each monitoring well and from surrounding ditches and drainages. The samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. The soil sample collected at LHSMW07 was also analyzed for TPH.

VOCs were not detected in the surface soil samples. There were no detected concentrations of TPH in the sample from LHSMW07. Thirteen SVOCs were detected in the soil samples. The most significant was bis(2-ethylhexyl) phthalate detected at a concentration of 2,000,000 µg/kg at sample LHS-SH05. This sample was located in the southwestern portion of the site, southwest of sump S-113 and southeast of sump S-117. Seventeen metals were detected in the soil samples.

1.3.4 Phase III Remedial Investigation

Sverdrup Environmental, Inc. (Sverdrup) conducted the field activities for the Phase III RI in 1998. The activities at the site included the collection of surface and subsurface soil samples at sumps (S-111, S-112, S-113, and S-117). Ten soil samples were collected from six locations (35ASS01, 35ASS02, 35ASB03, 35ASS04, 35ASB05, and 35ASS06). Two sediment samples (35ASD01 and 35ASD02) and two surface water samples (35ASW01 and 35ASW02) were collected. Four monitoring wells (35AWW01 through 35AWW04) were installed, and groundwater samples were collected from these wells along with the seven existing wells installed during Phase II. Locations are shown on **Figure 1-3** and **Figure 1-4**.

1.3.4.1 Phase III Soil Investigations

Soil samples were collected at the sumps (S-111, S-112, S-113, and S-117). For each sump location, one surface soil and one subsurface soil sample was collected. All sump soil samples were analyzed for beryllium, nickel, and vanadium. Samples collected at sumps S-112, S-113, and S-117 were also analyzed for pesticides, PCBs, and dioxins/furans.

The results from all sump locations showed low-level detections of beryllium, nickel, and vanadium. Four pesticides (dieldrin, p,p-DDD, p,mp-DDE, and p,p-DDT) were detected among the four sump locations. One PCB (Aroclor 1254) was detected near sump S-112.

The soil samples collected from locations 35ASS01, 35ASS02, 35ASB03, 35ASS04, 35ASB05, and 35ASS06 consisted of six surface and four subsurface samples. Surface soil samples collected at 35ASS01, 35ASS02, 35ASS04, and 35ASS06 were analyzed for polynuclear aromatic hydrocarbons (PAHs) and resulted in no detected concentrations. Soil samples at 35ASB03 and 35ASB05 were collected at the surface, at 1 to 3 feet, and in the subsurface, at 3 to 5 feet. All six samples were analyzed for PAHs, VOCs, SVOCs, metals, explosive compounds, pesticides, PCBs, and dioxins/furans.

Soil sample results showed no detectable concentrations of VOCs, SVOCs PAHs, pesticides, or explosive compounds. Metals, PCBs, and dioxins/furans were detected in these samples. Notably, the surface soil samples collected at 35ASB03 and 35ASB05 showed detected concentrations of chromium, lead, selenium, and silver. Aroclor 1254 was detected in the surface soil sample at 35ASB03. The samples collected from 1 to 3 feet and 3 to 5 feet showed detected concentrations of chromium, lead, selenium, and silver.

1.3.4.2 Phase III Sediment and Surface Water Investigations

Two sediment and surface water samples were collected and analyzed for VOCs, SVOCs, explosive compounds, metals, pesticides/PCBs, and cyanides. Sample 35ASD01 was also analyzed for dioxins/furans. The sediment samples were analyzed for total organic carbon (TOC) and the surface water samples were analyzed for hardness.

The sediment sample results showed no detectable concentrations of VOCs, SVOCs, explosive compounds, or pesticides. Metals detected in the sediment samples of potential concern, as identified in the RI Report, included chromium, lead, and selenium.

The surface water sample results showed no detections of VOCs, SVOCs, explosive compounds, pesticides, or PCBs. The RI Report did not identify any metals in surface water at levels of concern.

1.3.4.3 Phase III Groundwater Investigations

A total of four groundwater wells were installed during Phase III at LHAAP-35A(58). One intermediate monitoring well (35AWW01) and one deep monitoring well (35AWW02) were installed at depths of 71 feet and 140 feet bgs, respectively. Two shallow monitoring wells (35AWW03 and 35AWW04) were installed at depths of 19 feet and 24 feet bgs, respectively. Groundwater samples were collected from these four wells and from the existing wells (LHSMW04 through LHSMW07). All samples were submitted for laboratory analysis of VOCs,

SVOCs, explosive compounds, and metals. Groundwater samples from wells LHSMW05 and LHSMW07 were also analyzed for pesticides, PCBs, and dioxins/furans.

The results from the groundwater samples showed no detectable concentrations of explosive compounds, pesticides, PCBs, and dioxins/furans. Seven VOCs were detected in groundwater samples from LHSMW05 and LHSMW07. PCE was detected in LHSMW05 at a concentration of 5,400 µg/L. The constituent 1,1-DCE was detected at a concentration of 1,200 µg/L in LHSMW07. One SVOC [bis(2-ethylhexyl) phthalate] was detected in sample 35AWW02 from a deep well at a concentration of 12 µg/L. Other VOCs detected included cis-1,2-DCE at wells LHSMW06 and LHSMW07.

Concentrations of antimony, chromium, and thallium were detected above their respective MCL. Antimony was detected in two samples (35AWW03 and 35AWW04) at concentrations of 0.013 mg/L and 0.01 mg/L. Chromium was detected in five samples at concentrations above MCLs, with a maximum of 600J µg/L at deep well 35AWW02. Thallium was detected in samples LHSMW05 and LHSMW07 with concentrations of 0.0032 mg/L and 0.0036 mg/L, respectively.

1.3.5 Additional Investigations

During 1996, two rounds of groundwater samples were collected at monitoring wells LHSMW04 through LHSMW07 in January/February and August. This sampling occurred between the Phase II and Phase III RI activities. The groundwater samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. Samples from monitoring wells LHSMW04 and LHSMW05 were also analyzed for pesticides, PCBs, and chlorinated herbicides. The groundwater results for the August 1996 sampling round showed four explosive compounds detected at low concentrations. VOCs were detected in the groundwater samples. The constituent 1,1-DCE was detected at LHSMW07 at a concentration of 311 µg/L, PCE was detected at LHSMW05 at a concentration of 2,700 µg/L, and TCE was detected at LHSMW05 at a concentration of 39.7 µg/L. One SVOC [bis(2-ehtylhexyl) phthalate] was detected at LHSMW07 at a low concentration of 2.3 µg/L.

In 2003, a baseline risk assessment was completed using the data collected through 1998 (Jacobs, 2003). Subsequent investigations to the risk assessment were primarily focused on gathering data to better define the extent of the COCs identified in the risk assessment or to gather additional data to close areas with data gaps.

During the Environmental Site Assessment in 2003, soil and groundwater samples were collected at two locations at LHAAP-35A(58) (Plexus, 2005) as shown on **Figure 1-4**. Subsurface soil and groundwater samples were collected from a soil boring and temporary monitor well (1004SB/TW001) installed at the site of the former locomotive shop UST and near

several other shops. VOCs, TPH, and PCBs were not detected in subsurface soil sample 1004SB001 (15-17 feet bgs) collected from above the saturated zone in the soil boring. Several VOCs were detected in groundwater sample 1004TW001. Vinyl chloride (VC) (4.1 µg/L) and 1,1-DCE (24 µg/L) were present above their respective MCLs of 2 µg/L and 7 µg/L. TPH and PCBs were not detected in groundwater sample 1004TW001. Subsurface soil and groundwater samples were collected from a soil boring and temporary monitor well (1004SB/TW006) installed near the south corner of the former vehicle maintenance shop (Building 716). The samples were analyzed for VOCs, SVOCs, TPH, and metals. SVOCs were not detected in subsurface soil sample 1004SB006 (12-14 feet bgs) collected from above the saturated zone. With the exception of low-level concentrations of chlorinated VOCs, 1,1-dichloroethane (0.85J µg/kg) and 1,1-DCE (2.1J µg/kg), VOCs were not detected in subsurface soil sample 1004SB006 (12-14 feet bgs). The detected concentrations of VOCs in groundwater were below their MCLs except VC (7 µg/L) and 1,1-DCE (370J µg/L). Numerous metals were detected in subsurface soil sample 1004SB006 (12-14 feet bgs), but the only metal detected slightly above its respective risk-based screening value (RBSV) (TCEQ, 2006) was mercury at an estimated concentration of 0.05J mg/kg. The detected concentrations of metals in the groundwater did not exceed their MCLs. TPH and target SVOCs were not detected in groundwater sample 1004TW006 near Building 716.

In 2004, an additional round of samples was collected to provide more recent groundwater VOC data. PCE (5,100 µg/L) and TCE (230 µg/L) were detected at well LHSMW05. TCE (24 µg/L), 1,1,2-trichloroethane (2J µg/L), 1,1-dichloroethane (51 µg/L), 1,1-DCE (590 µg/L), cis-1,2-DCE (6 µg/L) and VC (9 µg/L) were detected at well LHSMW07. PCE (2 µg/L) and 1,1-dichloroethane (2J µg/L) were detected at well LHSMW06 (Shaw, 2007b). Groundwater elevation measurements and samples were also collected. **Figure 1-5** shows the groundwater gradient based on the 2004 data. Methylene chloride was detected at a low concentration of 0.97 µg/L (below the MCL of 5 µg/L) at deep monitoring well 35AWW02, located in the central portion of LHAAP-35A(58). Methylene chloride is a common laboratory contaminant. One new monitoring well, 35AWW05, was installed within the intermediate groundwater-bearing zone during the investigation. No contaminants were detected in the sample from this monitoring well.

In 2006, additional soil samples were collected to determine if the historic sump activities had impacted the surrounding soils (Shaw, 2008). Samples were collected around sumps S-111, S-113, S-117 and S-125. Since LHAAP-35A(58) is under Risk Reduction Standard (RRS) No. 3 with an approved baseline risk assessment, the data was evaluated by comparing the detected concentrations to the RBSV (TCEQ, 2006). If the detected concentrations exceeded their respective RBSV, the concentration was compared to the exposure point concentration (EPC) (Jacobs, 2003). If an EPC was not available for a chemical, its maximum concentration in the

Baseline Risk Assessment (Jacobs, 2003) was used for comparison. Soil from S-111 and S-117 was analyzed for metals and VOCs. Soil from S-113 was analyzed for TPH and VOCs while soil from S-125 was only analyzed for VOCs. Analytes were selected based on operations conducted at the nearby buildings. S-113 and S-125 did not have any chemicals detected above their respective RBSV. VOCs at S-111 and S-117 were not above their respective RBSVs. Metals at S-111 and S-117 were detected above their RBSV, specifically mercury at both sumps and aluminum and manganese at S-117. The maximum mercury concentration was 0.152 mg/kg at S-117, which is below the mercury EPC of 4.37 mg/kg. Since the mercury concentrations are below the EPC in the risk assessment, the concentrations of mercury in S-117 does not represent any additional contribution to the hazard index (HI) from the risk assessment (Jacobs, 2003). Therefore, mercury is not identified as a COC. The maximum manganese and aluminum concentrations at S-117 in the surface soils (0 to 2 feet) were 160 mg/kg and 12,200 mg/kg, respectively. The maximum manganese concentration used in risk assessment was 1,030 mg/kg and EPC for aluminum was 9,230 mg/kg. The 2006 manganese concentration is less than the maximum used in the risk assessment. Using the EPC aluminum concentration of 9,230 mg/kg, the soil hazard index from aluminum was 0.015 (Jacobs, 2003). Even though the aluminum concentration of 12,200 mg/kg detected in the 2006 sample is higher than the EPC, the estimated HI for aluminum at 12,200 mg/kg is approximately 0.02, which is well below an HI of 1. Therefore, aluminum and manganese are not identified as a COC for surface soil. Thus, no additional potential exposure to a hypothetical future maintenance worker from surface soils (0 to 2 feet bgs) was identified. Since the increase to the HI is negligible (0.47 to 0.59) and it is still below 1, the sump report concluded no further action was required for the soils around the sumps (Shaw, 2008). At a depth of 10 feet bgs at S-117, manganese and aluminum concentrations in soil were above their maximum risk assessment concentration and EPC used in the Jacobs 2003 risk assessment. Evaluation of the soil in the sump report do not significantly affect the overall cumulative risk, and no further action is required for soil associated with the sumps at LHAAP-35A(58) (Shaw, 2008). There is no direct exposure potential for future workers at this depth, and the potential for these chemicals to contaminate groundwater was evaluated. The groundwater monitoring well LHSMW07 is located southeast of S-117. The maximum groundwater concentrations were detected in 1994 at LHSMW07 for manganese (560 µg/L) and aluminum (23,600 µg/L), which were less than the EPCs of 5,800 µg/L for manganese and 98,200 µg/L for aluminum. Thus, there is no elevated risk in groundwater resulting from the elevated soil concentrations at 10 feet bgs. Since the soil concentrations above the RSBVs were not encountered in the shallow soil (0 to 2 feet bgs) and the groundwater near the sump has not been impacted by these chemicals, aluminum and manganese are not identified as COCs in soil (Shaw, 2008).

In 2007 and 2008, several sampling events were conducted for various purposes. In February 2007, samples were collected to evaluate the attenuation of chlorinated compounds at

LHAAP-35A(58). The data were used in the natural attenuation evaluation and are included in **Appendix A**. The laboratory data from the sampling event are included in an attachment in **Appendix A**. In December 2007, a sample was collected from LHSMW06 and analyzed for pesticides for LHAAP-60. The data from this sampling event are included in **Appendix B**. In late November/early December 2007, groundwater level readings were collected from the production area including LHAAP-35A(58) to develop the groundwater gradient across the production area. The field data are included in **Appendix B**. In early 2008, samples were collected from three wells in the shallow zone and one intermediate well, 35AWW01. The data from the shallow wells were used to delineate the PCE/TCE plume in the shallow groundwater at LHAAP-35A(58). The data from the intermediate zone confirm that the PCE/TCE is not migrating down. The data reports are included in **Appendix B**. Groundwater elevations were measured by Shaw in November/December 2007. The groundwater flow contours based on these data are shown on **Figure 1-6**.

In January/February 2008, shallow zone well LHSMW04 and intermediate well 35AWW01 were sampled for VOCs to evaluate the eastern VOC plume. In LHSMW04, the PCE concentrations remained above the MCL, and TCE was also detected above its MCL. No VOCs were detected at 35AWW01, indicating no downward plume migration.

In March 2008, sampling of two wells downgradient of LHSMW04 was conducted to determine if the plume had migrated to LHAAP-46. LHSMW09 and LHSMW11 are shallow zone wells located downgradient of LHSMW04 within the LHAAP-46 site boundary. They were sampled for VOCs; no VOCs were detected, indicating that the plume had not migrated to LHAAP-46.

In October 2008, eight points (58DPT01 through 58DPT08) were drilled using direct push technology (DPT) in the shallow zone to better delineate the shallow zone plume. Samples were collected from all eight points and analyzed for VOCs. Several VOCs were detected. Based on these results, three new shallow zone wells were installed – 35AWW06, 35AWW07, and 35AWW08. Well 35AWW08 was installed in the vicinity of LHSMW05. Historically, LHSMW05 has had high PCE and TCE concentrations, but it has been dry since the 2004 sampling event. The DPT points and new wells are shown on **Figure 1-4**. Boring logs and well completion forms are included in **Appendix B**.

In October 2008, the downgradient well LHSMW11 was again sampled to evaluate any plume movement to the east towards LHAAP-46. No VOCs were detected at LHSMW11, confirming that the plume has not migrated to LHAAP-46.

In November 2008 as part of the investigation activities at LHAAP-03, located within the boundary of LHAAP-35A(58), shallow well 03WW01 was installed near the area of historically high PCE and TCE concentrations (LHSMW05). The well, 03WW02, was sampled for VOCs

and metals. Any action associated with metals will be addressed under LHAAP-03. PCE and TCE were detected at concentrations above their associated MCLs and will be address under the groundwater action for LHAAP-35A(58).

In November/December 2008, several wells in all three groundwater zones were sampled to evaluate the plume areas as well as to confirm that no vertical migration was detected. Wells sampled in November 2008 included shallow zone wells 35AWW06, 35AWW07, 35AWW08, LHSMW04, LHSMW06, and LHSMW07; intermediate zone wells 35AWW01 and 35AWW05; and deep well 35AWW02. With the new data, the plume boundaries were reevaluated. The data from the intermediate and deep wells confirm that the plume is not migrating downward. Further discussion of the 2008 data is included in **Section 2.0**.

During the November 2008 field activities, another round of water elevations were collected and was used to develop the groundwater contours on **Figure 1-7**. Additionally, a new cross section depicting the site west to east as a fence diagram was developed and is shown on **Figure 1-8**.

00079350

PLOT DATE: 5/08/07
FORMAT REVISION 5/13/02

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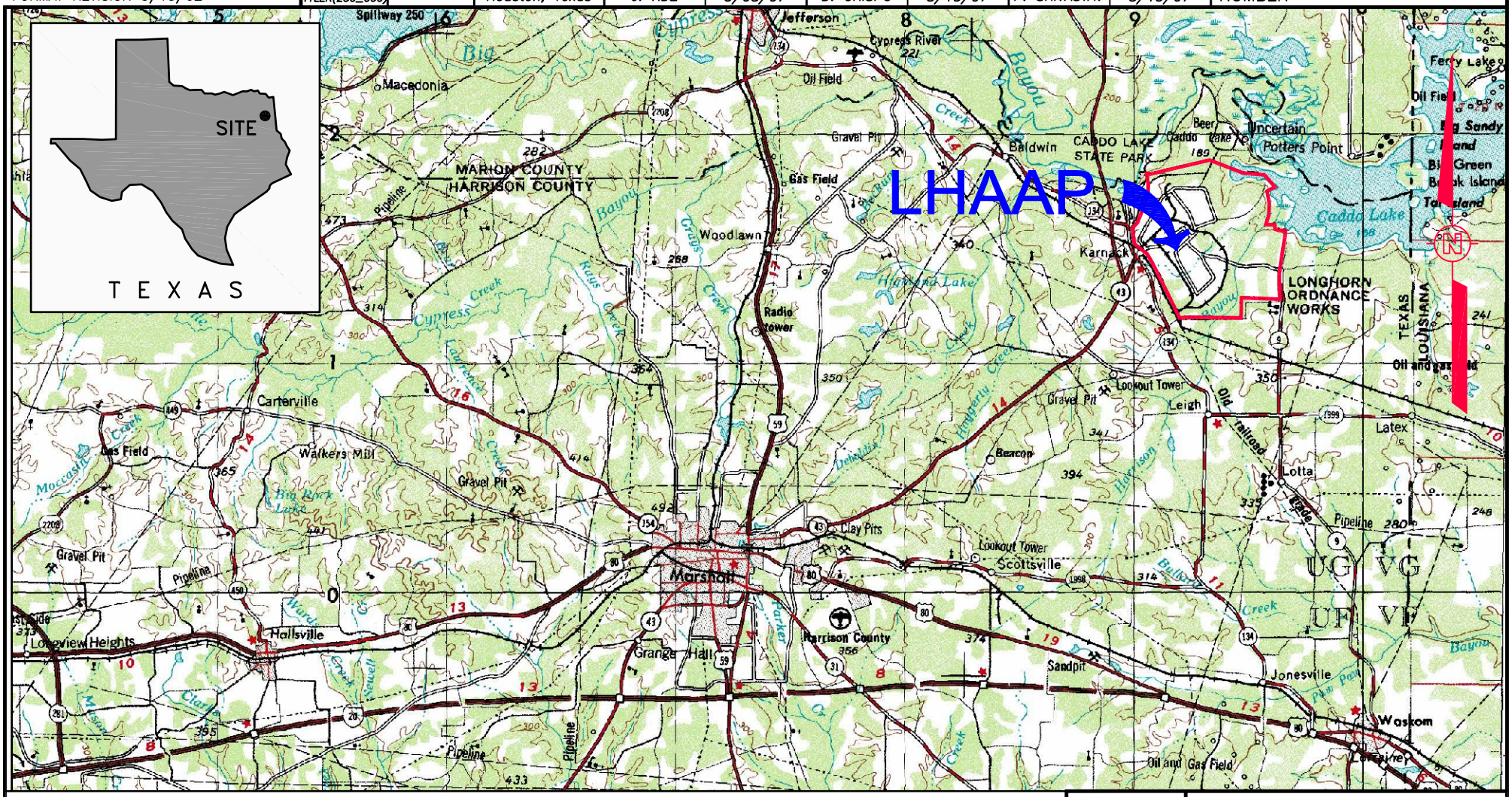

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TYLER, TEXAS; LOUISIANA 1956, REVISED 1977
SCALE 1:250,000

Shaw

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-1
LHAAP LOCATION MAP
LHAAP-35A(58) FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079351

FILE PATH	
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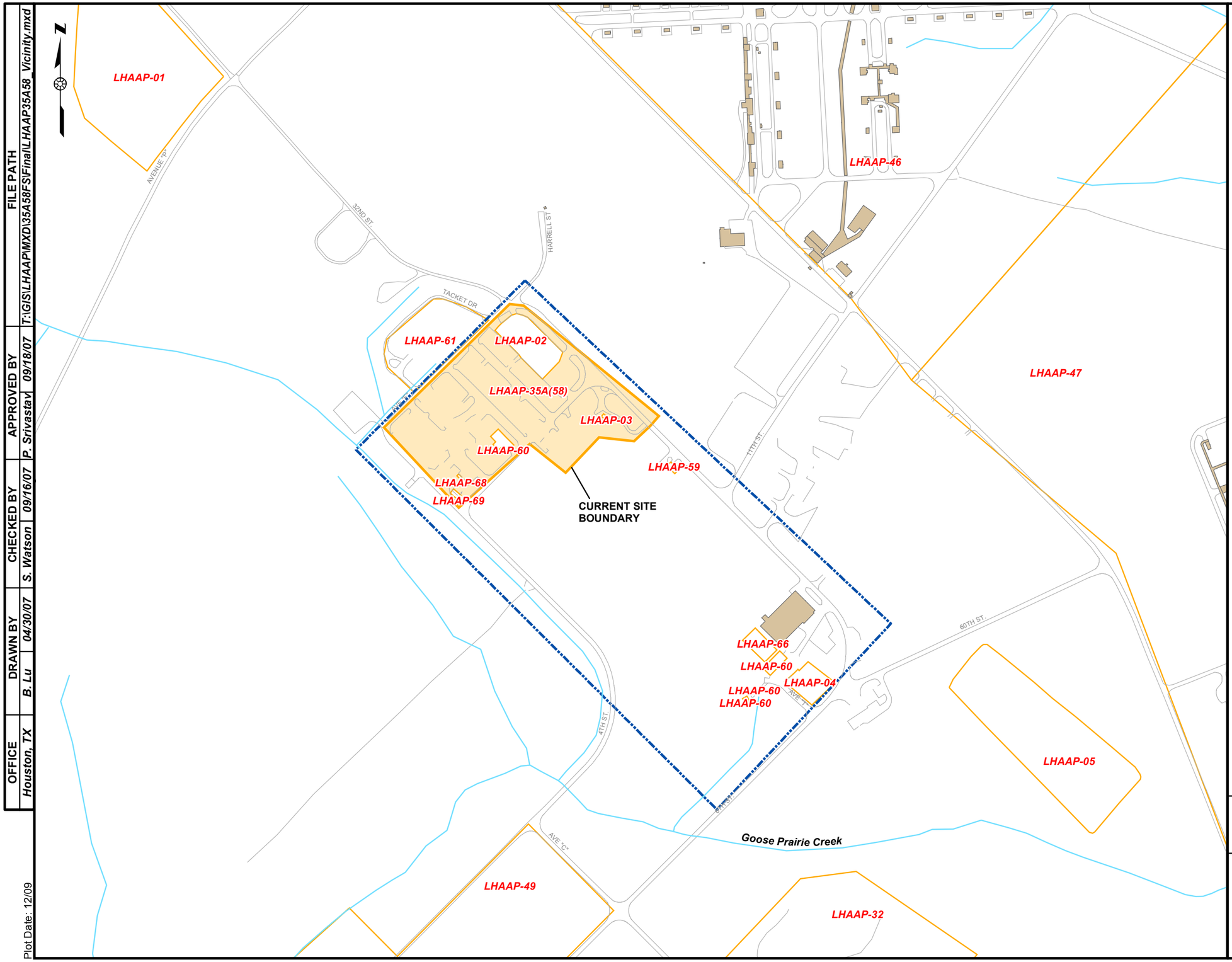
OFFICE	DRAWN BY		CHECKED BY	
Houston, TX	B. Lu	04/30/07	S. Watson	09/16/07

APPROVED BY	
P. Srivastav	09/18/07

Plot Date: 12/09



LEGEND

- Stream
- Road
- Existing Building
- Historic LHAAP-35A(58) Site Boundary
- Other LHAAP Site
- LHAAP-35A(58) Site
- Lake/Pond

0 200 400 800 Feet

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TULSA, OKLAHOMA

FIGURE 1-2

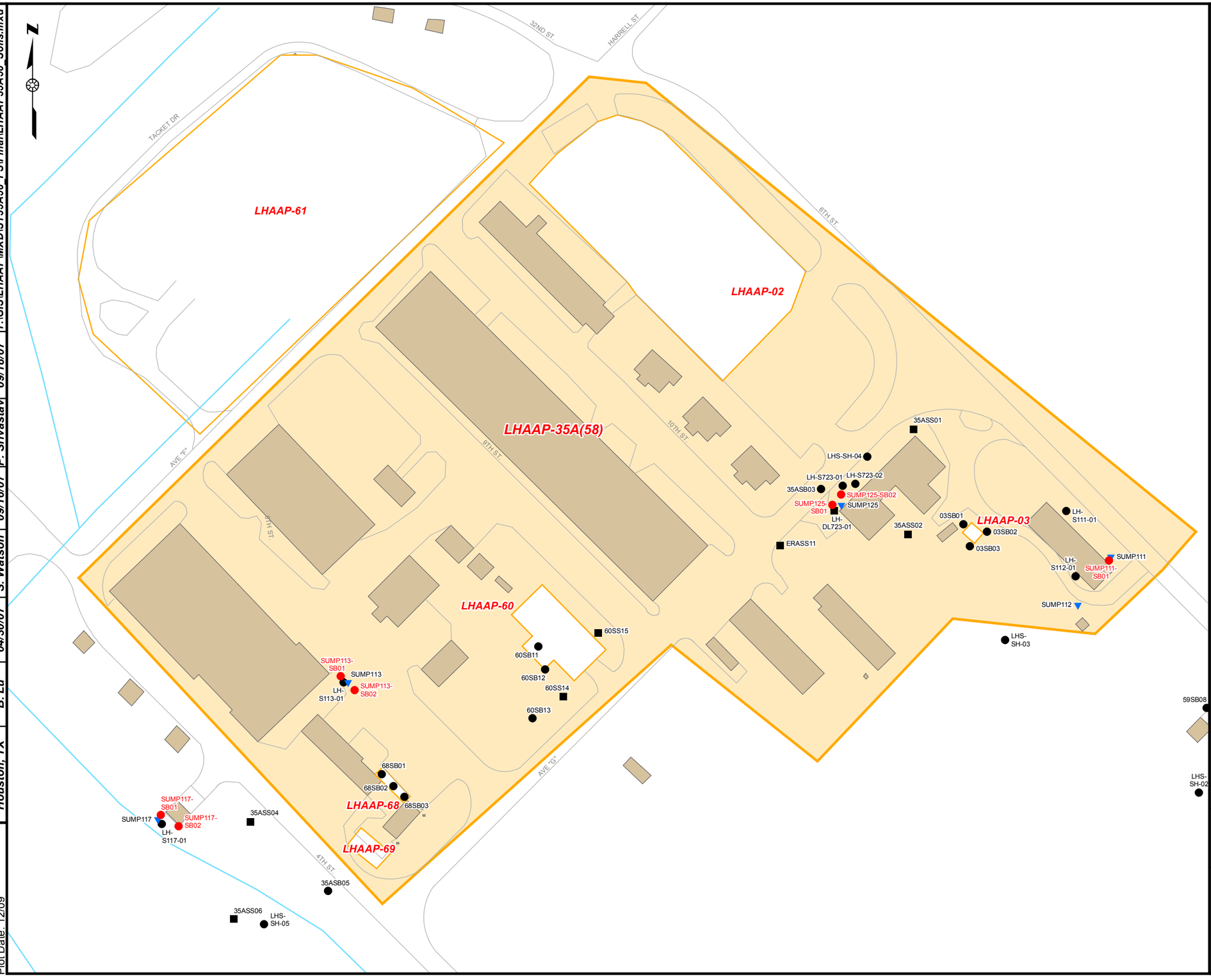
SITE VICINITY MAP
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079352

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Lu 04/30/07	S. Watson 09/16/07	P. Srivastav 09/18/07	T:\GIS\LHAAP\MXD\ST35A58_FSIFinal\LHAAP35A58_Soils.mxd

Plot Date: 12/09



LEGEND

- Soil Boring (2006 Sump Investigation)
- Soil Boring (Phase I, II)
- Surface Soil Sample (Phase II)
- Sump
- Stream
- Road
- Former Building or Tank
- LHAAP-35A(58) Site
- Other LHAAP Site

0 50 100 200 Feet

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TULSA, OKLAHOMA

FIGURE 1-3

SOIL SAMPLE LOCATION MAP
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079353

FILE PATH	
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OFFICE	DRAWN BY		CHECKED BY	
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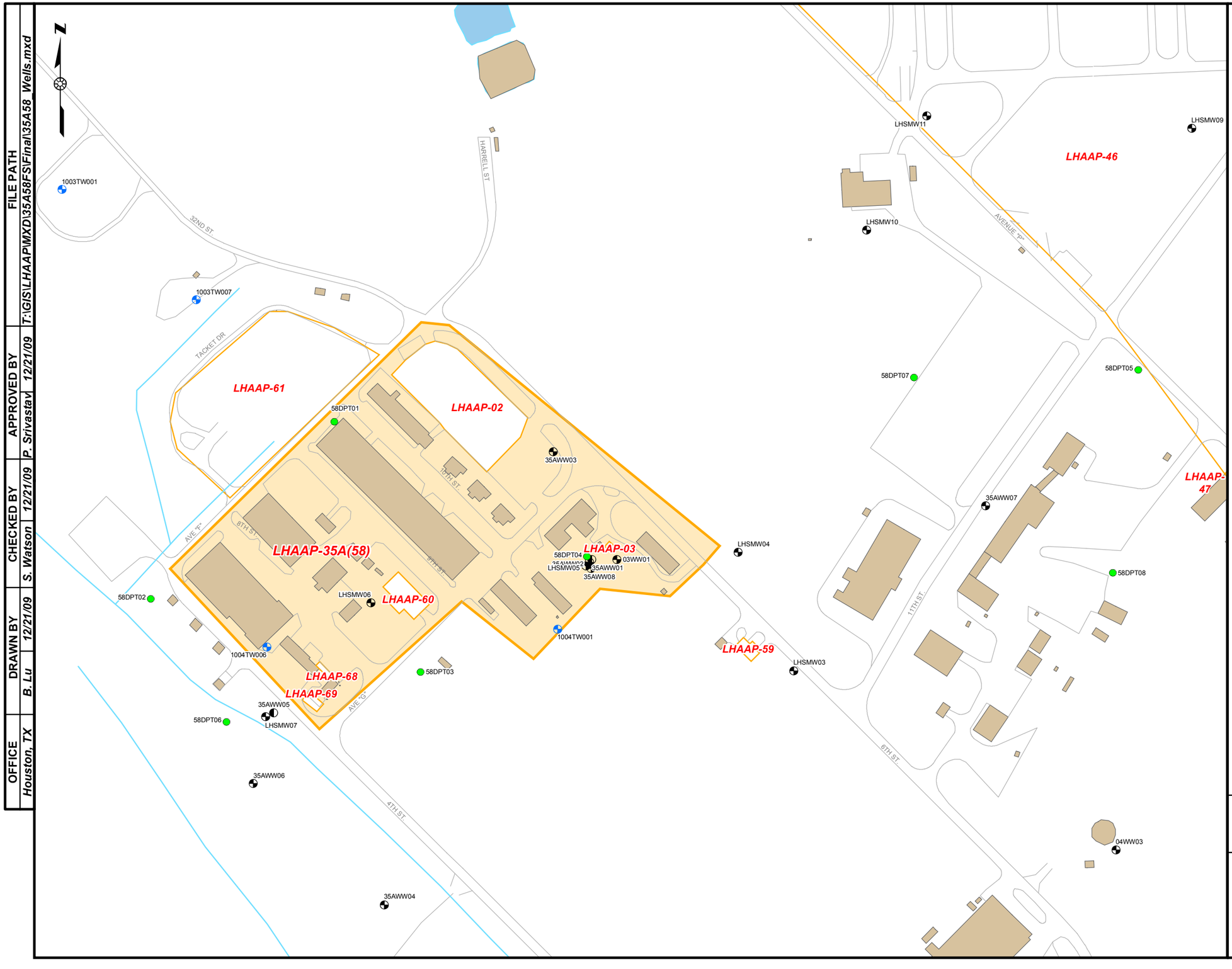
APPROVED BY	
P. Srivastav	12/21/09



LEGEND

- DPT Location
- Plexus Temporary Monitoring Well
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Stream
- Road
- LHAAP-35A(58) Site
- Other LHAAP Site
- Former Building or Tank

0 100 200 400 Feet

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FIGURE 1-4

WELL LOCATION MAP
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079354

OFFICE	DRAWN BY	CHECKED BY
Houston, TX	B. Lu 05/17/05	S. Watson 09/16/07

FILE PATH	APPROVED BY
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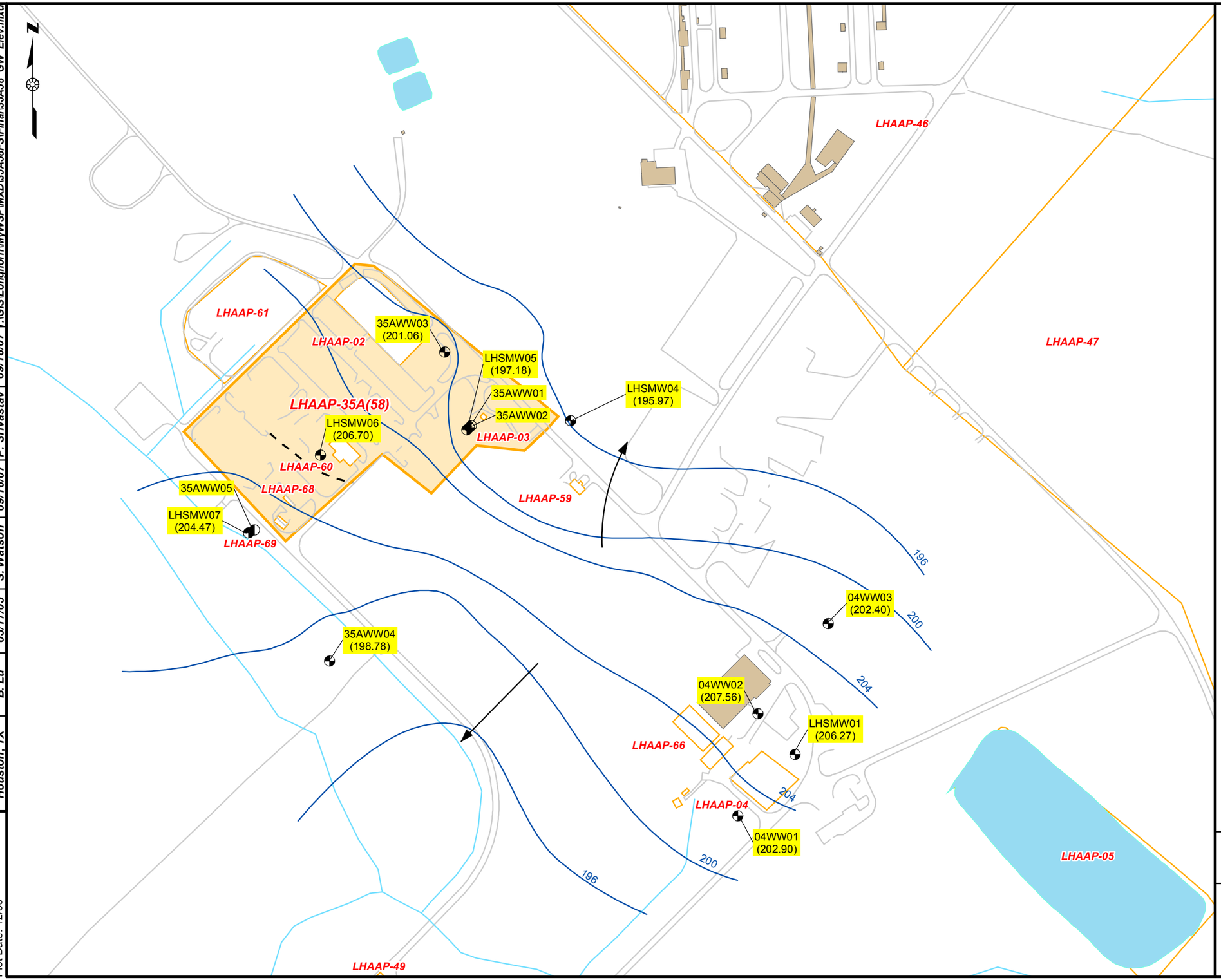
Plot Date: 12/09



Legend

Groundwater Monitoring Well
- Shallow
- Intermediate
- Deep

196 Groundwater Elevation Contour

Stream

Road

Building, Known to Exist

LHAAP-35A(58) Site

Other LHAAP Site

Lake

(206.27) Groundwater Elevation in Feet

Inferred Groundwater Flow Direction

Approximate Groundwater Divide

Notes:
1. All contours were generated using ArcGIS 8.3 (Spline as interpolation algorithm).
2. Groundwater contour elevations reported in feet.
3. Yellow highlighted groundwater monitoring wells were sampled during data gaps investigation in August - September, 2004.
4. Wells installed after 2004 are not shown on this figure.

0 150 300 600 Feet

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FIGURE 1-5
LHAAP-35A(58) GROUNDWATER ELEVATION MAP (SHALLOW ZONE 2004)
LHAAP-35A(58) FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079355

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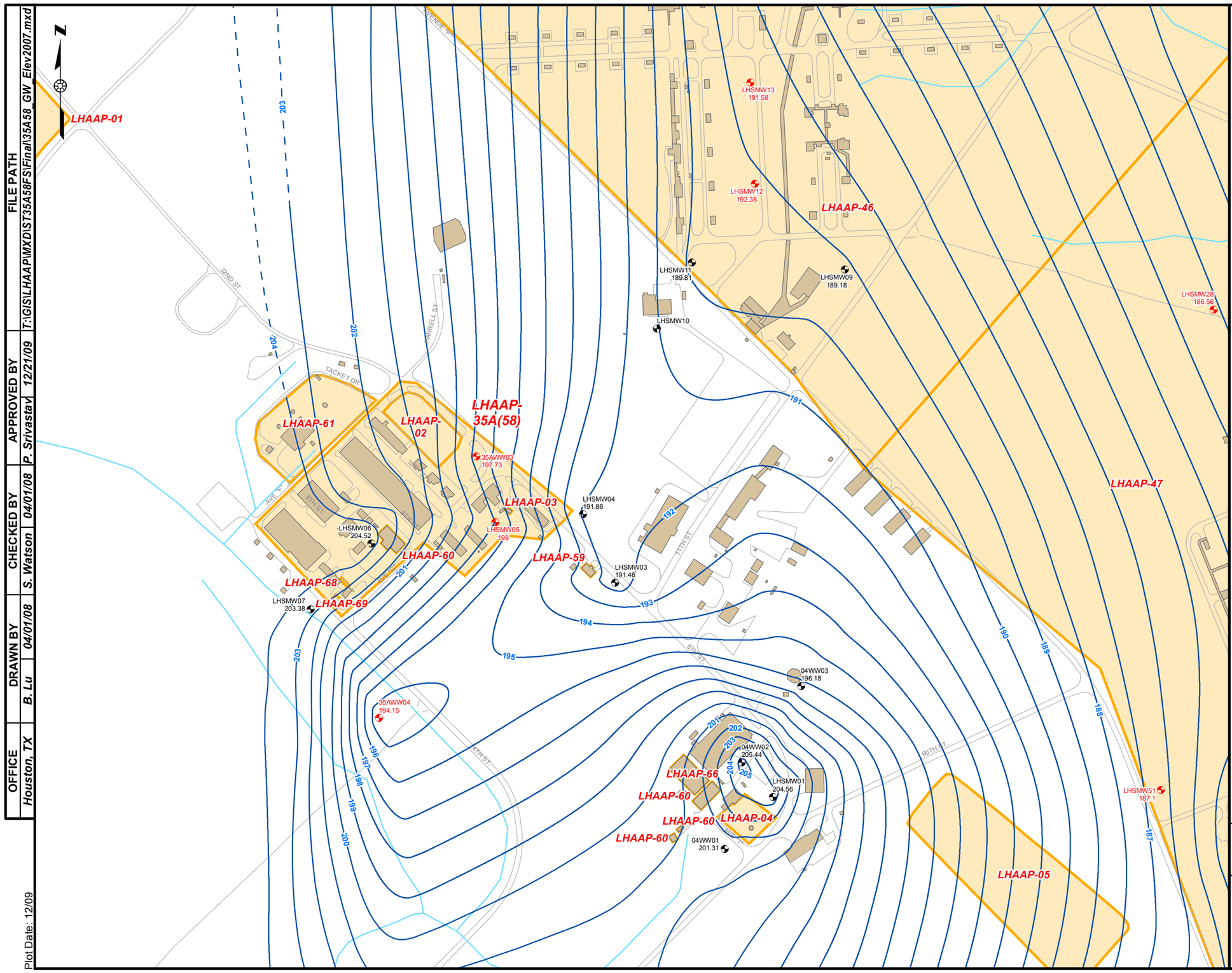

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FIGURE 1-6

LHAAP-35A(58) GROUNDWATER ELEVATION MAP (SHALLOW ZONE NOV/DEC 2007)
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079356

OFFICE	DRAWN BY	CHECKED BY
Houston, TX	B. Lu 12/16/08	A. Willmore 12/17/08

APPROVED BY	FILE PATH
P. Srivastav 12/17/09	T:\GIS\LHAAP\MXD\ST35A58FS\Final\35A58_GW_Elev2008.mxd

Plot Date: 12/09

N

32ND ST.

HARRELL ST

TACKET DR.

AVE. F

AVE. G

AVE. T

AVENUE "P"

6TH ST.

7TH ST.

8TH ST.

4TH ST.

5TH ST.

11TH ST.

60TH ST.

LHAAP-61

LHAAP-02

LHAAP-35A(58)

LHAAP-03

LHAAP-60

LHAAP-68

LHAAP-69

LHAAP-59

LHAAP-46

LHAAP-47

LHAAP-66

LHAAP-04

LHAAP-05

58DPT01 204.2

58DPT02 204.41

58DPT03 202.02

58DPT04 192.03

58DPT05 187.51

58DPT06 201.41

58DPT07 189.23

58DPT08 188.69

LHSMW01 207.85

LHSMW02 197.85

LHSMW03 190.26

LHSMW04 191.8

LHSMW05 DRY

LHSMW06 204.3

LHSMW07 202.15

LHSMW09 DRY

LHSMW10 DRY

LHSMW11 188.93

35AWW03 DRY

35AWW04 DRY

35AWW06 200.11

35AWW07 189.16

35AWW08 191.05

03WW01 190.96

04WW01 203.16

04WW02 207.6

A

A'

204 203 202 201 200 199 198 197 196 195 194 193 192 191 190 189 188 207 206 205

LEGEND

- Shallow Monitoring Well
- DPT Location
- Groundwater Elevation Contour
- Cross-Section Line
- Stream
- Road
- Former Building or Tank
- Site

NOTE:

Contours generated using 3D Analyst Extension in ArcGIS 9.3.

0 110 220 440 Feet

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TULSA, OKLAHOMA

FIGURE 1-7

LHAAP-35A(58) GROUNDWATER ELEVATION MAP (SHALLOW ZONE 2008)
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079357

PLOT DATE: 12/16-09
FORMAT REVISION

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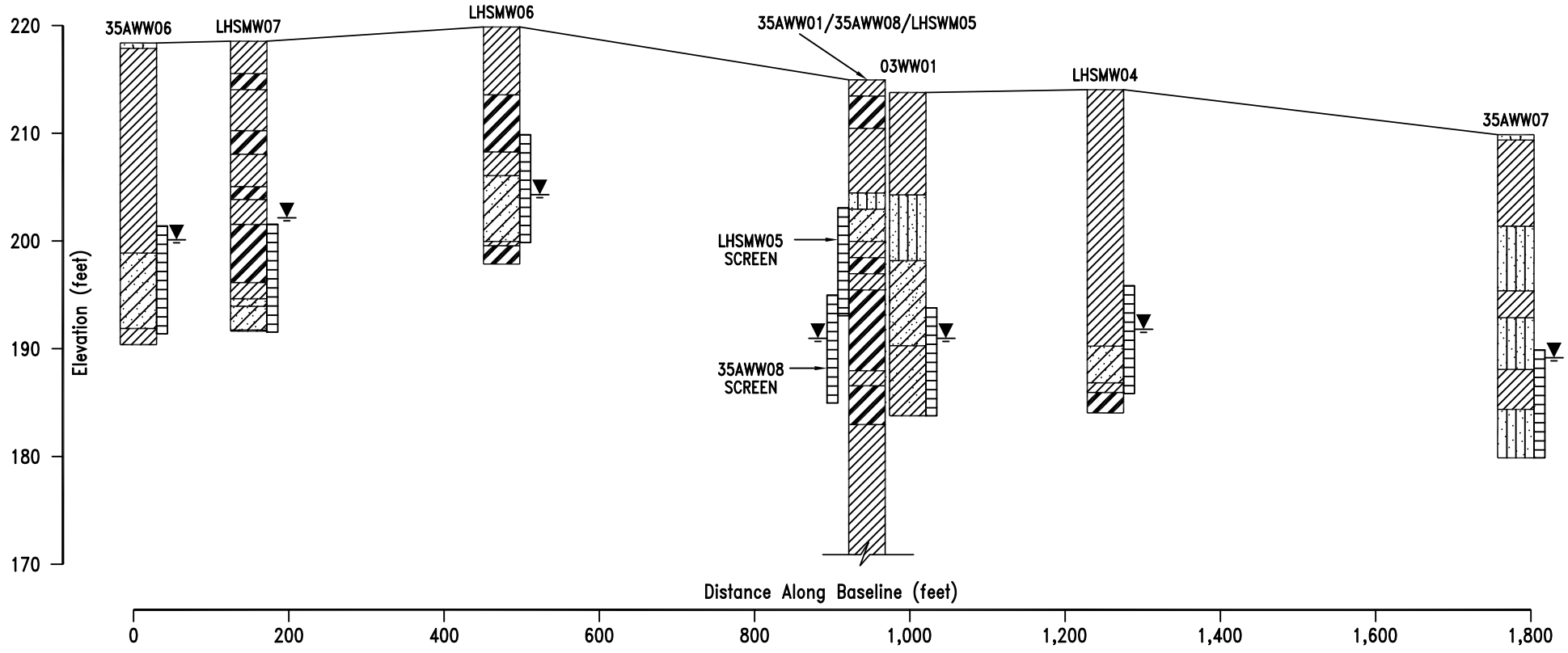

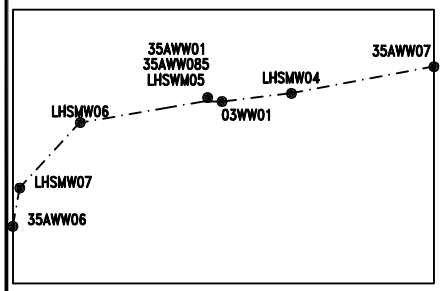

LEGEND:

- (CH) FAT CLAY
- (CL) LEAN CLAY
- (SC) CLAYEY SAND
- (MLS) SANDY SILT
- STATIC WATER LEVEL (11/08)
- SCREEN

HORIZONTAL SCALE
0 200 400
VERTICAL SCALE: AS SHOWN

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FIGURE 1-8
CROSS SECTION A-A'
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 Risk and Site Assessment

This section summarizes the risk assessment approach, risk conclusions, and the conceptual site model for LHAAP-35A(58). Information in this section is based on data primarily obtained from the following references:

- Group 4 Sites FS
- Group 4 Sites RI (Jacobs, 2002)
- Group 4 Sites Baseline Human Health Risk Assessment Report (Jacobs, 2003)
- Groups 2 and 4 Groundwater Data Gaps Investigation (Shaw, 2007b)
- Installation-Wide Baseline Ecological Risk Assessment (Shaw, 2007a)
- Environmental Site Assessment (Plexus, 2005)
- Data Evaluation Report, LHAAP-35/36 Sumps (Shaw, 2008)

Additionally, data has been collected in 2007 and 2008 that is not included in the above references. The data from the more recent sampling events is included in **Appendix B**.

2.1 Risk Assessment Summary

This summary is based on the conclusions presented in the *Final Baseline Human Health and Screening Ecological Risk Assessment for the Group 4 Sites* (Jacobs, 2003). During the risk assessment, soil and groundwater data were used to calculate the aggregate risk results, which were then compared to the USEPA target risk range of 1×10^{-4} to 1×10^{-6} for the excess lifetime cancer risk (ELCR) and a hazard index of 1.

The Jacobs risk assessment (Jacobs, 2003) presented the human health risks and hazards to a hypothetical future maintenance worker under an industrial scenario for soil and groundwater and a screening level ecological risk assessment. The hypothetical future maintenance worker scenario is consistent with the use of the site as part of a wildlife refuge. A baseline ecological risk assessment has been completed and does not indicate any risk to ecological receptors from LHAAP-35A(58)(Shaw, 2007a).

The site boundary used for the human health risk assessment was larger than the current limits of LHAAP-35A(58), and some of the maximum detected concentrations used as EPCs came from wells currently outside of LHAAP-35A(58) and have been incorporated into other areas that are being evaluated separately. This information is noted in the discussions below.

2.1.1 Soil

Soil in the risk assessment is defined as surface soil (0 to 2 feet in depth). Hypothetical future maintenance worker exposure to soil at LHAAP-35A(58) generated an HI of 0.1, below the

benchmark of 1. The carcinogenic risk calculated is 5×10^{-6}, which is within the acceptable range (1×10^{-6} to 1×10^{-4}).

2.1.2 Groundwater

The baseline human health risk assessment reported unacceptable carcinogenic risk (greater than 1×10^{-4}) and non-carcinogenic hazard (greater than 1) for LHAAP-35A(58) groundwater for the hypothetical future maintenance worker under an industrial scenario (ELCR of 1.6×10^{-2} and HI of 38). The major contributors to carcinogenic risk include 1,1-DCE (1.1×10^{-2}) and PCE (4.9×10^{-3}) which account for approximately 99 percent of the total groundwater carcinogenic risk. Vinyl chloride, RDX, and TCE generate risk in excess of 1×10^{-5} but less than 1×10^{-4}. Bis(2-ethylhexyl)phthalate, 1,2-dichloroethane, and 1,1,2-trichloroethane generate risks greater than 1×10^{-6} but less than 1×10^{-4}. **Table 2-1** lists chemicals that have a carcinogenic risk greater than 1×10^{-6} for the hypothetical future maintenance worker.

The major contributors to non-carcinogenic hazard include PCE (HQ=28), 1,1-DCE (HQ=3.4), and manganese (HQ=1.2) which account for approximately 87 percent of the groundwater HI. Ten additional chemicals, aluminum, perchlorate, TCE, nickel, thallium, strontium, antimony, RDX, selenium, and cobalt, had HQ values greater than 0.1 and account for another 12 percent of the groundwater HI. **Table 2-2** lists the chemicals in the risk assessment that have a HQ greater than 0.1 for the hypothetical future maintenance worker.

Chemicals in groundwater with unacceptable risk or hazard are addressed further in **Sections 2.2** and **2.3.2**.

2.2 Post Risk Assessment Data Evaluation

The risk assessment (Jacobs, 2003) was completed using data from the samples reported in the Final Remedial Investigation Report (Jacobs, 2002). Since that time, additional samples have been collected at LHAAP-35A(58). In 2003, Plexus collected soil and groundwater samples in and around LHAAP-35A(58) and reported the results in the Environmental Site Assessment Phase I and II Report (Plexus, 2005). In 2004, 2007, and 2008, Shaw collected groundwater samples and analyzed them for various analytes. In December 2008, Shaw conducted an investigation using direct-push technology and installed additional wells to better define the groundwater contamination.

2.2.1 Soil

The detected concentrations in samples collected since the risk assessment were less than the associated values used for the exposure point concentrations.

The results obtained from these post risk assessment soil samples do not alter the conclusions of the risk assessment for soil. The cancer risks and non-cancer hazards posed by soil fall within the acceptable ranges.

2.2.2 Groundwater

Methylene chloride was found in well 35AWW02 at an estimated concentration of 1.0 µg/L in 2004. This is slightly higher than the groundwater exposure point concentration of 0.97 µg/L. This small difference would raise the risk and hazard index for methylene chloride by 3 percent, leaving them well below 1×10^{-6} and 0.1, respectively.

PCE was found in well 35AWW08 at a concentration of 9,590 µg/L in November 2008. This is higher than the groundwater exposure point concentration of 5,400 µg/L (Jacobs, 2003). However, both the risk and hazard were already noted as above 1×10^{-6} and 0.1, respectively, so PCE is already addressed as a potential COC and this does not change the outcome of the risk assessment.

TCE was found in well 35AWW08 at a concentration of 675 µg/L in November 2008. This is higher than the groundwater exposure point concentration of 160 µg/L. However, both the risk and hazard were already noted as above 1×10^{-6} and 0.1, respectively, so TCE is already addressed as a potential COC and this does not change the outcome of the risk assessment.

Vinyl chloride was found in well LHSMW07 at a concentration of 14.4 µg/L in November 2008. This is higher than the groundwater exposure point concentration of 10 µg/L. However, the risk was already noted as above 1×10^{-6}, so VC is already addressed as a potential COC and this does not change the outcome of the risk assessment.

Nickel was detected in LHSMW04 at a concentration of 1,900 µg/L. This is higher than the groundwater exposure point concentration of 1,100 µg/L. Nickel is discussed further in **Section 2.3.2.3**.

Selenium was detected in LHSMW07 at a concentration of 90 µg/L in November 2008. This is higher than the groundwater exposure point concentration of 65.8 µg/L. Selenium is discussed further in **Section 2.3.2.3**.

The other chemical concentrations found in groundwater samples collected after the risk assessment was completed were all less than the values used for the exposure point concentrations.

The results obtained from these post risk assessment groundwater samples do not alter the conclusions of the risk assessment for groundwater. The cancer risks and non-cancer hazards posed by groundwater fall outside the acceptable range and action is needed to manage and

reduce those risks and hazards. Further analyses of the results for specific chemicals are noted in **Section 2.3**.

2.3 Media Contamination Assessment

Data presented in the remedial investigation and the human health risk assessment indicates that chemicals in the soil at LHAAP-35A(58) pose no unacceptable risk to human health. However, chlorinated compounds in groundwater at LHAAP-35A(58) pose an unacceptable risk to human health. Evaluation of data generated after the risk assessment identified no additional COCs.

2.3.1 Soil Contamination

Soil was not found to contribute to a significant human health risk and is not addressed further under this FS. The human health risk assessment calculated a cancer risk of 2.0×10^{-5} and a combined HI of 0.34.

2.3.2 Groundwater Contamination

Carcinogenic Risk

Based on the human health risk assessment, groundwater at LHAAP-35A(58) poses an unacceptable carcinogenic risk to a hypothetical future maintenance worker at LHAAP-35A(58) under an industrial scenario. Groundwater data were also compared with GW-Ind and MCLs, which are the proposed cleanup levels. The carcinogenic risk calculated for groundwater exposure is 1.6×10^{-2}, which is above the risk range of 1×10^{-4} to 1×10^{-6}. The COCs listed in **Table 2-1** for the LHAAP-35A(58) groundwater are 1,1-DCE, PCE, VC, and TCE due to the contribution to risk and exceedance of their respective GW-Ind and MCLs. The chemicals 1,2-DCA, 1,1,2-trichloroethane (TCA), bis(2-ethylhexyl), and RDX were excluded as COCs.

Non-carcinogenic Hazard

Based on the human health risk assessment, groundwater at LHAAP-35A(58) poses an unacceptable non-carcinogenic hazard to a hypothetical future maintenance worker at LHAAP-35A(58) under an industrial scenario. The non-carcinogenic hazard calculated for groundwater exposure is 38, which is higher than the acceptable HI of 1.0. The COCs listed in **Table 2-2** for the LHAAP-35A(58) groundwater are PCE, 1,1-DCE, and TCE due to the contribution to the noncarcinogenic hazard and exceedance of their respective GW-Ind and MCLs. The chemicals manganese, aluminum, perchlorate, nickel, thallium, strontium, antimony, RDX, selenium, and cobalt were excluded as COCs.

The most recent (2003 through 2008) detected COC concentrations in groundwater are shown on **Figure 2-1** (1,1-DCE, PCE, VC, and TCE).

2.3.2.1 Volatile Organic Compounds

The maximum concentration of 1,1-DCE in groundwater (1,340 µg/L) was from LHSMW07 in 1996 and exceeded the MCL (7 µg/L). The most recent groundwater sample result, 576 µg/L from LHSMW07 in 2008, still exceeds the MCL. Thus, 1,1-DCE is considered a COC in the shallow groundwater zone at LHAAP-35A(58). **Appendix A** summarizes the results and **Figure 2-1** shows the most recent 1,1-DCE groundwater results and the estimated extent of 1,1-DCE concentrations higher than the MCL.

The maximum concentration of PCE in groundwater (9,590 µg/L) was from 35AWW08 and exceeded the MCL (5 µg/L). PCE is considered a COC in the shallow groundwater zone at LHAAP-35A(58). **Appendix A** summarizes the results and **Figure 2-1** shows the most recent PCE groundwater results and the estimated extent of PCE concentrations higher than the MCL.

The maximum concentration of VC in groundwater (10 µg/L) was from LHSMW07 in 1996 and exceeded the MCL (2 µg/L). The most recent groundwater samples from LHSMW07 in 2008 of 14.4 µg/L still exceed the MCL. Thus, VC is considered a COC in the shallow groundwater zone at LHAAP-35A(58). Vinyl chloride concentrations that exceed the MCL consistently occur with the 1,1-DCE concentrations that exceed the MCL, so no separate VC extent is shown on **Figure 2-1**. **Appendix A** summarizes the results.

The maximum concentration of TCE in groundwater (675 µg/L) was from 53AWW08 in 2008 and exceeded the MCL (5 µg/L). TCE is considered a COC in the shallow groundwater zone at LHAAP-35A(58). **Appendix A** summarizes the results and **Figure 2-1** shows the most recent TCE groundwater results and the estimated extent of TCE concentrations higher than the MCL.

The maximum concentration of 1,2-DCA in groundwater (3 µg/L) was from LHSMW07 in 1996 and is less than the MCL (5 µg/L). Thus, 1,2-DCA is not considered a COC at LHAAP-35A(58).

The maximum concentration of 1,1,2-TCA in groundwater (8 µg/L) was from LHSMW07 in 1996 and exceeded the MCL (5 µg/L). 1,1,2-TCA was detected at LHSMW07 in 2008 at a concentration of 1.92 µg/L. Since the most recent groundwater sample was less than the MCL, 1,1,2-TCA is not considered a COC at LHAAP-35A(58).

2.3.2.2 Semivolatile Organic Compounds

The exposure point concentration used in the risk assessment for bis(2-ethylhexyl) phthalate in groundwater (88 µg/L) was from LHSMW03 in 1994 and exceeded the MCL (6 µg/L). The well LHSMW03 is outside the LHAAP-35A(58) boundary and is only used for plume bounding in this FS. Bis(2-ethylhexyl)phthalate was detected in 2 of the 19 groundwater samples analyzed between 1994 and 2003. The results were all less than the MCL except for a 1998 estimated

concentration of 12 µg/L at 35AWW02. These results were concluded to be anomalous (Jacobs, 2002). Bis(2-ethylhexyl)phthalate is also a common laboratory contaminant. Thus, bis(2-ethylhexyl)phthalate is not considered a COC at LHAAP-35A(58).

2.3.2.3 Metals

The risk assessment reported that the maximum concentration of manganese, 5,800 µg/L from LHSMW05 in 1994, is a contributor to the groundwater noncancer hazard (1.2) (Jacobs, 2003). This maximum manganese concentration is less than the LHAAP perimeter well groundwater background value (95% UTL) of 7,820 µg/L (Shaw, 2007). The most recent manganese sample from LHSMW05 in 1998 had a maximum concentration of 4,070 µg/L. This suggests that the maximum value from 1994 may have been in part due to suspended solids in the sample. Additionally, manganese from the new well 35AWW06 was 5,320 µg/L in November 2008, which is below the GW-Ind of 14,000 µg/L. Thus, manganese is not considered a COC for LHAAP-35A(58).

The maximum aluminum concentration in groundwater (98,200 µg/L), used as the EPC, was from LHSMW03 in 1994. The well LHSMW03 is outside the LHAAP-35A(58) boundary and is only used for the purpose of bounding VOC plumes in this FS. The maximum aluminum concentration in groundwater (35,400 µg/L) at LHAAP-35A(58) was from LHSWM05 in 1994. In 1998, the aluminum concentration at LHSMW05 was 2,400 µg/L. This suggests that the fluctuations in maximum values from 1994 may be due to sampling methods used and may have been due to suspended solids in the sample. The maximum concentration of aluminum in the 1998 groundwater samples at LHAAP-35A(58) was 4,800 µg/L from 35AWW03, which was dry in 2008. The maximum aluminum concentration in 2008 was 2,610 µg/L at 35AWW07. This concentration is about 3% of the EPC used in the risk assessment. Thus, the HQ would be well below 1, and aluminum is not considered a COC at LHAAP-35A(58).

The maximum concentration of nickel in groundwater (1,100 µg/L), used as the EPC, was from LHSWM05 in 1996. Nickel was detected in 14 of the 16 groundwater samples analyzed between 1996 and 2003. In 1998, the nickel concentration at LHSMW05 was 240 µg/L. This is about 22% of the EPC concentration. It was noted that the two samples with the highest nickel concentrations (both at LHSMW05) also have the highest chromium concentrations. In 2008, the maximum nickel concentration (1,900 µg/L) was also associated with the highest chromium concentration. LHSMW05 and LHSMW04 were installed at the same time. That suggests that nickel and chromium detection are co-related. The wells are constructed of stainless steel, which contains both chromium and nickel. All steel alloys are susceptible to corrosion when in contact with groundwater. The localized nickel detections suggest that the elevated nickel concentrations may be related to well construction material, rather than from site-related activities. Additionally, nickel is below the proposed cleanup goal of 2,000 µg/L based on the GW-Ind. Thus nickel is not considered a COC at LHAAP-35A(58).

The maximum concentration of thallium in groundwater (3.6 µg/L), used as the EPC, was from LHSMW07 in May 1998 and exceeded the MCL (2 µg/L). Thallium was detected in 5 of the 20 groundwater samples analyzed between 1994 and 2003. Thallium results from November 1998 have a maximum concentration of 1.8 µg/L (estimated value), and the most recent thallium result from November 2008 had a concentration of 0.000129J µg/L (estimated value). It appears that earlier samples contained more thallium than recent samples, indicating that thallium in the groundwater could be considered an artifact of turbid samples collected during historic sampling rounds. Thus, thallium is not considered a COC for LHAAP-35A(58).

The maximum concentration of strontium in groundwater (23,000 µg/L), used as the EPC, was from LHSMW07 in 1998. The strontium concentration at LHSMW07 from 2008 was almost the same at 23,300 µg/L. The maximum strontium concentration of 23,000 µg/L is well below the GW-Ind value of 61,000 µg/L. Thus, strontium is not considered a COC at LHAAP-35A(58).

Two detections of antimony in 1998 were above the MCL of 6 µg/L. The maximum concentration of antimony in groundwater (13 µg/L), used as the EPC, was from 35AWW03 in 1998. Metals were only analyzed for once at 35AWW03, and the well was dry in 2008. At 35AWW04, antimony was detected at 10 µg/L in September 1998. A second sample was collected and analyzed after the November 1998 sample, and antimony was not detected above 5 µg/L. This suggests that sampling methodology could have affected the result. The most recent detected result of 2.53 µg/L at 35AWW02 in 2008 was less than the MCL. Thus, antimony is not considered a COC for LHAAP-35A(58).

The maximum concentration of selenium in groundwater (65.8 µg/L), used as the EPC, was from LHSMW07 in 1996 and exceeded the MCL (50 µg/L), but had an HQ of only 0.13. The most recent selenium result at LHSMW07, from November 2008, had a detection of selenium at 90 µg/L. The hazard quotient for 2008 selenium concentration using a ratio of HQ to EPC/maximum concentration would yield an HQ of 0.18 which is acceptable, and selenium is not considered a COC for the hypothetical future maintenance worker LHAAP-35A(58).

The maximum concentration of cobalt in groundwater (250 µg/L), used as the EPC, was from LHSMW05 in 1998. The highest concentrations of cobalt were isolated to LHSMW05. The maximum cobalt concentration of 250 µg/L is well below the GW-Ind value of 6,100 µg/L. Thus, cobalt is not considered a COC at LHAAP-35A(58).

2.3.2.4 Perchlorate and RDX

The maximum concentration of perchlorate in the groundwater (81 µg/L) used as the EPC was from LHSMW01 in 2001. The well LHSMW01 is outside the LHAAP-35A(58) boundary used for this FS; the well is located near LHAAP-04. Perchlorate was not detected in the most recent 2007 samples collected from wells LHSMW04, LHSMW06, and LHSMW07 located at

LHAAP-35A(58). The most recent results are all much less than the earlier EPC. Thus, perchlorate is not considered a COC at LHAAP-35A(58).

The maximum concentration of RDX in the groundwater (88.3 µg/L) was from LHSMW03 in 1996. The well LHSMW03 is outside the LHAAP-35A(58) boundary used for this FS. RDX was not detected from wells within LHAAP-35A(58). Thus, RDX is not considered a COC at LHAAP-35A(58).

2.4 Conceptual Site Model

Figure 2-2 illustrates the overall conceptual site model for Site LHAAP-35A(58) and presents the potential pathways that are being considered for remediation. Pathways that are likely to be incomplete or have negligible impact are not being considered for remediation.

The sources of contamination at Site LHAAP-35A(58) are most likely small spills resulting from the variety of support services that occurred in the area. Sampling of and near the sumps does not indicate them as likely sources of contamination. The spills would result in minor soil contamination that would migrate, depending on the contaminants, through overland flow via surface runoff or through leaching to the groundwater. Overland flow does not currently appear to be contributing to a migration of contaminants, as the ditch surface water did not contain any VOCs, SVOCs, explosives, pesticides, or PCBs. Likewise, the sediment data do not show detections of VOCs, SVOCs, explosives, or pesticides. Some metals were detected in the surface water and sediment at low concentrations that naturally occur.

The other migration pathway, leaching of contaminants to groundwater, is a likely pathway. Although there appears to be no residual soil contamination (no VOCs detected in subsurface soils), VOCs are present in the groundwater. Chlorinated compounds were initially detected in two groundwater wells, LHSMW05 and LHSMW07, separated by approximately 750 feet with differing relative amounts of the contaminants. Well LHSMW05 contained elevated levels of only TCE and PCE, while LHSMW07 contained much lower levels of TCE, no PCE, and high levels of 1,1-DCE, as well as cis-1,2-DCE and VC. Both of these wells are shallow. The shallow well LHSMW06, located between the two contaminated wells, had low concentrations of VOCs with no MCL exceedances; however, TCE, cis-1,2-DCE, and VC were detected in the 2007 sampling round. In 2007, PCE was detected for the first time in LHSMW04, approximately 300 feet east of LHSMW05. In 2008, both PCE and TCE were detected in LHSMW04. This signature of contamination suggests two isolated sources of contamination, one centered around LHSMW07, and the other centered around LHSMW05 with its edge approximately at LHSMW04. An intermediate and a deep well are located immediately adjacent to LHSMW05. An intermediate well is located adjacent to LHSMW07. Contaminants are not found in these wells, suggesting that downward migration has not occurred.

LHSMW07 is located near the sampled drainage ditch which flows to Goose Prairie Creek. Another well, 35AWW04, located downgradient from LHSMW07, is closer to Goose Prairie Creek and historically had low levels of VOCs present. VOCs were not detected in well 35AWW04 during the most recent 2004 sampling round. The maximum level found in LHSMW07 was 576 µg/L of 1,1-DCE in 2008, which is greater than the drinking water MCL. A new well, 35AWW06, was installed downgradient of LHSMW07 in 2008. The 1,1-DCE was 57.6 µg/L in this well and the TCE is below the MCL at an estimated concentration of 0.81J µg/L. GPSCSW08 is the nearest downgradient surface water sampling location in Goose Prairie Creek (approximately 1750 feet to the south) and no contaminants were detected at this location during the 2004 or earlier sampling events (Jacobs, 2002). It is unlikely that the groundwater contamination from LHAAP-35A(58) is discharging to Goose Prairie Creek.

Modeling calculations were completed to assess the potential for the COCs present in shallow groundwater at LHAAP-35A(58) to migrate toward and discharge to Goose Prairie Creek. There are uncertainties in the use of AT123 modeling to estimate the impact of groundwater on surface water. Specifically, the absence of a downgradient well between the site and Goose Prairie Creek precluded the field verification of the model's results. The modeling concluded that contaminants present in the shallow groundwater at LHAAP-35A(58) will not adversely impact Goose Prairie Creek surface water (Shaw, 2007c).

Table 2-1
Chemicals with Hazard Index Greater than 0.1 in Groundwater

Chemical	Hazard Quotient[a]	Exposure Point Concentration[b] (µg/L)	MCL (µg/L)	GW-Ind (µg/L)	Retained as Chemical of Concern?
Tetrachloroethene (PCE)	28	5,400	5	5	Yes, 1
1,1-Dichloroethene (1,1-DCE)	3.4	1,340	7	7	Yes, 1
Manganese	1.2	5,800	-	14,000	No, 2,3
Aluminum	0.96	98,200	-	100,000	No, 4
Perchlorate	0.88	81	-	72	No, 4
Trichloroethene (TCE)	0.61	160	5	5	Yes, 1
Nickel	0.54	1,100	-	2,000	No, 3
Thallium	0.44	3.6	2	2	No, 5
Strontium	0.38	23,000	-	61,000	No, 3
Antimony	0.32	13	6	6	No, 4
RDX	0.29	88.3	-	--	No, 4
Selenium	0.13	65.8	50	50	No, 4
Cobalt	0.12	250	-	6,100	No, 3

Notes and Abbreviations:

All chemicals with hazard indexes exceeding 0.1 are listed.

1. *Identified as COC since noncancer hazard quotient is greater than 0.1 and the Exposure Point Concentration is above the Safe Drinking Water Act MCL or TCEQ GW-Ind.*
2. *Excluded as COC since Exposure Point Concentration is less than LHAAP perimeter well background.*
3. *Excluded as COC based on since Exposure Point Concentration is less than a proposed cleanup level based on GW-Ind.*
4. *Excluded as COC based on more recent data showing much lower concentrations that are below TCEQ GW-Ind or MCL.*
5. *Excluded as COC based on difference in sampling methods.*

[a] *From Baseline Risk Assessment Table 3-74 and Table C-44 (Jacobs, 2003).*

[b] *From Baseline Risk Assessment Table 3-49 (Jacobs, 2003).*

GW-Ind *Texas Commission on Environmental Quality, Risk Reduction Standard 2, groundwater medium-specific concentration for industrial use*

MCL *Safe Drinking Water Act maximum contaminant level*

µg/L *micrograms per liter*

Table 2-2
Chemicals with Carcinogenic Risk in Groundwater greater than 1×10^{-6}

Chemical	Cancer Risk Groundwater[a]	Exposure Point Concentration[b] (µg/L)	MCL/ GW-Ind (µg/L)	Retained as Chemical of Concern?
1,1-Dichloroethene (1,1-DCE)	1.1×10^{-2}	1,340	7	Yes, 1
Tetrachloroethene (PCE)	4.9×10^{-3}	5,400	5	Yes, 1
Vinyl Chloride	5.8×10^{-5}	10	2	Yes, 1
RDX	3.4×10^{-5}	88.3	-	No, 3
Trichloroethene (TCE)	3.1×10^{-5}	160	5	Yes, 1
bis(2-Ethylhexyl)phthalate	7.1×10^{-6}	88	6	No, 3, 4
1,2-Dichloroethane (1,2-DCA)	6.2×10^{-6}	3	5	No, 2
1,1,2-Trichloroethane (1,1,2-TCA)	3.0×10^{-6}	8	5	No, 3

Notes and Abbreviations:

All Chemicals with cancer risks exceeding 1.0×10^{-6} are listed.

1. *Identified as COC since Exposure Point Concentration is above the Safe Drinking Water Act MCL.*
2. *Excluded because since Exposure Point Concentration is below the Safe Drinking Water Act MCL.*
3. *Excluded based on more recent data showing much lower concentrations.*
4. *Excluded as COC based on bis(2-ethylhexyl)phthalate being a common laboratory contaminant.*

[a] *From Baseline Risk Assessment Table 3-73 (Jacobs, 2003).*
[b] *From Baseline Risk Assessment Table 3-49 (Jacobs, 2003).*

GW-Ind *Texas Commission on Environmental Quality, Risk Reduction Standard 2, groundwater medium-specific concentration for industrial use*
MCL *Safe Drinking Water Act maximum contaminant level*
µg/L *micrograms per liter*

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APPROVED BY: P. Srivastav 12/17/09
CHECKED BY: A. Willmore 12/16/08
DRAWN BY: B. Lu 12/16/08
OFFICE: Houston, TX

N

1003TW001

1003TW007	12/03
1,1-DCE	0.36 J µg/L
1,1,2-TCA	ND
PCE	ND
TCE	ND
Vinyl Chloride	ND

1003TW007

LHSMW06	09/04	02/07	11/08
1,1-DCE	ND	ND	<0.5 µg/L
1,1,2-TCA	ND	ND	<0.25 µg/L
PCE	2J µg/L	ND	<0.25 µg/L
TCE	ND	0.77 J µg/L	0.486J µg/L
Vinyl Chloride	ND	ND	<0.25 µg/L

58DPT01	10/08
1,1-DCE	<0.5 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	<0.25 µg/L
TCE	0.263J µg/L
Vinyl Chloride	0.754J µg/L

LHSMW05	09/04	02/07	11/08
1,1-DCE	ND		
1,1,2-TCA	ND		
PCE	5100 µg/L	Dry	Dry
TCE	230 µg/L		
Vinyl Chloride	ND		

58DPT04	10/08
1,1-DCE	<5 µg/L
1,1,2-TCA	<2.5 µg/L
PCE	520 µg/L
TCE	93.1 µg/L
Vinyl Chloride	<2.5 µg/L

35AWW03	09/04	11/08
1,1-DCE	ND	
1,1,2-TCA	ND	
PCE	ND	Dry
TCE	ND	
Vinyl Chloride	ND	

03WW01	11/08
1,1-DCE	<10 µg/L
1,1,2-TCA	<5 µg/L
PCE	2570 µg/L
TCE	196 µg/L
Vinyl Chloride	<5 µg/L

35AWW01	09/04	02/08
1,1-DCE	ND	ND
1,1,2-TCA	ND	ND
PCE	ND	ND
TCE	ND	ND
Vinyl Chloride	ND	ND

LHSMW11	05/98	03/08
1,1-DCE	ND	ND
1,1,2-TCA	ND	ND
PCE	ND	ND
TCE	ND	ND
Vinyl Chloride	ND	ND

LHSMW09	05/98	03/08
1,1-DCE	ND	ND
1,1,2-TCA	ND	ND
PCE	ND	ND
TCE	ND	ND
Vinyl Chloride	ND	ND

LHSMW10	05/98
1,1-DCE	ND
1,1,2-TCA	ND
PCE	ND
TCE	ND
Vinyl Chloride	ND

58DPT07	10/08
1,1-DCE	<0.5 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	<0.25 µg/L
TCE	<0.25 µg/L
Vinyl Chloride	<0.25 µg/L

58DPT05	10/08
1,1-DCE	<0.5 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	1.43 µg/L
TCE	3.31 µg/L
Vinyl Chloride	<0.25 µg/L

35AWW07	11/08
1,1-DCE	<0.5 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	<0.25 µg/L
TCE	<0.562 µg/L
Vinyl Chloride	<0.25 µg/L

58DPT08	10/08
1,1-DCE	<0.5 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	<0.25 µg/L
TCE	<0.25 µg/L
Vinyl Chloride	<0.25 µg/L

LHSMW04	09/04	02/07	01/08	11/08
1,1-DCE	ND	ND	ND	<0.5 µg/L
1,1,2-TCA	ND	ND	ND	<0.25 µg/L
PCE	ND	ND	6.4 µg/L	8.74 µg/L	25.7 µg/L
TCE	ND	4.6 µg/L	5.74 µg/L	11.3 µg/L
Vinyl Chloride	ND	ND	ND	<0.25 µg/L

LHSMW03	05/98	11/08
1,1-DCE	ND	<0.25 µg/L
1,1,2-TCA	ND	<0.5 µg/L
PCE	ND	<0.25 µg/L
TCE	ND	<0.25 µg/L
Vinyl Chloride	ND	<0.25 µg/L

35AWW08	11/08
1,1-DCE	<50 µg/L
1,1,2-TCA	<25 µg/L
PCE	9590 µg/L
TCE	675 µg/L
Vinyl Chloride	<25 µg/L

1004TW001	12/03
1,1-DCE	24 µg/L
1,1,2-TCA	ND
PCE	ND
TCE	0.2 J µg/L
Vinyl Chloride	4.1 µg/L

35AWW02	09/04	11/08
1,1-DCE	ND	<0.5 µg/L
1,1,2-TCA	ND	<0.25 µg/L
PCE	ND	<0.25 µg/L
TCE	ND	<0.25 µg/L
Vinyl Chloride	ND	<0.25 µg/L

1004TW006	12/03
1,1-DCE	370 J µg/L
1,1,2-TCA	0.31 J µg/L
PCE	ND
TCE	0.31 J µg/L
Vinyl Chloride	7 µg/L

58DPT02	10/08
1,1-DCE	<0.5 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	<0.25 µg/L
TCE	0.607J µg/L
Vinyl Chloride	<0.25 µg/L

58DPT03	10/08
1,1-DCE	<0.5 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	<0.25 µg/L
TCE	<0.25 µg/L
Vinyl Chloride	<0.25 µg/L

58DPT06	10/08
1,1-DCE	1.25 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	<0.25 µg/L
TCE	0.258J µg/L
Vinyl Chloride	<0.25 µg/L

LHSMW07	09/04	02/07	11/08
1,1-DCE	590 µg/L	394 µg/L	576 µg/L
1,1,2-TCA	2 J µg/L	1.1 J µg/L	1.92 µg/L
PCE	ND	ND	<0.25 µg/L
TCE	24 µg/L	15.8 µg/L	25 µg/L
Vinyl Chloride	9 µg/L	3 µg/L	14.4 µg/L

35AWW05	09/04	11/08
1,1-DCE	ND	0.551J µg/L
1,1,2-TCA	ND	<0.25 µg/L
PCE	ND	<0.25 µg/L
TCE	ND	<0.25 µg/L
Vinyl Chloride	ND	<0.25 µg/L

35AWW06	11/08
1,1-DCE	57.6 µg/L
1,1,2-TCA	<0.25 µg/L
PCE	7.19 µg/L
TCE	0.811J µg/L
Vinyl Chloride	<0.25 µg/L

35AWW04	09/04	11/08
1,1-DCE	ND	
1,1,2-TCA	ND	
PCE	ND	Dry
TCE	ND	
Vinyl Chloride	ND	

LHAAP-35A(58)
LHAAP-03
LHAAP-61
LHAAP-02
LHAAP-60
LHAAP-68
LHAAP-69
LHAAP-59
LHAAP-46
LHAAP-47

58DPT04, 35AWW01, 35AWW02, LHSMW05, 03WW01, 35AWW08, 03WW01, LHSMW11, LHSMW09, LHSMW10, 58DPT07, 58DPT05, 35AWW07, 58DPT08, LHSMW04, 1004TW001, LHSMW03, 58DPT02, 58DPT03, 58DPT06, LHSMW07, 35AWW05, 35AWW06, LHSMW06, 35AWW04, 04WW03

HARRELL ST, 32ND ST, TACKET DR, 15TH ST, AVE T, AVENUE "P", 9TH ST, 8TH ST, 6TH ST, 11TH ST, 4TH ST

LEGEND

- DPT Location
- Plexus Temporary Monitoring Well
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Stream
- Road
- Other LHAAP Site
- Former Building or Tank
- LHAAP-35A(58) Site
- Estimated TCE Contamination Extent at Concentration = 5 µg/L
- Estimated PCE Contamination Extent at Concentration = 5 µg/L
- Estimated 1,1-DCE Contamination Extent at Concentration = 7 µg/L
- COC Concentration Exceeds MCL

Safe Drinking Water Act Maximum Contaminant Levels (MCL)	
1,1-DCE	7 µg/L
1,1,2-TCA	5 µg/L
PCE	5 µg/L
TCE	5 µg/L
Vinyl Chloride	2 µg/L

1,1-DCE: 1,1-dichloroethene
1,1,2-TCA: 1,1,2-trichloroethane
PCE: tetrachloroethene
TCE: trichloroethene
µg/L: micrograms per liter
ND: not detected
COC: chemical of concern

0 100 200 400 Feet

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TULSA, OKLAHOMA

FIGURE 2-1

2003, 2004, 2007, AND 2008 VOC COC GROUNDWATER RESULTS
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

PLOT DATE: 12/21/09
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
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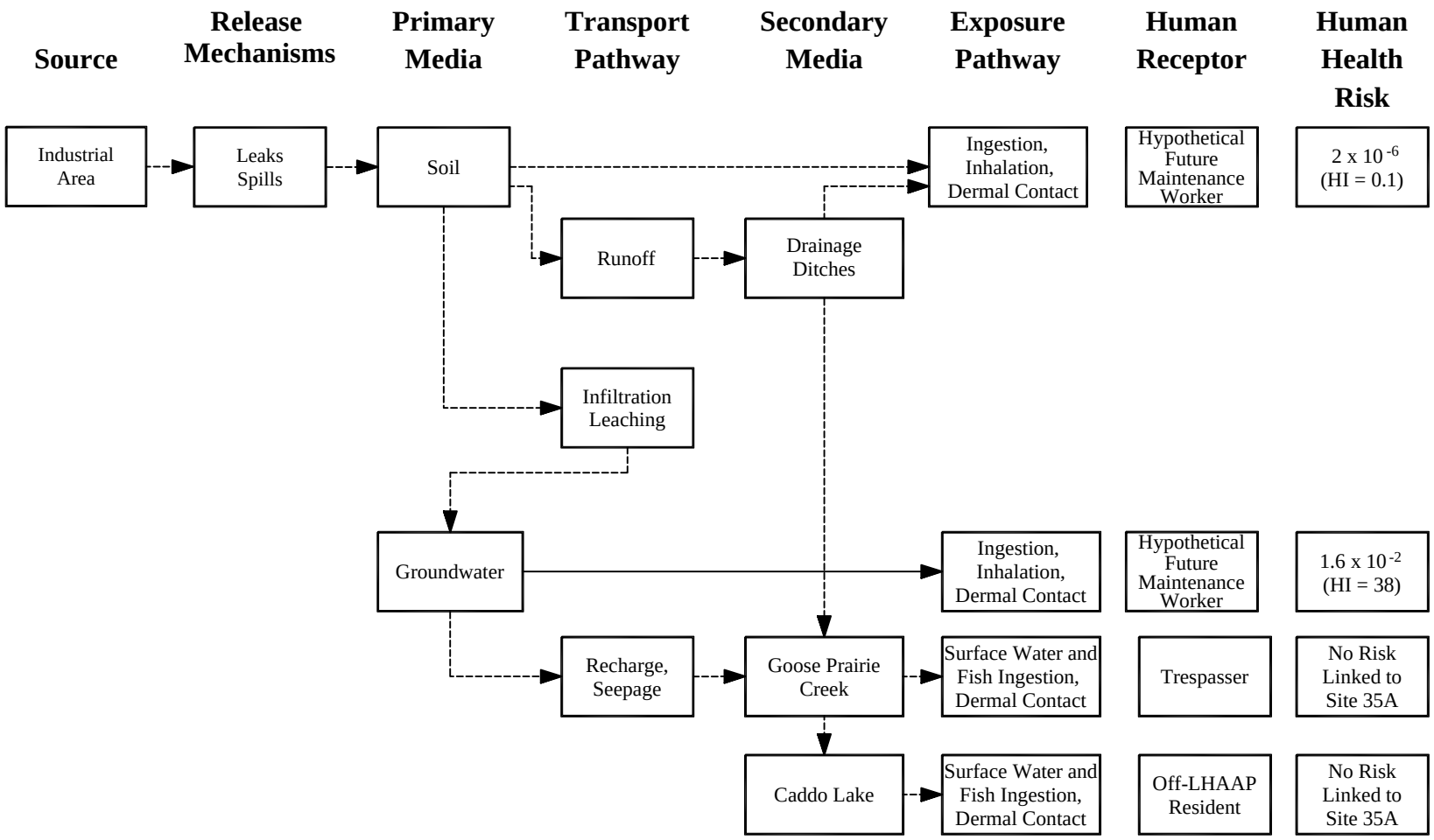

Pathway considered for remediation

Pathway *not* considered for remediation

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FIGURE 2-2
CONCEPTUAL SITE MODEL
LHAAP-35A(58) FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

3.0 Remedial Action Objective and Preliminary Remediation Goals

This section identifies the RAO **(Section 3.1)**, potential chemical-, location- and action-specific ARARs **(Section 3.2)**, and preliminary remediation goals **(Section 3.3)** for LHAAP-35A(58). The RAO identifies the general goals or end points that the remediation will accomplish, while the preliminary remediation goals identify specific cleanup standards for each medium of concern based on risk or ARARs. The preliminary remediation goals may be applied to individual contaminants.

3.1 Remedial Action Objectives

RAOs are established to protect human health and the environment while also meeting ARARs. The identification of the RAO must consider the environmental issues at the site and the receptors that are affected. As identified in the conceptual site model (**Section 2.4**), the primary environmental issue at LHAAP-35A(58) is VOC contaminated groundwater that exceeds MCLs, and thus has the potential to adversely impact humans via ingestion, inhalation, or dermal contact. There is also a potential for the contaminated groundwater to reach surface water, but is unlikely based on predictive modeling analysis.

The Army recognizes the U.S. Environmental Agency's policy to return usable water to its potential beneficial use, based upon the non-binding programmatic expectation in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Based on these considerations, the RAOs for LHAAP-35A(58) include:

- Protect human health (hypothetical future maintenance worker) by preventing exposure to VOC contaminated groundwater
- Prevent potential impact from site groundwater to the nearby surface water body
- Return groundwater to its potential beneficial use wherever practicable, within a reasonable time period given the particular site circumstances.

3.2 Applicable or Relevant and Appropriate Requirements

The NCP, 40 Code of Federal Regulations (CFR) 300.430(f)(1)(ii)(B) states that on-site remedial actions conducted under CERCLA must attain, or have waived, legally applicable ARARs under federal or more stringent state environmental or facility citing laws identified at the time of the ROD signature. This section provides a preliminary identification and evaluation of potential federal and State of Texas chemical-, location-, and action-specific ARARs for the remediation of LHAAP-35A(58) to protect human health (hypothetical future maintenance worker) by preventing exposure to groundwater.

3.2.1 Definitions and Methods

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site (40 CFR 300.5). A requirement is applicable if all the jurisdictional and site-specific prerequisites of the requirement are met; that is, a requirement is applicable if it directly and fully addresses the situation at the site.

Relevant and appropriate requirements are those substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site so that their use is well suited to the particular site (40 CFR 300.5). The criteria for determining relevance and appropriateness are listed at 40 CFR 300.400(g)(2). A relevant and appropriate requirement must be complied with to the same extent as an applicable requirement.

To qualify as a state ARAR mandating cleanup standards under 40 CFR 300.400(g)(4) of the NCP, a state requirement must be (1) promulgated (of general applicability and legally enforceable), (2) an environmental or facility citing law or regulation, (3) substantive (not procedural or administrative), (4) more stringent than a comparable federal requirement, (5) identified by the state in a timely manner, and (6) consistently applied throughout the state. Pursuant to USEPA guidance (1989a), where USEPA has delegated to a state the authority to implement a federal program, the state regulations replace the equivalent federal requirements as the potential ARARs.

ARARs are generally divided into chemical-, location-, and action-specific requirements. Chemical-specific ARARs are usually promulgated health- or risk-based numerical values or methods used to determine acceptable concentrations of chemicals that may be found in, or discharged to, the environment. Location-specific ARARs restrict actions or contaminant concentrations in certain environmentally sensitive areas. Action-specific ARARs are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes.

An on-site action need not comply with administrative parts of requirements identified as ARARs. According to USEPA guidance (1988a), administrative requirements are mechanisms that facilitate the implementation of the related substantive requirements of a statute or regulation (e.g., approval of or consultation with administrative bodies, documentation, permit issuance, reporting, record keeping, and enforcement).

The NCP at 40 CFR 300.400(e)(1) exempts on-site actions from having to obtain federal, state, or local permits and defines "on-site" as meaning "the aerial extent of contamination and all suitable areas in very close proximity to the contamination necessary for the implementation of the response action." However, on-site actions must still be in compliance with any substantive permit requirements. Off-site actions must not only comply with requirements that are legally applicable, but they must comply with both the substantive and the administrative parts of those requirements. Permits, if required, must be obtained for all remedial activities conducted off site (40 CFR 300.400[e][2]). Statutory waivers of ARARs (40 CFR 300.430[f][1][ii][C]) may not be used for off-site actions.

The USEPA has noted in its CERCLA guidance that if attainment of a numerical value that is a potential chemical-specific ARAR is impossible because the background level of the chemical subject to CERCLA authority is higher than that of the potential ARAR, the numeric criterion would not be considered an ARAR (USEPA, 1991).

ARARs include only federal or more stringent state environmental laws and regulations and do not include occupational safety regulations. The USEPA requires compliance with the Occupational Safety and Health Administration (OSHA) standards and other worker protection requirements under Section 300.150 of the NCP, not through the ARARs process. Therefore, none of the promulgated OSHA regulations (e.g., 29 CFR 1926, 29 CFR 1910) are addressed here as ARARs.

In addition to ARARs, 40 CFR 300.400(g)(3) states that federal or state nonpromulgated advisories or guidance may be identified as to-be-considered (TBC) guidance for contaminants, conditions, and/or actions at the site. TBCs include non-promulgated criteria, advisories, guidance, and proposed standards. TBCs are not ARARs because they are neither promulgated nor enforceable. TBCs may be used to interpret ARARs and to determine preliminary remediation goals when ARARs do not exist for particular contaminants or are not sufficiently protective to develop cleanup levels. TBCs, such as guidance or policy documents, developed to implement regulations may be considered and used where necessary to ensure protectiveness. Potential TBCs evaluated are listed in **Tables 3-1, 3-2,** and **3-3** and are discussed herein.

Potential chemical-specific requirements are discussed in **Section 3.2.2**; **Table 3-1** includes a narrative listing of chemical-specific ARARs/TBCs for LHAAP-35A(58). **Table 3-2** includes a numerical listing of chemical-specific ARARs/TBCs for groundwater COCs. Potential location-specific ARARs/TBCs for the sensitive resources potentially identified at LHAAP are discussed in **Section 3.2.3** and listed in **Table 3-3**. Potential action-specific ARARs/TBCs are listed in **Table 3-4** and are grouped by component action.

3.2.2 Potential Chemical-Specific ARARs

This section identifies the chemical-specific ARARs that apply to soil and groundwater COCs at LHAAP-35A(58). These ARARs are summarized in **Tables 3-1** and **3-2**.

3.2.2.1 Chemical-Specific ARARs for Soil

Soils at Site LHAAP-35A(58) were not found to pose a risk, therefore, chemical-specific ARARs have not been identified to develop cleanup levels. Proposed remedial action alternatives (other than a "no action" alternative) developed during the FS stage may involve excavation activities that may require handling, treatment or disposal of soils. Soils which are considered a waste must meet certain chemical-specific requirements for handling and disposal, however, are triggered by a proposed action, they are addressed as action-specific ARARs in **Section 3.2.4**.

Table 3-1
Potential Chemical-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
Groundwater		
State of Texas Primary Drinking Water Standards 30 TAC 290, Subchapter F	Applicable to drinking water at the tap—relevant and appropriate for water that could potentially be used for human consumption	Must not exceed drinking water standard for water designated as a current or potential source of drinking water. See Table 3-2 for specific numeric criteria.
State of Texas Risk Reduction Standards 30 TAC 335.558 and 335.559(d)(2) as updated in the Texas Commission on Environmental Quality memorandum July 23, 1998	Applicable to industrial groundwater—relevant and appropriate for potential hypothetical future maintenance worker exposure to groundwater	If no maximum contaminant level has been promulgated, groundwater must not exceed the industrial medium-specific concentration.

Abbreviations:

ARAR applicable or relevant and appropriate requirement
TAC Texas Administrative Code
TBC to-be-considered [guidance]

Table 3-2
Chemical-Specific ARARs for Groundwater COCs

Analyte	MCL (µg/L)
Volatile Organic Chemicals (µg/L)	
1,1,2-Trichloroethane	5
1,1-Dichloroethene	7
cis-1,2-dichloroethene	70
trans-1,2-dichloroethene	100
trichloroethylene	5
tetrachloroethene	5
vinyl Chloride	2
	GW-Ind
1,1-dichloroethane (TCA daughter product)	10,000
chloroethane (TCA daughter product)	41,000

Abbreviations:

µg/L micrograms per liter
ARAR applicable or relevant and appropriate requirement
COCs chemicals of concern
GW-Ind groundwater medium-specific concentration for industrial use
MCL maximum contaminant level as established in the Safe Drinking Water Act

Table 3-3
Potential Location-Specific ARARs/TBCs

Resource/Citation	Activity or Prerequisite Status	Requirement
Protection of Wetlands Section 404 of the Clean Water Act (33 USC 1344); 40 CFR 230.10(a) and (d); Swampbuster Provision of the Food Security Act; Executive Order 11990, "Protection of Wetlands"	Actions that involve the discharge of dredged or fill material into potential wetlands or actions that have a potential adverse impact to, or take place within, potential wetlands—applicable if delineated wetlands are determined to be present at the site and will be adversely impacted by the action	No discharge of dredged or fill material into an aquatic ecosystem is permitted if there is a practicable alternative that would have less adverse impact. No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps per 40 CFR 230.70 et. seq have been taken, which will minimize potential impacts of the discharge on the aquatic ecosystem.

Abbreviations:

ARAR applicable or relevant and appropriate requirement
CFR Code of Federal Regulations
FS feasibility study
LHAAP Longhorn Army Ammunition Plant
TAC Texas Administrative Code
TBC to-be-considered (guidance)
USC United States Code

Table 3-4
Potential Action-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
Waste Generation, Management, and Storage		
Characterization of Solid Waste 40 CFR 262.11 30 TAC 335.62 30 TAC 335.504 30 TAC 335.503(a)(4)	Generation of solid waste, as defined in 30 TAC 335.1—applicable.	Must determine whether the generated solid waste is RCRA hazardous waste by using prescribed testing methods or applying generator knowledge based on information regarding material or process used. If the waste is determined to be hazardous, it must be managed in accordance with 40 CFR 262–268. After making the hazardous waste determination as required, if the waste is determined to be nonhazardous, the generator shall then classify the waste as Class 1, Class 2, or Class 3 (as defined in Section 335.505 through Section 335.507) using one or more of the methods listed in Section 335.503(a)(4) and Section 335.508 and manage the waste in accordance with the requirements of Chapter 335 of the TAC for industrial solid waste.
Characterization of Hazardous Waste 40 CFR 264.13(a)(1); 40 CFR 268.7 30 TAC 335.504(3) 30 TAC 335.509 30 TAC 335.511	Generation of a RCRA hazardous waste for treatment, storage, or disposal—applicable if hazardous waste is generated (e.g., PPE).	Must obtain a detailed chemical and physical analysis of a representative sample of the waste(s) that at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with 40 CFR 264 and 268. Must also determine whether the waste is restricted from land disposal under 40 CFR 268 et seq. by testing in accordance with prescribed methods or use of generator knowledge of waste.
Management of RCRA Hazardous Waters—Wastewater Treatment Unit Exclusion 40 CFR 264.1(g)(6) 40 CFR 270.1(c)(2) 30 TAC 335.41(d)(1)	Treatment/disposal of wastewater containing RCRA hazardous waste—applicable to management of contaminated groundwater if it is determined to contain RCRA characteristically hazardous waste.	On-site wastewater treatment units, as defined in 40 CFR 260.10, that are part of a wastewater treatment facility subject to regulation under Section 402 or Section 307(b) of the CWA are excluded from the requirements of RCRA Subtitle C (Note: USEPA has clarified that this exemption applies to all tank systems, conveyance systems, and ancillary equipment, including transfer trucks, associated with the wastewater treatment unit [53 FR 34079, September 2, 1988]).
Requirements for Temporary Storage of Hazardous Waste in Accumulation Areas 40 CFR 262.34(a) and (c)(1) 30 TAC 335.69(a) and (d)	On-site accumulation of 55 gallons or less of RCRA hazardous waste for 90 days or less at or near the point of generation—applicable if hazardous waste is generated (e.g., PPE) and stored in an accumulation area.	A generator may accumulate hazardous waste at the facility provided that • Waste is placed in containers that comply with 40 CFR 264.171 to 264.173 (Subpart I); and • Container is marked with the words "hazardous waste"; or • Container may be marked with other words that identify the contents.
Requirements for the Use and Management of Containers 40 CFR 264.171–264.173 30 TAC 335.69(e) 30 TAC 335.152(a)(7)	On-site storage/treatment of RCRA hazardous waste in containers for greater than 90 days—applicable if hazardous waste is generated (e.g., PPE) and is stored in containers.	Design and operating standards of 40 CFR 264.175(c) and 40 CFR 264.171, 264.172, and 264.173(a) and (b) must be met for the use and management of hazardous waste in containers.
Well Construction Standards—Monitoring or Injection Wells 16 TAC 76.1000	Construction of water wells—applicable to construction of new monitoring or injection wells, if needed.	Wells shall be completed in accordance with the technical requirements of Section 76.1000, as appropriate.

Table 3-4 *(continued)*
Potential Action-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
Well Construction Standards—Extraction Wells 16 TAC 76.1000(a) and (c) through (h) 16 TAC 76.1002(a) through (c) 16 TAC 76.1008(a) through (c)	Construction of water wells—applicable to construction of extraction (recovery) wells.	Wells shall be completed in accordance with the technical requirements of Section 76.1000, as appropriate. Water wells completed to produce undesirable water shall be cased to prevent the mixing of water or constituent zones. The annular space between the casing and the wall of the borehole shall be pressure grouted with cement or bentonite grout to the land surface. Bentonite grout may not be used if a water zone contains chloride water above 1500 ppm or if hydrocarbons are present. Wells producing undesirable water or constituents shall be completed in such a manner that will not allow undesirable fluids to flow onto the land surface. During installation of a water well pump, installer shall make a reasonable effort to maintain integrity of groundwater and to prevent contamination by elevating the pump column and fittings, or by other means suitable under the circumstances. Pump shall be constructed so that no unprotected openings into the interior of the pump or well casing exist.
Treatment/Disposal		
Disposal of Wastewater (e.g., contaminated groundwater, dewatering fluids, decontamination liquids) 40 CFR 268.1(c)(4)(i) 30 TAC 335.431(c)	RCRA-restricted characteristically hazardous waste intended for disposal—applicable if extracted groundwater is determined to be RCRA characteristically hazardous .	Disposal is not prohibited if such wastes are managed in a treatment system subject to regulation under Section 402 of the CWA that subsequently discharges to waters of the United States.
Closure		
Requirements for Closure of a RCRA Container Storage Area 40 CFR 264.111 40 CFR 264.178 30 TAC 335.152(a)(5) 30 TAC 335.152(a)(7)	Closure of a RCRA-permitted container storage area—applicable if hazardous waste is generated (e.g., PPE) and is stored in containers.	Must close unit in a manner that • Minimizes the need for further maintenance; • Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to ground or surface waters or to the atmosphere; and • Complies with closure requirements of 40 CFR 178. All hazardous waste and residues must be removed from containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or residues must be decontaminated or removed.
Standards for Plugging Wells that Penetrate Undesirable Water or Constituent Zones 16 TAC 76.1004(a) through (c)	Plugging and abandonment of wells—applicable to plugging and closure of monitoring and/or extraction wells.	If a well is abandoned, all removable casing shall be removed and the entire well pressure filled via a tremie pipe with cement from bottom up to the land surface. In lieu of this procedure, the well shall be pressure-filled via a tremie tube with bentonite grout of a minimum 9.1 lb/gal weight followed by a cement plug extending from land surface to a depth of not less than 2 feet. Undesirable water or constituents or the freshwater zone(s) shall be isolated with cement plugs.

Table 3-4 *(continued)*
Potential Action-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
Post-Closure Care and LUCs		
Land Use Controls (LUCs) when Hazardous Substances are Left in Place 30 TAC 335.565 30 TAC 335.566	Hazardous substances left in place on contaminated property—relevant and appropriate.	Where engineering or LUCs measures are required to protect human health and the environment, they must comply with the identified post-closure care requirements and deed recordation of the facility in accordance with Section 335.566. Must record in the deed records of the county or counties in which the activities take place the information specified in Sections 335.566(b) through (e): • Description of post-closure measures required, • Description of any land use or legal controls placed on the future use of the property, • Metes and bounds description of the tract of land, and • Statement that pertinent information and documents are available for inspection.

Abbreviations:

ARAR	*applicable or relevant and appropriate requirement*
CFR	*Code of Federal Regulations*
CWA	*Clean Water Act of 1972*
USEPA	*U.S. Environmental Protection Agency*
FR	*Federal Register*
FS	*feasibility study*
lb/gal	*pound per gallon*
LHAAP	*Longhorn Army Ammunition Plant*
LUCs	*land use controls*
%	*percent*
PPE	*personal protective equipment*
ppm	*part per million*
RCRA	*Resource Conservation and Recovery Act of 1976*
TAC	*Texas Administrative Code*

3.2.2.2 Chemical-Specific ARARs for Air

Contaminants emitted into the air during remediation must meet certain chemical-specific requirements for fugitive particulate matter and opacity. Since emissions would be a result of a proposed action, they are addressed as action-specific ARARs in **Section 4.2.4**. However, it is unlikely the proposed actions in this FS would cause emissions that would impact air.

3.2.2.3 Chemical-Specific ARARs for Surface Water

Section 121(d)(2) of CERCLA states that every remedial action shall require a level of control which at least attains surface water quality criteria established under Sections 304 or 303 of the Clean Water Act of 1972 (CWA). Therefore, surface water quality criteria are ARARs if there is a remedial action and measures will be implemented during construction to prevent off-site migration of contaminants to surface waters.

3.2.2.4 Chemical-Specific ARARs for Groundwater

The human health risk assessment (Jacobs, 2003) indicated that the contaminated groundwater at LHAAP-50 presented an unacceptable hazard to a hypothetical future maintenance worker. For the groundwater COCs at LHAAP-50, Safe Drinking Water Act MCLs are available and are considered relevant and appropriate because LHAAP-50 is an NPL site. Thus MCLs are proposed as the cleanup levels in this FS for the groundwater at LHAAP-50. If MCLs are not available for certain COCs, MSCs provided under Texas RRR (Title 30 Texas Administrative Code [TAC] 335.551 through 335.569) will be used.

3.2.3 Potential Location-Specific ARARs

This section identifies the location-specific ARARs that may apply to LHAAP-35A(58). These ARARs are summarized in **Table 3-3**.

3.2.3.1 Sensitive Habitats

A sensitive habitat is defined within the CERCLA hazard ranking system (40 CFR 300, **Appendix A**) as one that contains an important biological resource or a particularly fragile resource. Wetlands are specifically included as a type of sensitive habitat. Other sensitive habitats include plant communities of unusual or limited distribution and important seasonal-use areas for wildlife (e.g., migration routes, breeding areas, or crucial winter habitat).

Although there are low-lying wetland areas associated with the drainage ditch and Goose Prairie Creek at LHAAP-35A(58), no formal wetlands survey has been conducted at the LHAAP specifically (USACE, 1992; Jacobs, 2001). Nearby Caddo Lake, however, into which LHAAP surface waters flow is part of the Big Cypress Bayou, which is considered a wetland of international significance. Adverse impacts to any identified wetlands located at LHAAP or to the Caddo Lake/Big Cypress Bayou wetland system from remedial actions at LHAAP-35A(58) must be avoided to the extent practicable. If identified wetlands will be impacted and wetland

mitigation is required, Title 12, Chapter 221 (*Wetlands Mitigation*) of the Texas Code, as well as the federal standards for wetland mitigation, may provide location-specific ARARs. These requirements will be evaluated during the final ROD stage as further site-specific data are collected and the preferred alternative is proposed and evaluated.

The Fish and Wildlife Coordination Act (16 USC 661 et seq.) requires that the effects of water-related projects that modify, divert, or control waters, including drainage activities, be considered with a view to preventing loss of and damage to such resources. This act may provide ARARs if groundwater diversion or treatment activities will impact groundwater-to-surface-water drainage patterns such that fish or wildlife may be adversely affected.

3.2.4 Potential Action-Specific ARARs

Action-specific ARARs include operation, performance and design requirements or limitations based on the waste types, media, and remedial activities. This section provides a preliminary identification and evaluation of potential federal and state of Texas action-specific ARARs for the proposed remediation of LHAAP-35A(58).

Pursuant to USEPA guidance, there are no action-specific ARARs for the required no action alternative (USEPA, 1991). The action-specific ARARs for the activities common to the remedial action to be conducted at LHAAP-35A(58) are discussed in **Section 3.2.4.1** below. All action-specific ARARs are listed in **Table 3-5** and are grouped by component action.

3.2.4.1 ARARS for Activities Associated with Action Alternatives

The proposed remedial action alternatives at LHAAP-35A(58) will involve several of the following activities: waste generation, characterization, management, storage, and disposal activities; land use controls (LUCs), and long-term monitoring (LTM). Action-specific ARARs are discussed here for the activities common to the remedial activities to be proposed for LHAAP-35A(58).

3.2.4.1.2 Waste Generation, Characterization, Management, Storage, and Disposal Activities

The processes of monitoring, intercepting, or treating contaminated groundwater may generate a variety of primary and secondary waste streams (e.g., soil, personal protective equipment, and dewatering and decontamination fluids). These waste streams are expected to be non-hazardous waste. All solid waste (defined as any solid, liquid, semisolid, or contained gaseous material intended for discard [40 CFR 261.2]) generated during remedial activities must be appropriately characterized to determine whether it contains Resource Conservation and Recovery Act (RCRA) hazardous waste (40 CFR 262.11; 30 TAC 335.62; 30 TAC 335.503[a][4]; 30 TAC 335.504). All wastes must be managed, stored, treated (if necessary), and disposed of in accordance with the ARARs for waste management listed in **Table 3-4** for the particular type of waste stream or contaminants in the waste.

Excavated environmental media generated during the installation of wells would be sent off site for disposal or, in the case of non-hazardous trenching or well construction soil, redeposited within the area of concern (AOC). The USEPA defines "on-site" as the lateral extent of contamination and all suitable areas in close proximity to the contamination necessary for the implementation of the CERCLA response action and notes that such contamination may contain varying types and concentrations of hazardous substances (53 Federal Register [FR] 51444; 55 FR 8758). ARARs for the management of such media at the site of generation (i.e., within the AOC) are listed in **Table 3-4**.

The USEPA has stated that excavation and redeposition of contaminated soil within an AOC does not constitute "generation"; therefore, the requirements of 40 CFR 262.11 and 268.7 to characterize generated wastes are not applicable (Office of Solid Waste and Emergency Response Directive 9441.1992[16], June 11, 1992). Consolidation of waste between AOCs for treatment or disposal, however, or excavation and treatment with subsequent disposal in the same AOC or off-site disposal constitute "placement." In these situations, RCRA Subtitle C requirements for the generation, handling, treatment, and disposal of such wastes are applicable if the waste/media is determined to contain RCRA hazardous waste (55 FR 8758) (USEPA, 1989b).

3.2.4.1.3 LUCs and Long Term Monitoring

Some combination of restrictive covenants, administrative controls, physical barriers, physical surveillance or other controls, in combination with LTM of groundwater, would be necessary under all remedial alternatives to restrict access to contamination and protect human health and the environment because none of the actions will completely remove all of the groundwater contamination in the short term to levels that would allow industrial use of the groundwater in the near term.

When engineering or LUC measures are required to protect human health and the environment, 30 TAC 335.565 requires compliance with the identified post-closure care requirements and deed recordation of the facility in accordance with Sections 335.566(b) through (e). The deed recordation must include a description of post-closure measures required and any LUCs placed on the future use of the property, as well as a metes and bounds description of the tract of land. Since there is no deed for federal land, when the Army transfers the land to the USFWS, a recordation of the LUC, as required by the State of Texas, will accompany the transfer documentation and be recorded in the County Courthouse. If the land is transferred from a federal entity to a non-federal entity, it is transferred by deed. Some or all of these requirements may be ARARs for this remedial action; the specific combination of controls negotiated for this action would be listed in a signed ROD.

3.2.4.1.4 Well Construction

All of the proposed alternatives, other than the no action alternative, may involve the placement, use, or eventual plugging and abandonment of some type of groundwater monitoring, injection, and/or extraction wells, either for in situ treatment or extraction of the contaminated groundwater or for LTM of the groundwater. Available standards for well construction and plugging/abandonment would provide ARARs for such actions.

Texas has promulgated technical requirements in Chapter 76 of Title 16 of the TAC applicable to construction, operation, and plugging/abandonment of water wells. In particular, 16 TAC 76.1000 (*Locations and Standards of Completion for Wells*), 16 TAC 76.1002 (*Standards for Wells Producing Undesirable Water or Constituents*) (LHAAP-35A(58) contaminated groundwater could be considered "undesirable water" defined pursuant to Section 76.10[36] as "water that is injurious to human health and the environment or water that can cause pollution to land or other waters"), 16 TAC 76.1004 (*Standards for Capping and Plugging of Wells and Plugging Wells that Penetrate Undesirable Water or Constituent Zones*), and 16 TAC 76.1008 (*Pump Installation*) may provide ARARs for the placement, construction, and eventual plugging/abandonment of groundwater injection or extraction wells or the placement and long-term operation of groundwater monitoring wells for proposed groundwater remedial strategies.

3.2.4.1.5 Water Treatment

Contaminated groundwater and wastewaters collected during well drilling or decontamination activities could be transported to the on-site groundwater treatment facility constructed as a component of the previous interim remedial action at other LHAAP sites (LHAAP-18/24) and would subsequently be discharged in compliance with the effluent limits listed in the ROD. Such waters would be characterized, as required, before transport and managed accordingly in compliance with requirements for the type of waste contaminating the water.

The USEPA has stated; that any waters that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise restricted from land disposal, are not prohibited if such waters are managed in a treatment system that subsequently discharges to waters of the United States pursuant to Section 402 of the CWA (40 CFR 268.1[c][4][I]). To assure compliance with the groundwater treatment plant's discharge limits, the incoming water must meet the waste acceptance criteria for the facility. On-site wastewater treatment units (as defined in 40 CFR 260.10) that are part of a wastewater treatment facility that is subject to regulation under Section 402 or Section 307(b) of the CWA are not subject to RCRA Subtitle C hazardous waste management standards (40 CFR 270.1[c][2][v]; 40 CFR 264.1[g][6]; 30 TAC 335.42[d][1]). The USEPA has clarified that this exemption applies to all tanks, conveyance systems, and ancillary

equipment, including piping and transfer trucks, associated with the wastewater treatment unit (53 FR 34079, September 2, 1988).

3.3 Preliminary Remediation Goals

The RAOs listed in **Section 3.1** allow for a range of response actions. For a response action that leaves contamination in place, LUCs would be needed in combination with the response action in order to prevent exposure. For a response action that removes the contamination, preliminary remediation goals or cleanup levels would be needed to determine when sufficient contamination has been removed. Cleanup levels are the concentrations for individual chemicals in the medium of concern above which remediation or control measures would be required. The cleanup levels for groundwater at LHAAP-35A(58) are determined with consideration of the risk to human health and the ARARs identified for the site as discussed in **Section 3.2.2**.

The proposed cleanup levels for the VOC contaminated groundwater are shown on **Table 3-5**. The list of contaminants includes daughter products of the identified COCs.

Table 3-5
Cleanup Levels for LHAAP-35A(58) Groundwater COCs

Groundwater Chemical of Concern	Maximum Concentration (µg/L)	MCL (µg/L)
1,1-Dichloroethene	1,341	7
Tetrachloroethene	5,400	5
Trichloroethene	230	5
1,1,2-Trichloroethane	7.1	5
Vinyl chloride	10	2
cis-1,2-dichloroethene	11	70
trans-1,2-dichloroethene	0.73J	100
		GW-Ind
1,1-dichloroethane (TCA daughter product)	87	10,000
Chloroethane (TCA daughter product)	40	41,000

Abbreviations:
COC chemical of concern
GW-Ind groundwater medium-specific concentration for industrial use
MCL maximum contaminant level
µg/L micrograms per liter

4.0 Identification and Screening of Technologies and Process Options

The primary objective of identifying, screening, and evaluating potentially applicable technology types and process options for the LHAAP-35A(58) FS is to identify an appropriate range of remedial technologies and process options to be developed into remediation alternatives. This screening process consists of a series of analytical steps that include the following:

- Identify volumes or areas of media of concern, and COCs **(Section 4.1)**
- Identify general response actions (GRAs) **(Section 4.2)**
- Identify and screen remedial technologies and process options **(Section 4.3)**
- Evaluate and select representative process options **(Section 4.4)**

These steps are outlined in the USEPA RI/FS guidance (USEPA, 1988b) and the NCP.

4.1 Contaminants and Media of Concern

Section 1.0 presents the site conditions at LHAAP-35A(58). Based on available sampling data, groundwater at LHAAP-35A(58) has been identified as the medium of concern because it poses an unacceptable carcinogenic risk and non-carcinogenic hazard to a hypothetical future maintenance worker, primarily due to the presence of PCE, TCE, 1,1-DCE, 1,1,2-TCA and VC. These contaminants are identified as COCs because they pose unacceptable cancer-risk/hazards and exceed their respective MCLs in groundwater. The most recent 2003, 2004 and 2007 concentrations are shown on **Figure 2-1**. Three wells (LHSMW04, LHSMW05, and LHSMW07), screened within the shallow groundwater zone, had detections of some COCs above their respective MCL in 2004 and/or 2007.

TCE is the COC detected most consistently during all the sampling events for which the MCL is 5 µg/L. Therefore, a total COC concentration limit of 5 µg/L was selected as a conservative basis for determining the horizontal and vertical extent of groundwater requiring remedial action at LHAAP-35A(58). As discussed in **Section 1.2.1**, the saturated sand zone varies from 3 to 5 feet thick (Jacobs, 2002), and a 5-foot vertical extent was selected for the plume size estimation. Two areas of high contamination are present (one surrounding LHSMW07 and one around LHSMW05). It is estimated that the extent of contamination around these two wells is approximately 200,000 square feet. Equation 4-1 estimates the total volume of contaminated groundwater at LHAAP-35A(58).

Lateral extent of groundwater contamination (450,000 sq ft) × vertical extent of groundwater contamination (5 ft) × total porosity (0.3) × 7.48 gallons per cubic foot = 5,049,000 gallons **Equation 4-1**

Therefore, a conservative estimate of the volume of groundwater requiring remedial action equals approximately 2.24 million gallons.

4.2 General Response Actions

GRAs are large groups of remedial actions that typically satisfy the RAO. The GRAs include no action, LUCs, monitored natural attenuation (MNA), containment, removal, treatment, and disposal. These GRAs may be combined to form remediation alternatives that meet the RAO. The following are descriptions of the GRAs:

- **No Action** – The no action GRA is retained throughout the FS process as required by the NCP. The no action alternative provides a comparative baseline against which other alternatives can be evaluated. Under this alternative no remedial action will be taken. The site is considered to be left "as is," with no LUCs, containment, removal, treatment, or other mitigating actions.
- **Monitored Natural Attenuation** – MNA is defined in the NCP as "biodegradation, dispersion, dilution, and adsorption" of contaminants that allow preliminary remediation goals to be reached in a reasonable time frame. MNA is usually combined with other GRAs, such as LUCs or containment.
- **LUCs** – LUCs include access controls or deed restrictions that would reduce or eliminate access to the site. The volume, mobility, and toxicity of the contaminants are not reduced through the application of institutional actions. LUCs are generally combined with other GRAs to meet the RAO.
- **Containment** – Another method of reducing risk to receptors is through containment, which reduces access to the contaminated medium or the migration potential of the contaminated medium. The contaminated medium must be isolated from the primary transport mechanisms such as groundwater flow. This isolation may be accomplished through the installation of subsurface barriers.
- **Removal or Groundwater Extraction** – Removal technologies extract the contaminated medium from its present location and move it to an alternative location for treatment and/or disposal. These removal technologies can be selected to reduce exposure to workers and can be amenable to treatment processes.
- **In Situ Treatment** – In situ treatment technologies or process options reduce the toxicity, mobility, or volume of the contaminated medium. Chemicals are added, physical properties of the medium are changed, or biological activity of the medium is modified without removal.
- **Ex Situ Treatment** – Ex situ treatment process options involve the reduction of toxicity, mobility, or volume of contaminated medium. Ex situ treatment processes are typically coupled with removal and disposal process options.

- **Disposal** – Disposal process options involve the discharge of the contaminated medium. Disposal process options are typically coupled with removal and treatment process options.
- **Long-Term Media Monitoring** – Long-term media monitoring process options involve the monitoring of media after remediation to determine the effect the action has had and to monitor levels of contamination.

4.3 Screening of Process Options

This section presents the approach to technology and process option screening. In the technology screening process, GRAs are identified that, by themselves or in combination with other GRAs, could be implemented to meet the RAO established for LHAAP-35A(58). Technologies associated with each response action and process options associated with each technology are identified. Process options that are not technically feasible for the site are eliminated (screened out) from further consideration. If all of the process options under a given technology are screened out, the entire technology is eliminated.

The technologies and process options are initially screened for technical applicability to identify those to be carried forward for further evaluation. The screening process reduces the number of possible process options for a given technology to a number that is appropriate for consideration at LHAAP-35A(58). The following are the two general criteria used to determine if a technology or process option listed in **Section 4.2** should be retained for further evaluation:

- Applicability to the type and combination of contaminants
- Applicability to the site's physical conditions

The only process option not considered for LHAAP-35A(58) from this screening is containment since there is no distinct source area and there are several less costly and more viable options. Thus, the screened process options retained for further evaluation are:

- No action
- Monitored natural attenuation
- LUCs
- Removal
- In Situ treatment
- Ex Situ treatment
- Disposal
- Long term media monitoring

4.4 Evaluation and Selection of Representative Process Options

In this section, each of the process options retained from the initial screening in **Section 4.3** are further evaluated and screened, further reducing the list of process options that are developed into alternatives in **Section 5.0**. Process options are evaluated using three criteria: effectiveness, implementability, and cost. Based on these criteria, representative process options are selected for each technology. The representative process options provide a basis for developing alternatives in the FS.

The general descriptions of the process options retained from the screening, along with the relevant aspects of effectiveness, implementability, and cost, are discussed. The effectiveness evaluation considers the following: (1) the potential effectiveness of process options in handling the estimated areas or volumes of the medium; (2) the contribution toward meeting any of the goals identified in the RAO; (3) the potential impacts to humans and the environment during the construction and implementation phase; and (4) how proven and reliable the process is with respect to the contaminants and conditions at the site.

The implementability evaluation considers both the technical and administrative feasibility of implementing a process option. Technical implementability concentrates on the difficulty of implementing the option, including the number of treatability studies required, the extent of innovative design required, and the extent of site preparation needed. Unusual equipment or unusual conditions for standard equipment may decrease the ease of implementation. The institutional aspects of implementability such as permitting and availability of services are also considered.

The cost evaluation focuses on the relative capital and operation and maintenance (O&M) costs required. A ranking of high, medium, or low relative to other similar process options is given, each ranking considering both capital and O&M costs. Based on this evaluation, one or more representative process options are selected for each response action to be carried forward into the development of alternatives. The selection of representative process options for the development of alternatives does not eliminate the remaining process options from future consideration. Those process options not carried forward may be reconsidered during the development of the Proposed Plan, ROD, or remedial design.

4.4.1 Groundwater

4.4.1.1 No Action

The no action GRA does not provide for any groundwater remedial activities. No monitoring of the groundwater conditions occurs under this GRA. This GRA is retained as a baseline with which other remediation alternatives are prepared.

- **Effectiveness** – A lack of access controls or remediation of the groundwater from LHAAP-35A(58) could result in a future unacceptable risk to humans if the groundwater is ingested.
- **Implementability** – No implementation is required.
- **Cost** – None.

4.4.1.2 Monitored Natural Attenuation

Natural processes such as dilution, volatilization, biodegradation, adsorption, and chemical reactions with subsurface materials are monitored to confirm their progress in reducing contaminant concentrations to acceptable levels over time. Natural attenuation may already be occurring at LHAAP as discussed in **Appendix A**. The types of contaminants found at LHAAP-35A(58) (chlorinated compounds) are amenable to this technology.

- **Effectiveness** – MNA is considered under CERCLA on a case-by-case basis. USEPA guidance has been developed to aid in the selection of this process option for VOCs. MNA has been selected for a number of CERCLA sites at LHAAP. It is effective when short term releases have been mitigated and a determination is made that natural attenuation is occurring and that further off-site releases are not occurring at unacceptable levels. Regular monitoring must be conducted throughout the process to confirm that attenuation is occurring in accordance with cleanup objectives. The evaluation of MNA parameters indicate that natural attenuation is occurring at LHAAP-35A(58) (see **Appendix A**). By applying a calculated degradation rate of 0.0000898 day^{-1} from LHSMW07 data, the estimated time for 1,1-DCE to reach the MCL in the shallow zone is approximately 135 years. These estimated cleanup times are based on limited data, and actual cleanup time could be higher or lower than these estimates.
- **Implementability** – Significant groundwater sampling and analyses must be performed to confirm that conditions are suitable for natural attenuation and to establish a monitoring network. It must also be confirmed that additional source releases and unacceptable off-site releases are not occurring.
- **Cost –** Low to moderate.

Summary of Monitored Natural Attenuation Process Option

Monitored Natural Attenuation is carried forward as a representative process option. This process option could be combined with other process options to meet the RAO.

4.4.1.3 LUCs

LUCs include covenants/deed restrictions, and physical surveillance. This GRA controls risk by removing the receptor from the source of the risk and also provides information needed to assess future conditions at the site. All LUC process options are applicable to the groundwater at

LHAAP-35A(58). Notification of industrial/recreational use will accompany all transfer documents and will be recorded in the Harrison County Courthouse. Five-Year Reviews will be performed to document that the land use remains consistent with the industrial/recreational exposure scenario evaluated in the risk assessment.

Access Controls

Access controls would be implemented to regulate access to the groundwater. The process options for access controls include covenants/deed restrictions, administrative controls, and physical mechanisms.

Covenants/Deed Restrictions. Restrictions to the groundwater can be accomplished through modifications to the property deed or agreements about land use. Legal restrictions can be placed on the installation of groundwater extraction wells not only to prevent access to the contamination but also to minimize the possibility of moving the contamination toward a future user. A recordation of the LUCs (including restriction of groundwater use) will accompany transfer documentation from the Army to USFWS. Deed restrictions would be needed only if the army releases the property to a non-federal entity. These restrictions are only effective as long as the property owners and local authorities enforce them. The Army is ultimately responsible for the enforcement of the LUCs.

- **Effectiveness** – Covenants/deed restrictions are effective, if enforced, in controlling human activities such as potable well construction. These actions can limit or prevent exposure to contaminants remaining on the site after remediation and can be implemented on a temporary basis. The 5-year reviews will ensure that the covenants/deed restrictions are enforced and remain effective.
- **Implementability** – These options can be readily implemented.
- **Cost** – Low.

Administrative Controls. Administrative controls consist of the use of training or procedures to limit access to the site and reduce the risk to human health posed by site contamination at LHAAP-35A(58). These measures may include internal notices and site inspections to serve as a reminder of the existence of LUCs, a site approval process to review land-use changes at LHAAP-35A(58) to ensure the LUCs are followed, training of site personnel regarding the existence and care of the LUCs, and regular inspection and maintenance of the LUCs. These are controls the Army can use while they maintain control of the site.

- **Effectiveness** – Administrative controls are effective in controlling human intrusion into contaminated areas during and after remediation. The training required for access to the site limits potential exposure to the contaminated

groundwater. Administrative controls can be used in conjunction with physical mechanisms and deed restrictions. This option is effective only while LUCs are maintained.

- **Implementability –** Training and procedures are readily available and implemented. They may need to be modified for LHAAP.
- **Cost** – Low.

Surveillance

Physical surveillance is used to assess the performance of remedial actions and verify compliance with the established RAO.

Physical Surveillance. Visual and physical inspections of engineered remedial action components can detect physical changes (e.g., iron deposition and pipeline cracks) that may ultimately lead to the failure or unsatisfactory performance of that component. Repairs and/or revised maintenance activities can be implemented as a result of these inspections.

- **Effectiveness** – Physical surveillance is effective in determining the continued integrity of engineered systems and the need for repairs and/or replacement. Physical surveillance needs to be used with contaminant monitoring to assess the impact of integrity failure.
- **Implementability –** Physical surveillance is easily implemented and requires experienced, but readily available personnel to make regular visits to the site for inspections.
- **Cost** – Low.

Summary of LUCs Process Options

Covenants/deed restrictions, administrative controls, and physical surveillance are carried forward as representative process options for the LUCs GRA. The covenants/deed restrictions would only be used if the Army releases the land to a non-federal entity. All of these process options could be combined with other process options to meet the RAO.

4.4.1.4 Groundwater Extraction

The groundwater extraction GRA consists of technologies that remove or extract groundwater to either relocate it or prepare it for treatment. The removal technology considered is groundwater collection/removal.

Groundwater Collection/Removal

Groundwater collection and removal is accomplished by either extraction wells, interception trenches, or horizontal wells.

Extraction Wells. These are vertically installed wells designed to collect and extract clean or contaminated groundwater to contain a plume or to reduce contaminant mass in the plume. Extraction wells have been used with mixed results at LHAAP.

- **Effectiveness** – Extraction wells are considered the most effective groundwater removal technology applicable over a wide range of site conditions. However, proper locations need to be selected to provide for effective extraction. The low yield from the upper sand lenses (e.g., near LHSMW05) at LHAAP-35A(58) limits the effectiveness of this process option.
- **Implementability** – This process is the single most commonly used method to remove groundwater in a very wide range of conditions. Some site predesign characterization may be needed to site new wells. Extraction wells are easy to install at depths required to intercept all depths of groundwater.
- **Cost** – Low to moderate.

Interception Trenches. An interception trench is a high permeability subsurface trench that collects contaminated groundwater. It is constructed and operates very much like a vertical French drain with the exception that the collected groundwater is actively pumped from the trench for ex situ treatment. The trench can be installed across the entire width of a shallow plume to more effectively capture contaminated groundwater.

- **Effectiveness** – Interception trenches are generally very effective at collecting groundwater. The trench functions like a continuous line of extraction wells. The soils at LHAAP-35A(58) consist of clay and silty clay with discontinuous sand lenses, which will limit the effective use of the trenches, since several trenches may need to be installed to effectively remove the TCE from the various sand lenses.
- **Implementability** – Interception trenches are relatively easy to install with conventional construction equipment in the shallow groundwater zone. Further, properly locating the interception trenches will be difficult due to the variability of groundwater flow direction in the area. The process requires long-term maintenance to ensure that the permeable media and collection piping do not become clogged.
- **Cost** – Moderate.

Horizontal Wells. Horizontal wells are similar to vertical wells with the exception that the horizontal wells are installed horizontally and are typically screened their entire length. They function like drains and offer a water removal capability that exceeds that of a similarly sized vertical well. Horizontal wells could be installed under areas with the highest contaminant concentrations to remove contaminated groundwater or collect migrating leachate.

- **Effectiveness** – Horizontal wells are very effective at removing large volumes of contaminated groundwater in applications where vertical wells cannot be used. Wells up to 12 inches in diameter and 10 to 500 feet deep can be installed over 1,000-foot lengths. A single horizontal well is generally equivalent to five vertical wells in sandy soil and ten vertical wells in clayey soil.
- **Implementability** – Although this process is commonly used in the oil industry, it is still in the demonstration phase in environmental restoration. It would likely be used underneath a the contaminated area to collect contaminated groundwater or leachate.
- **Cost** – High.

Summary of Removal Process Options

Horizontal wells are not retained as a representative groundwater removal process option because of their limited use in environmental restoration actions and because of their high costs. The placement of interception trenches would be difficult due to variability in the local groundwater conditions and nature of the isolated shallow lenses which contain groundwater. The use of vertical wells is limited by the low permeability of the formation and a potential discontinuous nature of the permeable lenses containing groundwater Because of the hydrogeologic conditions, the extraction well process option will not be retained for remedial alternative development in this FS.

4.4.1.5 In Situ Treatment

In situ treatment technologies provide varying levels of groundwater treatment without prior removal of the groundwater, and reduce the mobility or toxicity of the contaminants in groundwater. The in situ treatment technologies under consideration are physical/chemical and biological treatments.

4.4.1.5.1 Physical/Chemical Treatment

Air sparging/soil vapor extraction, in situ oxidation, and permeable reactive barriers are process options considered potentially applicable to the groundwater at LHAAP-35A(58).

Air Sparging/Soil Vapor Extraction. This process option is designed to remove VOCs from the groundwater by volatilizing these contaminants through the introduction of air. Air is introduced into the groundwater, assisting in the volatilization of those organics in solution in the groundwater. Extraction wells are installed into the vadose zone and a vacuum is drawn on these wells. The extraction system draws off the organic-laden air that was bubbled through the groundwater in addition to any vapors that exist in the soil pore spaces. The volatilized contaminants can then be drawn from these extraction wells and treated. This process can be

used in those areas where VOCs exist in the groundwater and the vadose zone above this groundwater is relatively permeable.

- **Effectiveness** – This process is very effective on highly volatile contaminants (e.g., 1, 1-DCE, TCE, and PCE) and highly permeable formations. It is incompatible with certain soil types, and high humid content inhibits volatilization of contaminants. High clay content soil, however, may limit the effectiveness of air sparging by retarding the movement of air and vapors through the soil column. The effectiveness can also be limited by any presence of discontinuous high-permeability zones, which can result in preferential air flow paths.
- **Implementability** – Vapor extraction and air sparge equipment is readily available, and commercial vendors are available to design and operate these systems. This process has been used at many hazardous waste sites in relatively homogeneous media. Organics that are removed from the vapor extraction wells require ex situ treatment. Site characterization and modeling are required to determine the proper location of the injection and extraction wells and extraction rates.
- **Cost** – Low to moderate.

In Situ Oxidation. Contaminated media are treated through the addition of oxidants, such as potassium permanganate, hydrogen peroxide, or ozone, which convert the contaminants to a less mobile or toxic form. This process option is applicable to VOCs such as 1,1-DCE, TCE, and PCE.

- **Effectiveness** – In situ oxidation is effective for treatment of VOCs (particularly TCE) in a relatively homogeneous and porous medium. This technology is typically used as a source-area treatment and is less effective for treatment of large areas of low contaminant concentrations (e.g., dissolved plumes) similar to the groundwater plume identified at LHAAP-35A(58). The effectiveness of the treatment usually depends on the success of the delivery method. The long-term effectiveness is uncertain as a change in chemistry could mobilize or change the chemical behavior of the previously oxidized or reduced constituents.
- **Implementability** – This process option may be difficult to implement. Special handling considerations are often required due to the reactive and corrosive characteristics of the oxidants. Furthermore, in situ chemical oxidation can produce particulates and cause a loss of permeability in the subsurface. Other potential side effects from this treatment technique include gas evolution, generation of fugitive VOC emissions, potentially toxic byproducts, and release of heat generated during the oxidation process. Because oxidants are often highly reactive in the subsurface, they may not migrate long distances from the delivery point. Consequently, several, closely-

spaced injection points would be required to adequately disperse the oxidant. A pilot test would also be required to determine the site-specific chemical transport properties of the aquifer.

- **Cost** – Low to moderate.

Permeable Reactive Barriers. Permeable reactive barriers can be a physical/chemical or biological treatment option. A reactive barrier or gate is a permeable wall containing reactive media that is constructed across the path of a contaminant plume. As contaminated water passes through the wall, the contaminants are removed or degraded, allowing uncontaminated water to emerge on the downgradient side. Reactive barriers are usually installed through adaptation of conventional construction methods for impermeable barriers such as open trenches, polymer slurry trenches, and overlapping caissons. Reactive barriers may be constructed from a variety of materials including zero-valence metals (ZVM), granulated activated carbon (GAC), and biological material. These materials treat contaminants through a combination of mechanisms, including adsorption, chemical reduction, and biodegradation.

ZVM works by chemically reducing contaminants, thus either causing their degradation or limiting their mobility. A variety of metals can be used as reducing agents such as silver, gold, palladium, copper, zinc, aluminum, manganese, and iron. In situ reactive gates require high volumes of ZVM, making the application of precious metals such as silver, gold, and palladium impractical. The most practical metal for this technology is iron, because of its relative abundance, low cost, and low toxicity. However, more expensive yet more effective forms of iron (palletized iron) may be necessary, depending on the contaminant.

GAC is the most widely used adsorbent and filter medium because of its effectiveness on a variety of contaminants. GAC is chemically stable and will not produce secondary contaminants. The surface area of the carbon and the pH of the solution flowing through the medium determine the rate and effectiveness of GAC in adsorbing contaminants. In addition, different contaminants are adsorbed according to different ionic natures and kinetics.

The biological system consists of trenches filled with highly permeable reactive material along with carbon sources from organic materials such as compost, vegetable oil, and cottonseed.

- **Effectiveness** – The effectiveness of this process depends greatly on the contaminants, the reactive media, site hydrology, and site geochemistry. Reactive media clogging and exhaustion causes the need for periodic replacement. The gates are generally limited to shallower applications because of the difficulties in installing and monitoring the media at depth. There are concerns over the longevity of the reactive media given uncertain and changing chemical and physical conditions. There is evidence from trenches installed at Oak Ridge National Laboratory that the chemistry of VOC degradation is

proven; however, the hydraulics can become the limiting factor in the effectiveness of these trenches. For instance, clay smearing resulting from sheet pile removal is thought to change the hydraulics of a trench at the Denver Federal Center (McMahon, et al., 1999).

- **Implementability** – Permeable reactive barriers require adequate site and contaminant characterization and monitoring to determine effectiveness. This process requires treatability testing before full-scale implementation to determine potential physical and chemical interactions with surrounding materials, location within the aquifer, and criteria for replacement. It is likely that two separate barriers with two carbon sources may be required at LHAAP-35A(58). Additional treatability studies, characterization, and maintenance efforts would also be required. Long-term maintenance requirements may be significant.

- **Cost** – Low to moderate.

4.4.1.5.2 Biological Treatment

Biological treatment process options use living organisms such as bacteria or fungi to detoxify or immobilize contaminants in waste. These process options are applied primarily to convert organic contaminants into nontoxic products.

In Situ Bioremediation. This general process option covers a wide range of individual biological process options that rely on microbial transformation of organic contaminants under aerobic or anaerobic conditions into benign forms to obtain energy or carbon. Excessively high concentrations of contaminants could be toxic to microbes. Many organic contaminants, including the COCs at LHAAP-35A(58), can be biodegraded under anaerobic (without oxygen) conditions. The activity of microorganisms is greatly affected by pH, redox potential, temperature, oxygen content, and most importantly, nutrient availability. These conditions can be manipulated to achieve optimal conditions for microbial activity, accelerating the biodegradation of the target contaminants. The conditions are manipulated through the addition of nutrients or electron acceptors or donors.

- **Effectiveness** – In situ biodegradation is effective in either low oxygen conditions or high oxygen and methane conditions in a permeable media that enhances the continuing delivery of nutrients to the bacteria. The primary challenge for in situ biological treatment is to effectively introduce the bacteria and nutrients to the affected areas and ensure adequate mixing and contact. Pilot-scale testing at other sites has demonstrated that some enhancements will allow indigenous bacteria to degrade chlorinated solvents such as those detected at LHAAP-35A(58), and in situ bioremediation is applicable to the groundwater at LHAAP-35A(58). .

- **Implementability** – Enhancing the biological activity may be difficult in some of the low permeability soil at LHAAP-35A(58) because of complications associated with the delivery of nutrients and oxygen. Equipment and expertise are readily available, but significant treatability testing would be required.
- **Cost** – Low to moderate.

Phytoremediation. Phytoremediation is an emerging technology that uses plants to control contaminant releases from soil or water. It is only applicable to contamination present in the shallow zone, and it may be effective for treatment of VOCs. Phytoremediation processes can be classified based on the contaminant fate: degradation, extraction, containment, or a combination of these. Phytoremediation mechanisms include extraction of contaminants from groundwater; concentration of contaminants in plant tissue; degradation of contaminants by biotic or abiotic processes; volatilization or transpiration of volatile contaminants from plants to the air; immobilization of contaminants in the root zone; hydraulic control of contaminated groundwater (plume control); and control of runoff, erosion, and infiltration by vegetative covers. Poplar and cottonwood trees have been successfully used to remove and degrade TCE from groundwater.

- **Effectiveness** – It has been demonstrated that TCE is effectively removed by phytodegradation or the uptake and breakdown of contaminants by metabolic processes. Hybrid poplar trees were exposed to water containing 50 parts per million TCE and metabolized the TCE within the tree. Plant uptake is controlled by hydrophobicity, solubility, and polarity. Toxic intermediates or degradation products may be formed. Phytoremediation is not effective for treatment of contamination in intermediate and deeper groundwater zones.
- **Implementability** – Time is required for the deeper-rooted trees to grow sufficiently to provide an effective remedy. The contamination depth, even in the shallow zone, would require deeper-rooted plants. This is a fairly easy process option to implement.
- **Cost** – Low to moderate.

Summary of In Situ Treatment Process Options

There are numerous in situ groundwater treatment process options available. The effectiveness of the physical/chemical process options for treatment of LHAAP-35A(58) groundwater may be limited by site geology or hydraulic conditions, contaminant characteristics, or the degree of required long-term maintenance. The physical/chemical treatment processes are better suited for sites with high concentrations of VOCs where a distinct source exists. They also tend to be more costly than other options such as bioremediation. The physical/chemical treatment process options will not be retained for remedial alternative development. Phytoremediation is eliminated from further consideration based on the depth of the contaminated groundwater below ground surface. In situ bioremediation is retained for remedial alternative development. This

process option is expected to be effective for the contaminants at LHAAP-35A(58) (e.g., 1,1-DCE, TCE, and PCE) and will produce less toxic byproducts than other competing processes.

4.4.1.6 Ex Situ Treatment

Ex situ treatment technologies provide varying levels of water treatment following extraction or collection of the water. These technologies are applied to reduce the volume, mobility, or toxicity of recovered groundwater. Although ex situ treatment technologies considered are physical/chemical, thermal, and biological, they have been grouped into two process options under an on-site treatment technology – the existing treatment system and a new mobile or skid-mounted system near the extraction point.

New Treatment Plant

A small, skid-mounted or mobile treatment plant could be built near the point of groundwater extraction. The treatment system would be designed for removal of the COCs from the extracted groundwater. GAC or air stripping could remove the COCs. The new treatment plant may require a pretreatment system (e.g., precipitation) if iron and other interfering metals are present in the groundwater.

- **Effectiveness** – The new system could be very effective. All of the considered technologies are proven effective and are even used at an existing treatment plant at LHAAP. Smaller units have less operational flexibility and may expect deviations more often. However, this option would be effective.
- **Implementability** – The implementation of this option is more difficult than that of the existing treatment plant. A few studies would be needed to design the plant to meet the site conditions. This option is still reasonably easy to implement.
- **Cost** – Moderate. The capital costs of this option are considerably greater than that of the existing plant. However, there is a potential that the operational costs could be minimized.

Burning Ground No. 3 Groundwater Treatment Plant

Process wastewater and decontamination water are sent to the LHAAP groundwater treatment plant. This facility, which is currently processing contaminated groundwater from other LHAAP sites, includes unit operations such as neutralization, precipitation, biological digestion, and air stripping. The effluent from the plant is discharged to Harrison Bayou.

- **Effectiveness** – The existing facility is currently treating groundwater. The hydraulic capacity of the plant has not been met yet, so additional flow could be effectively handled. The discharge requirements are routinely met, indicating an effective operation.

- **Implementability** – The treatment plant is already operational. It is operating below current design capacity. Depending on the composition of the site water sent to the plant, it is possible that no revisions to the treatment components of the plant would be necessary.
- **Cost** – Low.

Summary of Ex Situ Treatment Process Options

Ex situ treatment is not retained since this technology was evaluated in combination with groundwater extraction which has been eliminated as a GRA.

4.4.1.7 Disposal

The representative on-site disposal process option evaluated is surface water discharge.

Surface Water Discharge

This process option discharges treated wastewater into a surface water body, stream, or river. This would require piping and pumps or a gravity drain system to transport the treated water to the surface water discharge point. The treated wastewater would likely be discharged into a local surface water body. Currently, the existing treatment plant discharges into Harrison Bayou.

- **Effectiveness** – This process option is an effective method for disposal of water if the requisite National Pollutant Discharge Elimination System (NPDES) discharge limits can be met. The current treatment system discharges to Harrison Bayou through an NPDES-monitored point.
- **Implementability** – Discharge limits have already been selected for the current discharge point. The existing water treatment plant is currently discharging through this point; therefore, this process option would be easily implemented.
- **Cost** – Low.

4.4.1.7.2 Summary of Disposal Process Options

Disposal is not retained since this technology was evaluated in combination with groundwater extraction which has been eliminated as a GRA.

4.4.1.8 Long-Term Media Monitoring

Environmental media (e.g., groundwater) can be monitored after the implementation of the remedial action to determine the effect the remedy has had on the level of contamination. Long-term media monitoring can detect a potential failure of the action to meet the RAO. Monitoring can also be used to detect changes in expected site conditions or changes in the expected effectiveness of the remedy, and indicate whether additional actions should be implemented.

- **Effectiveness** – Long-term media monitoring would be successful in evaluating the effectiveness of a remedial alternative. The effectiveness of the monitoring system depends on the design of the monitoring plan.
- **Implementability** – Equipment and personnel are readily available. The site is readily accessible, and most monitoring techniques have already been implemented at LHAAP. Multiple groundwater-monitoring wells are already in place, and there is a reasonable baseline of groundwater conditions.
- **Cost** – Moderate due to labor and analytical costs.

Summary of Long-Term Media Monitoring

Long-term media monitoring is carried forward as a process option to be combined with other process options to meet the RAO.

4.4.2 Summary of Representative Process Options

Representative GRAs, technologies, and process options were retained and used to develop alternatives. From those retained, the following remedial alternatives were developed:

- Alternative 1 – No Action
- Alternative 2 – MNA with LUCs
- Alternative 3 – In Situ Bioremediation, MNAs, LUCs
- Alternative 4 – In Situ Bioremediation (eastern plume) followed by MNA and MNA with conditional enhancements (western plume), and LUCs (both plumes)

Detailed analyses of these remedial alternatives are included in **Section 5.0**.

5.0 Development and Description of Alternatives

Section 5.1 presents the development of a range of alternatives based on the key assumptions regarding site and contaminant conditions **(Section 2.0)**, the RAO **(Section 3.0)**, and the representative process options **(Section 4.0)**. **Section 5.2** presents the detailed description of the alternatives.

5.1 Development of Alternatives

5.1.1 Requirements and Preferences

The CERCLA process, as defined in the NCP, develops a remedy that protects human health and the environment, complies with ARARs (unless a statutory waiver is justified and granted), is cost-effective, and uses permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable. A statutory preference for remedies that would result in permanent and significant decreases in toxicity, mobility, or volume through treatment and provide long-term protection is stated in Section 121 of CERCLA, as amended.

The NCP defines the following preferences in developing remedial action alternatives:

- Use of treatment to address the "principal threats" posed by a site, wherever practical.
- Use of engineering controls, such as containment, for waste that poses a relatively low, long-term threat and for which treatment is not practical.
- Implementation of a combination of actions, as appropriate, to achieve protection of human health and the environment. For example, in appropriate site situations, treatment of principal threats would be combined with engineering controls, such as containment, and LUCs for treatment residuals and untreated waste.
- Use of LUCs, such as drinking water supply controls and covenants, to supplement engineering controls for short- and long-term management to prevent or limit exposures to hazardous substances.
- Selection of an innovative technology when the technology offers the following: the potential for comparable or better treatment performance or implementability, fewer or lesser magnitude adverse impacts than other technologies, or lower costs than demonstrated technologies for similar levels of performance.
- Usable groundwater is expected to be returned to beneficial uses, whenever practicable, within a time frame that is reasonable given the particular circumstances of the site. When such restoration is not practicable, the

prevention of further migration of the plume and of exposure to the contaminated groundwater is expected.

These statutory requirements and preferences were given due consideration in the development of alternatives for LHAAP-35A(58).

5.1.2 Development using Remediation Strategies and Process Options

The media at LHAAP-35A(58) presenting an unacceptable risk or hazard is groundwater. Thus, the purpose of the remedial alternatives is to present the decision maker with technical and economic options for remediation of groundwater and soil at LHAAP-35A(58). Although all of the action alternatives would achieve the RAO and the statutory requirements under CERCLA, each alternative must also be sufficiently unique in its strategy and approach that the range of alternatives represents a reasonable spectrum of final site conditions in the view of the decision makers.

5.2 Description of Remedial Alternatives

The following sections describe the remedial alternatives developed in the previous sections. The level of detail presented here supports the detailed evaluation and cost estimate in **Section 6.0** and **Appendix B**, respectively. Designs and process options other than those considered here may be substituted once the decision on remedial approach is made.

5.2.1 Alternative 1 – No Action Alternative

As required by the NCP, the no action alternative provides a comparative baseline against which the action alternatives can be evaluated. Under this alternative groundwater would be left "as is," without implementing any additional containment, removal, treatment, or other mitigating actions. Actions in place as a result of an interim action decision (groundwater extraction, media monitoring, etc.) would be discontinued, as would LUCs. No other actions would be implemented to reduce existing or potential future exposure to human and ecological receptors.

5.2.2 Alternative 2 – Monitored Natural Attenuation with LUCs

Alternative 2 has been developed to provide actions that may be taken to limit public exposure to the contaminated media while demonstrating reduction of contamination by natural processes. The goals of this alternative are to protect the hypothetical future maintenance worker and prevent exposures to groundwater as well as to return groundwater to its beneficial use, wherever practicable. The toxicity, mobility, or volume of groundwater contaminants is reduced through natural processes including biodegradation, dispersion, absorption, volatilization, and dilution over time and with distance from the source. Groundwater remediation is through intrinsic bioremediation and other physical loss mechanisms which are monitored to demonstrate that the groundwater contamination remains localized and that the contaminant migration, if any, is

minimal. The USEPA provides guidance for MNA as a remedial action in *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank* Sites (USEPA, 1999). To document that natural attenuation is occurring, a groundwater monitoring program will be implemented at the site. This section presents a description of the alternative that may be used to implement MNA at LHAAP-35A(58). Degradation of COCs at this site will be discussed in the effectiveness of this alternative provided in **Section 6.2.2.3**.

5.2.2.1 Monitored Natural Attenuation

For this alternative, an MNA program would be implemented to address the two areas of contamination as shown on **Figure 2-1**. The monitoring program will be developed as part of the remedial design phase and will define the MNA expectations. The objectives of the monitoring program will include elements such as (USEPA, 1999):

- Demonstrate that MNA is occurring according to the expectations
- Verify there is no unacceptable impact to downgradient receptors
- Verify the plume is not expanding
- Demonstrate the effectiveness of LUCs to protect the hypothetical future maintenance worker, and
- Verify attainment of RAOs.

The sampling program will be designed during the remedial design phase and will be based on the current plume that considers seasonal variations, groundwater direction, and velocity. The performance monitoring frequency will be developed as part of the remedial design. For cost estimating purposes, it is assumed that existing wells will be used for MNA sampling, and the MNA performance monitoring will be performed quarterly for the first two years. After eight quarterly sampling events, MNA will be evaluated. The analytical program will consist of VOCs, including chlorinated compounds and degradation products, methane, ethene, and ethane. Initially, the following geochemical parameters will also be included in the analytical program, dissolved oxygen (field), redox potential (field), sulfate, nitrate, nitrites, alkalinity, TOC, and ferrous iron (field).

Annual reports will be prepared as needed to document the sampling program until the first 5-year review. Sampling frequency or analytical suite may be modified based on the results of the sampling program.

5.2.2.2 Long-Term Operation

The plume remediation relies on monitoring the natural reduction of contaminant levels in groundwater in an MNA program combined with the maintenance of LUCs to prevent human exposure to contaminated groundwater at LHAAP-35A(58). Long-term operational requirements under this alternative would be minimal, and would involve maintenance of the

LUCs and LTM activities. LUCs will be maintained until the cleanup levels are achieved. The LUCs will consist of a restriction on groundwater use at LHAAP-35A(58). If at some time in the future, property ownership is transferred from a federal agency to the private sector, a deed restriction for the use of groundwater will be required. The Army will record a notice of LUCs with Harrison County and will include the notice with the transfer letter to Fish and Wildlife Service for the intended future use as a national wildlife refuge. LTM would be required to demonstrate natural attenuation process is occurring, as well as compliance with ARARs and the RAO. Sampling and analysis of groundwater would be performed at LHAAP-35A(58) for multiple contaminants and general chemistry parameters as described in **Section 5.2.2.1**. The sampling frequency will be semiannual until the first 5-year review. The sampling frequency will be reevaluated during the first 5-year review. For costing purposes, it is assumed LTM sampling will occur annually for years 5 through 10. Monitoring frequency may be adjusted to once every 5 years after the initial 5-year review. For costing purposes, a thirty year monitoring program is assumed. The estimated time for natural attenuation processes to restore the groundwater is approximately 135 years. Data obtained during the monitoring program will be used in support of the 5-year reviews required by CERCLA Section 121(c). Sampling results will be evaluated in accordance with the monitoring program, and if the results indicate unusual deviations outside of sampling variability or seasonal fluctuations, additional sampling or action will be taken as described in the monitoring program.

The location and number of monitoring wells included in the MNA program will be reviewed as part of the 5-year review. Any well that is proposed for the MNA program that becomes damaged, or is required to be removed due to construction or other activities, may be replaced or repaired, as needed. The need for continuing MNA at the location will be evaluated based on existing and expected future groundwater conditions. All water quality results, and the results of the MNA evaluation, will be provided in annual/5-year review monitoring reports.

5.2.3 Alternative 3 – In Situ Bioremediation with Short-Term LUCs and LTM

The goals of this alternative are to achieve ARARs for the COCs at the two areas where contaminant concentrations in groundwater are highest at LHAAP-35A(58) and to prevent human exposure to groundwater contamination until the ARARs are achieved. In situ bioremediation will be implemented to reduce groundwater contaminant concentrations. Since there is no known source of groundwater contamination in soils remaining at LHAAP-35A(58), achievement of cleanup levels in groundwater would be expedited by remediating groundwater using in situ bioremediation in areas of highest concentrations. Attenuation of the COCs in the plume will be monitored until acceptable preliminary remediation goals are met, and LUCs will be maintained (until remediation goals are met for groundwater contaminant), to prevent human exposure until RAOs are achieved.

5.2.3.1 In Situ Bioremediation for Groundwater Plume

In situ groundwater bioremediation is a technology that encourages growth and reproduction of indigenous microorganisms to enhance biodegradation of organic constituents in the saturated zone. The microbiological processes are used to degrade or transform contaminants to ultimately less toxic or nontoxic forms. Groundwater at LHAAP-35A(58) is impacted by VOCs including chlorinated solvents such as PCE, TCE, and 1,1-DCE that exceed their respective cleanup levels in groundwater. Treatment under anaerobic conditions is often applied to these types of contaminants.

In general, the components of the in situ bioremediation action include:

- **Determining effective treatment.** Currently shallow monitoring wells 35AWW06, 35AWW08, 03WW01, LHSMW04, LHSMW05, and LHSMW07 are impacted. Contaminated groundwater is present in shallow thin sand lenses which occur in a formation consisting primarily of clay to silty clay. Two separate plumes are evident. In situ remediation is proposed in these two areas. A treatability study may be conducted to determine the most effective bioaugmentation additive (i.e., quantities and types of microbial cultures and nutrients to accelerate attenuation in a shorter time and/or disperse to treat a larger area).
- **Installing temporary wells for injection.** Chlorinated solvents often require circulation of nutrients and other growth-stimulating additives/materials specific to the contaminants' metabolic degradation process. The wells would be used to inject these materials to accelerate microbial degradation of the plumes.
- **Injecting microbial cultures and nutrients into the subsurface at a predetermined location.** Bacteria present in the groundwater can use chlorinated solvents as electron acceptors. Electron donors may include a wide variety of nutrients: sugars (molasses), alcohols (methanol, ethanol), volatile acids (acetate, lactate), and/or wastes (food processing, manure). The COCs at LHAAP-35A(58) can degrade under anaerobic conditions, but microorganisms, mechanisms, and redox requirements differ. Based on results of the treatability study, bioaugmentation additives, appropriate nutrients and other materials, would be injected into the subsurface. For this FS, it is assumed that a bioaugmentation will be used at the site. This form of bioremediation combines the injection of microbial cultures capable of degrading the contaminants with a carbon source to provide adequate conditions for the proliferation of the dechlorinating organisms. For costing purposes in this FS, it is assumed that application would include 70 injection points, installed using direct-push technology It is anticipated that the bioaugmentation material would be injected twice and that the injection would occur in the shallow zone, at approximately 20 feet bgs.

- **Sampling wells to monitor effectiveness.** Monitoring for contaminants, bacteria, and geochemical parameters would be performed to assess the effectiveness of the treatment. Anticipated remediation times may be short with appropriate contact. Assuming first order anaerobic degradation rates and reasonable half-lives for the COCs, the COCs within the treated areas could be reduced to their respective cleanup levels in approximately 2 to 3 years. However, it is anticipated that COCs will remain in the plumes outside the treated areas and will attenuate to levels below MCLs over time. Groundwater sampling will occur quarterly for the first 2 years and will be reduced to semiannually for years 3 through 5. This frequency has been assumed for the estimate.

- **Injecting additional substrate**. It is also assumed for the cost estimate that a second bioaugmentation treatment in the area of highest contamination may be required during year 2 of the remediation program to further treat COCs. However, this would only occur if warranted based on the first six quarters of data.

Annual reports will be prepared during the first 2 years to document the program.

5.2.3.2 Long-Term Operation

Long-term operation would include maintenance of LUCs and LTM of groundwater at LHAAP-35A(58) until the COCs throughout the plume are below MCLs (assumed to be at least 30 years in the estimate). LUCs and LTM will be maintained until the cleanup levels are achieved. The LUC will consist of a restriction on groundwater use at Site LHAAP-35A(58). If at some time in the future, property ownership is transferred from a federal agency to the private sector, a deed restriction for the use of groundwater will be required, if transfer occurs during the time frame that COCs are present above groundwater cleanup levels. Sampling and analysis of groundwater would be performed at LHAAP-35A(58) for VOCs and general chemistry parameters. The sampling frequencies may change based on the results of the 5-year review and the contaminant concentrations at that time. Monitoring would be required to demonstrate that reduction in concentrations is occurring, as well as compliance with ARARs and the RAOs. Data obtained during the monitoring program will be used in support of the 5-year reviews required by CERCLA Section 121(c). If sampling results show unusual trends of perturbations, additional investigative sampling may be performed.

Any well that is proposed for LTM that becomes damaged, or is required to be removed due to construction or other activities, may be replaced or repaired, as needed. The need for continuing LTM at the location will be evaluated based on existing and expected future groundwater conditions. All water quality results, and the results of the review, will be provided in periodic monitoring report.

5.2.4 Alternative 4 In Situ Bioremediation for Eastern Plume followed by MNA and LUCs; MNA and LUCs for Western Plume

In situ bioremediation will be implemented in the most contaminated portion of the eastern plume followed by MNA. Alternative 4 has been developed to provide actions that may be taken to limit public exposure to the contaminated media while demonstrating reduction of contamination. The goals of this alternative are to protect the hypothetical future maintenance worker and prevent exposures to groundwater as well as to restore groundwater. The eastern plume remedy includes in situ bioremediation and MNA, and the western plume remedy includes MNA. The toxicity, mobility, or volume of groundwater contaminants is reduced through in situ biotreatment and/or natural processes (biodegradation, dispersion, absorption, volatilization, and dilution over time and with distance from the source). The contaminant attenuation will be monitored to demonstrate that the groundwater contamination remains localized and that the contaminant migration, if any, is minimal. Monitored natural attenuation will be implemented in the western plume with LUCs. The MNA in the western plume will be evaluated after a period of 2 years. LUCs will be maintained until the preliminary remediation goals are met in both plumes to prevent human exposure to the contaminated groundwater.

5.2.4.1 In Situ Bioremediation and MNA for Eastern Plume

In situ groundwater bioremediation is a technology that encourages growth and reproduction of indigenous microorganisms to enhance biodegradation of organic constituents in the saturated zone. The microbiological processes are used to degrade or transform contaminants to ultimately less toxic or nontoxic forms. Groundwater at LHAAP-35A(58) is impacted by VOCs including chlorinated solvents such as PCE, TCE and 1,1-DCE, which can be treated using bioremediation processes. In general, the components of the in situ bioremediation action that treat the most contaminated area of the plume include:

- **Determining the effective treatment.** Currently, shallow monitoring wells 35AWW08, 03WW01, and LHSMW04 (approximately 300 feet apart) are impacted. Contaminated groundwater is present in shallow thin sand lenses which occur in a formation consisting primarily of clay to silty clay. Additional investigation and a treatability study will be conducted to support the design to determine the concentration of contaminants to treat, and the most effective bioaugmentation additive and placement (i.e., installation locations, quantities and types of microbial cultures and nutrients to accelerate attenuation in a shorter time and/or disperse to treat a larger area).

- **Injecting microbial cultures and nutrients into the subsurface.** Bacteria present in the groundwater can use chlorinated solvents as electron acceptors. Electron donors may include a wide variety of nutrients: sugars (molasses), alcohols (methanol, ethanol), volatile acids (acetate, lactate), and/or wastes (food processing, manure). The COCs at LHAAP-35A(58) can degrade under anaerobic conditions, but microorganisms, mechanisms, and redox requirements differ. Based on results of the

treatability study, bioaugmentation additives, appropriate nutrients and other materials, would be injected into the subsurface. For this FS, it is assumed that a bioaugmentation will be used at the site. This form of bioremediation combines the injection of microbial cultures capable of degrading the contaminants with a carbon source to provide adequate conditions for the proliferation of the dechlorinating organisms. For costing purposes in this FS, it is assumed that application would include five injection points, installed using direct-push technology. It is anticipated that the bioaugmentation material may be injected twice and that the injection would occur in the shallow zone, at approximately 20 to 30 feet bgs. If it is determined that circulation of nutrients and other growth-stimulating additives/materials specific to the contaminants' metabolic degradation process is required, temporary wells will be installed for injection. Otherwise, the injection will be conducted using direct push technology at multiple points over a specific area of the plume.

- **Sampling wells to monitor effectiveness.** Monitoring for contaminants, bacteria, and geochemical parameters would be performed to assess the effectiveness of the treatment. Anticipated remediation times may be short with appropriate contact. Assuming first order anaerobic degradation rates and reasonable half-lives, the COCs within the treated areas could be reduced to their respective cleanup levels in approximately 2 to 3 years. However, it is anticipated that COCs will remain in the plumes outside the treated areas and will attenuate to levels below MCLs over time. Groundwater sampling will occur quarterly for the first 2 years and will be reduced to semiannually for years 3 through 5. This frequency has been assumed for the estimate.

- **Injecting additional substrate**. It is also assumed for the cost estimate that a second bioaugmentation treatment in the area of highest contamination may be required during year 2 of the remediation program to further treat COCs. However, this would only occur if warranted based on the first six quarters of data.

For this alternative, MNA would be implemented to address the area of contamination outside the treated area. A monitoring program will be developed as part of the remedial design phase and will define the MNA expectations. The objectives of the monitoring program will include elements such as (USEPA, 1999):

- Demonstrate that MNA is occurring according to the expectations
- Verify there is no unacceptable impact to downgradient receptors
- Verify the plume is not expanding
- Demonstrate the effectiveness of LUCs to protect the hypothetical future maintenance worker, and
- Verify attainment of RAOs.

The sampling program will be designed during the remedial design phase and will be based on the current plume that considers seasonal variations, groundwater direction, and velocity. The performance monitoring frequency will be developed as part of the remedial design. For cost estimating purposes, it is assumed that existing wells will be used for MNA sampling, and the MNA performance monitoring will be performed quarterly for the first two years. After eight quarterly sampling events, MNA will be evaluated.

The analytical program will consist of VOCs, including chlorinated compounds and then degradation products, methane, ethene, and ethane, and other parameters to support MNA evaluation (USEPA, 1998). Annual reports will be prepared to document the program is effective.

5.2.4.2 MNA for Western Plume

For this alternative, it is assumed that a MNA will be implemented to address the western plume, including wells LHSMW07 and 35AWW06. Well locations are shown on **Figure 1-5**. These two wells currently provide groundwater data to represent the western plume. Monitoring well 35AWW04 is located approximately 400 feet downgradient of 35AWW06.

Under MNA, groundwater is treated naturally through biodegradation and other physical loss mechanisms which are monitored to demonstrate that groundwater contamination remains localized and that contaminant migration, if any, is minimal. To document that natural attenuation is occurring, a groundwater monitoring program will be developed during remedial design and implemented at the site. Current available evidence for degradation of COCs at this site is discussed in the effectiveness of this alternative provided in **Appendix A**. It is estimated to take 135 years for the plume contaminants to be reduced to MCLs.

MNA sampling will be performed quarterly for the first two years. This phase is referred to as performance monitoring. Beyond the first two years of MNA sampling, semiannual sampling will be conducted until the first 5-year review. The analytical program will consist of VOCs, including chlorinated compounds and degradation products, methane, ethene, and ethane. Initially, the following geochemical parameters will also be included in the analytical program, dissolved oxygen (field), redox potential (field), sulfate, nitrate, nitrites, alkalinity, TOC, and ferrous iron (field), and additional parameters to evaluate MNA (USEPA, 1998). Sampling frequency or analytical suite may be modified based on the results of the sampling program.

After the first 2 years of MNA performance monitoring, the data will be evaluated in accordance with the monitoring plan to assess the effectiveness of the MNA process and to verify that the plume is stable and: (1) has favorable conditions for biodegradation; or (2) has contaminant concentrations with downward trends.

Annual reports will be prepared to document the program. The second annual report will include a review of eight quarters of data as well as the historical data, provide the rationale for MNA as a remedial method, will include review of the first three years of data, and determine whether MNA is occurring.

5.2.4.3 Long-Term Operation

Long-term operation would include LUCs and LTM of groundwater at LHAAP-35A(58) until the COCs throughout both plumes are below MCLs. LUCs will be maintained until the cleanup levels are achieved. The LUCs will consist of a restriction on groundwater use at LHAAP-35A(58) during the time frame that COCs are present above groundwater cleanup levels. Sampling and analysis of groundwater would be performed at LHAAP-35A(58) for VOCs and general chemistry parameters. It is assumed for cost estimating purposes that monitoring for both plumes would be reduced to annually for years 6 to 10. The sampling frequencies may change based on the results of the 5-year review and the contaminant concentrations at that time. It is assumed for cost estimating purposes that monitoring for both plumes would be reduced to once every 5 years after year 10. Monitoring would be required to demonstrate that reduction in concentrations is occurring, as well as compliance with ARARs and the RAOs. Data obtained during the monitoring program will be used in support of the 5-year reviews required by CERCLA Section 121(c). If sampling results show unusual trends, additional investigative sampling may be performed.

The location and number of monitoring wells included in the MNA program will be reviewed on an annual basis. Any well that is proposed for the MNA program that becomes damaged, or is required to be removed due to construction or other activities, may be replaced or repaired, as needed. The need for continuing MNA at the location will be evaluated based on existing and expected future groundwater conditions. All water quality results, and the results of the review, will be provided in monitoring reports.

6.0 Detailed Analysis of Alternatives

6.1 Introduction

The detailed analysis of alternatives presents and assesses relevant information that provides the basis for selecting an alternative and preparing a ROD. **Section 6.2** provides an overview of the evaluation criteria. The detailed analysis begins with an individual analysis in **Section 6.3** in which each alternative is individually evaluated according to the evaluation criteria identified in the NCP (40 CFR 300.430). Following the individual analysis, the alternatives are compared in relation to the two threshold criteria and then the alternatives are assessed regarding the five balancing criteria, highlighting the key advantages, disadvantages, and trade-offs that are considered as part of the evaluation process.

6.2 Overview of the Evaluation Criteria

CERCLA, Section 121, as amended, specifies statutory requirements for remedial actions. These requirements include protection of human health and the environment, compliance with ARARs, a preference for permanent solutions that incorporate treatment as a principal element to the maximum extent practicable, and cost-effectiveness. To assess whether alternatives meet the requirements, the USEPA has identified nine criteria in the NCP (40 CFR 300.430) that must be evaluated for each alternative considered for selection (Section 300.430[e][9][iii]). Provided here are summaries of the factors that comprise the nine criteria and an overview of the approach taken by this FS to address these criteria.

6.2.1 Criterion 1: Overall Protection of Human Health and the Environment

This evaluation criterion assesses whether the alternative achieves and maintains adequate protection of human health and the environment in accordance with the RAO established in **Section 3.0**. Because the scope of this criterion is broad, it also reflects the discussions of the subsequent criteria, including long-term effectiveness and permanence, and short-term effectiveness. Evaluation of this criterion describes how site risks associated with each pathway are eliminated, reduced, or mitigated through treatment, engineering, or LUCs. This criterion also considers whether an alternative poses an unacceptable short-term or cross-media affect.

6.2.2 Criterion 2: Compliance with ARARS

This criterion addresses compliance with promulgated federal and state environmental requirements. The detailed analysis summarizes which requirements are applicable or relevant and appropriate to an alternative and how the alternative meets these requirements. If an alternative cannot meet a requirement, a determination can be made that a waiver under CERCLA may be appropriate, and a basis for justifying the waiver is presented. ARARs consist of two sets of requirements – those that apply and those that are relevant and appropriate. In

certain cases, standards may not exist that address the proposed action or the COC(s). In such cases, nonpromulgated advisories, criteria, or guidance developed by the USEPA or other federal agencies or states can be TBCs. There are three types of ARARs; chemical-specific, location-specific, and action-specific. The chemical-, location-, and action-specific ARARs are presented in **Section 3.2**.

6.2.3 Criterion 3: Long-Term Effectiveness and Permanence

This criterion evaluates the extent to which an alternative achieves an overall reduction in risk to human health and the environment after the RAO is met. The criterion considers the degree to which the alternative provides sufficient long-term controls and reliability to prevent exposures that exceed protective levels for human and environmental receptors. The principal factors addressed by this criterion include magnitude of residual risk and the adequacy and reliability of controls to address such risk. This criterion also addresses the uncertainties associated with these factors.

The evaluation of adequacy and reliability of controls assesses the effectiveness of any treatment, containment, or institutional measures that are part of the alternative. Factors considered include performance characteristics, maintenance requirements, and expected durability. Information and data from past performance and similar technology applications are incorporated appropriately into the evaluation. LUCs are considered where they have the potential to improve the effectiveness of engineered measures.

6.2.4 Criterion 4: Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion reflects the statutory preference that remedial alternatives contain a principal component that substantially reduces toxicity, mobility, or volume of hazardous substances through treatment. The evaluation regarding this criterion considers the extent to which alternative technologies can effectively and permanently fix, transform, immobilize, or reduce the volume of waste materials and contaminated media.

6.2.5 Criterion 5: Short-Term Effectiveness

This criterion addresses the effects of the construction and implementation phases of the alternative until the RAO is achieved. The evaluation regarding this criterion considers the effect on human health and the environment posed by operations conducted during the remedial action phases. Both the potential effect and associated mitigation measures are examined for maintaining protectiveness for the community, remediation workers, and environmental receptors throughout the duration of activities.

Potential short-term risks to the pubic include inhalation of constituents that may be released during waste removal and treatment operations, and contaminant exposure and physical injury during waste transport off site. Potential short-term risks to workers include direct contact and

exposure during construction, waste handling, and transportation; physical injury or death during construction and transportation activities; and non-remediation worker exposures to airborne contaminants during waste and soil removal operations. Alternative analyses also include a description of mitigating measures such as engineering and LUCs that are expected to minimize potential risks to the public and workers. This evaluation also addresses the anticipated duration of remedial activities.

6.2.6 Criterion 6: Implementability

This criterion examines the technical and administrative factors affecting implementation of an alternative and considers the availability of services and materials required during implementation. Technical factors to be assessed include the ease and reliability of construction and operations, the prospects for implementing a future action, and the adequacy of monitoring systems to detect failures. Administrative factors include permitting and coordination requirements between the lead agency and regulatory agencies. Service and material considerations include treatment, storage, and disposal capacities, equipment and operator availability, and prospective technology applicability or development requirements.

The assessment of technical feasibility examines the performance history of the technologies in direct applications or considers the expected performance for similar applications. Also addressed are uncertainties associated with construction, operation, and performance monitoring.

The evaluation of administrative feasibility includes a discussion of those actions required to coordinate with regulatory agencies to establish the framework for complying with key substantive technical requirements that must be met by an alternative. Additionally, those alternatives that include off-site transportation of waste are reviewed to assess the feasibility of off-site disposal.

The availability of services and materials is addressed by analyzing the material components of the proposed technologies to determine the locations and quantities of those materials, and by reviewing process operations to identify special services, operator skills, or training required to readily implement the process.

The NCP requires that the evaluation of the relative administrative feasibility of each alternative include "…activities needed to coordinate with other offices and agencies, and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-site actions). CERCLA, Section 121(e), stipulates that no deferral, state, or local permit shall be required for the portion of any removal or remedial action conducted entirely on site." An action must satisfy the substantive requirements of the permits that will otherwise be required.

6.2.7 Criterion 7: Cost

Cost estimates are included for each remedial alternative. The estimates are based on feasibility level scoping and are intended to aid in making project evaluations and comparisons among alternatives. The estimates have an expected accuracy of +50 to –30 percent for the scope of the action described in **Section 5.0** for each alternative.

The estimates are divided into capital cost and O&M cost, and are developed according to an assumed schedule for the various activities based on similar project experience.

Capital costs are defined as those expenditures required to initiate and install an alternative. These are short-term costs and are exclusive of costs required to maintain the action throughout the project lifetime. Capital costs consist of direct and indirect costs. Direct costs include construction costs (material, labor, and equipment to install an action), service equipment, process and new process buildings, utilities, and waste disposal costs. Indirect costs include design engineering, inspection, project integration, project administration and management, and project contingencies.

O&M costs are long-term costs associated with ongoing remediation at a site. These costs occur after construction and installation are completed. The costs include labor, materials, utilities, and services required to monitor, operate, and maintain the facilities for a period of up to 30 years.

The estimated present worth of each remedial alternative is determined on a discount rate of 2.8 percent and a base maintenance/monitoring period of up to 30 years.

Appendix B presents detailed cost estimates and the major assumptions used to develop the cost estimates for each remedial alternative.

6.2.8 Criterion 8: State Acceptance

State acceptance of an alternative will be evaluated in the Proposed Plan issued for public comment. Therefore, this criterion is not considered in this FS.

6.2.9 Criterion 9: Community Acceptance

Community acceptance of each alternative will be evaluated after a Proposed Plan is issued for public comment. Therefore, this criterion is not considered in this FS.

6.3 Individual Analysis of Alternatives

6.3.1 Alternative 1 – No Action

Under the no action alternative, no further action would be taken to control human exposure to contaminated groundwater. The contaminated groundwater would remain in place without the implementation of any contaminant removal, treatment, or containment. LUCs to prevent access

to contaminated site groundwater would not be implemented. This alternative provides a baseline for comparison purposes.

6.3.1.1 Overall Protection of Human Health and the Environment

The no action alternative does not achieve the RAO for LHAAP-35A(58). This alternative provides no control of exposure to the contaminated groundwater and no reduction in the risks to human receptors for current and future land use scenarios. Risks to receptors from ingestion of groundwater contaminants would exceed the USEPA-established threshold for acceptable incremental lifetime cancer risk of 1×10^{-4} for carcinogens or an HI of 1 for non-carcinogens.

6.3.1.2 Compliance with ARARs

CERCLA, Section 121, cleanup standards, including compliance with ARARs, apply only to actions the USEPA determines should be taken under CERCLA, Sections 104 and 106 authority. A no action decision will be made when no action is deemed necessary to reduce, control, or mitigate exposure because the site does not present a threat to human health and the environment, or because any action taken will worsen the negative effects on human health and the environment. Because no remedial activities are associated with this alternative, compliance with chemical-specific ARARs would not be met. Since no remedial activities would be conducted, action-specific and location-specific ARARs would not apply.

6.3.1.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risk

The no action alternative would not provide an effective or permanent long-term solution. The residual risk and toxicity from groundwater exposure under a no action alternative would be unacceptable at LHAAP-35A(58). The carcinogenic risk is 1.6×10^{-2} and the toxicity is above acceptable levels. The major contributors to the risk are 1,1-DCE and PCE. These risks were calculated for a hypothetical future maintenance worker ingesting the groundwater, although this scenario is unlikely. Currently, the groundwater at LHAAP-35A(58) is not used for drinking water, and would not be used for drinking water under a wildlife refuge future use scenario. The shallow groundwater impacted at the site is unlikely to be used as a water source since it is present in thin sand lenses, likely to be low in yield. Based on a groundwater flow and transport model (Shaw, 2007c), groundwater COCs will not impact Goose Prairie Creek.

Adequacy and Reliability of Controls

The no action alternative would not provide the maintenance of LUCs at LHAAP-35A(58) and, therefore, would not reduce the existing exposure risks posed by contaminated site groundwater if it were to be used at the site; however use is unlikely.

6.3.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Implementation of the no action alternative would not reduce toxicity, mobility, or volume of contaminants because this alternative does not employ treatment.

6.3.1.5 Short-Term Effectiveness

Under the no action alternative, no remedial action would be taken; therefore, the short-term effectiveness criterion is not applicable to this alternative. No short-term risks to workers, the community or the environment would exist.

6.3.1.6 Implementability

This alternative is inherently implementable because no remedial action would be taken.

6.3.1.7 Cost

There are no costs associated with the no action alternative.

6.3.2 Alternative 2 – Monitored Natural Attenuation with LUCs

Alternative 2 relies on monitoring the natural reduction of contaminant levels in groundwater in an MNA program combined with the maintenance of LUCs to prevent human exposure to contaminated groundwater at LHAAP-35A(58). LUCs are a major portion of the alternative as the groundwater contamination presenting an unacceptable risk to human health would not be actively treated, although it will naturally attenuate to acceptable levels. MNA activities would demonstrate that the COC concentrations in groundwater remain stable or continue to degrade naturally. Until MNA goals are achieved, LUCs will remain in place.

6.3.2.1 Overall Protection of Human Health and the Environment

Protection of Human Health

This alternative would achieve the RAOs for LHAAP-35A(58) as long as MNA is effective and LUCs are in place. Continued maintenance of the LUCs would prevent human access and exposure to groundwater that poses an unacceptable risk to human health, until COCs have sufficiently degraded to below the action levels. If cleanup levels in the groundwater are not achieved and the property is transferred out of U. S. government control, deed restrictions are required to be placed on the property to prohibit or restrict property uses (e.g., drinking water well installation) that may result in exposure to contaminated groundwater. It is unlikely that impacted groundwater at the site would be used as a water supply since it is present in narrow sand lenses that probably are low yield.

The LTM program would monitor groundwater plume migration and stability, and degradation of COCs.

Protection of the Environment

A site-wide ecological baseline risk assessment was performed for the Group 4 sites and concluded that no environmental receptors are at risk from exposure to the contaminants at LHAAP-35A(58).

6.3.2.2 Compliance with ARARs

Chemical-Specific ARARs

This alternative will achieve the chemical-specific ARARs for groundwater contaminants that exceed their respective ARARs in groundwater since COCs are naturally degrading, however the time frame may be long. Since use of groundwater as a water supply is unlikely based on future land use and probable low yield of the water bearing zones at LHAAP-35A(58), the time frame for achievement of ARARs is not a issue for use as a groundwater supply. In addition, based on modeling performed for the site (Shaw, 2007c), groundwater does not impact surface water.

Location-Specific ARARs

Activities that would be conducted under this alternative would comply with all location-specific ARARs. No activities would take place in sensitive environments such as wetlands, and no impacts to archeological resources are anticipated. Due to the limited number and locations of activities associated with this alternative, threatened and endangered species would not likely be impacted.

Action-Specific ARARs

Activities that would be conducted under this alternative would comply with all action-specific ARARs.

6.3.2.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risks

Implementation of LUCs under this alternative would prevent direct contact by human receptors with the groundwater at LHAAP-35A(58), thus minimizing potential risk posed by groundwater contamination. Risk from ingestion of the groundwater is primarily from 1,1-DCE and PCE, however VC, TCE, 1,2-DCA, and 1,1,2-TCA also contribute to risk. Of these constituents, only PCE, TCE, 1,1-DCE, and VC were detected in the latest sampling program performed in 2007. Based on modeling results, it is unlikely COCs will reach Goose Prairie Creek (Shaw, 2007c).

The USEPA guidance for MNA (USEPA, 1999) provides first, second, and third lines of evidence to support that natural attenuation is occurring. These same lines of evidence may be used to evaluate the long term effectiveness of this technology as a remedial action. The lines of evidence for natural attenuation at Site LHAAP-35A(58) are discussed in **Appendix A**.

Based on the lines of evidence, natural attenuation of the COCs is occurring at site LHAAP-35A(58) in limited areas and may be a feasible long-term sole remedy for the site. However, based on recent data, the plume stability is questionable for the eastern plume. If the plume is not stable, the contaminants could continue to migrate without a reduction in contaminant concentrations. Groundwater is currently not used and is unlikely to be used in the future due to 1) the low yield expected from thin sand lenses and 2) the proposed future land use. Groundwater use restrictions will control the use of groundwater until COCs have degraded to levels below MCLs.

Adequacy and Reliability of Controls

The implementation of LUCs would protect potential human receptors from exposure to contaminated groundwater at LHAAP-35A(58) and would ensure continued compliance with risk-reduction goals at the various potential points of exposure. The reliability of LUCs would depend on the long-term maintenance of the controls until COCs have naturally attenuated to below action levels. Maintenance of the LUCs and MNA implemented with these controls would be required until groundwater COC concentrations attenuate to their respective MCLs over the long term. The effectiveness of the LUCs would depend on the annual and five-year CERCLA reviews and inspections of any physical mechanisms in place at LHAAP-35A(58). The 5-year reviews may indicate the need for components of this alternative to be maintained, modified, or replaced.

6.3.2.4 Reduction of Toxicity, Mobility, or Volume through Treatment

This alternative would not reduce the toxicity, mobility, or volume of COCs in groundwater through a passive remedial process that would enhance degradation through natural processes. A reduction in groundwater contaminant concentrations is expected to occur over time through natural processes. This reduction is anticipated to take 135 years for 1,1-DCE. Although the groundwater would be monitored until MCLs are met, no enhancements to reduce contaminant mobility in the groundwater would be accomplished through this alternative.

6.3.2.5 Short-Term Effectiveness

Protection of the Community during Remedial Action

This alternative is protective of the surrounding community during remedy implementation primarily because all activities would occur on site with very little disturbance of contaminated material.

Protection of Workers during Remedial Action

No significant short-term risks to human health or the environment would exist during implementation of this alternative. However, worker exposure to soils and contaminated groundwater is possible during drilling, well installation, and sampling activities associated with the monitoring events. The short-term risks associated with drilling and groundwater monitoring

activities and may be minimized through implementation of an effective health and safety program.

Short-Term Environmental Effects

Since minimal disturbance of contaminated material would occur under this alternative, short-term impacts to the environment are unlikely. The implementation of proper engineering controls would minimize the risk of environmental impacts.

Duration of Remedial Activities

Implementation of LUCs would prevent exposure to contaminated groundwater by prohibiting installation of potable water wells at LHAAP-35A(58). This alternative could provide almost immediate protection because LUCs can be implemented relatively quickly (e.g., within six months). Maintenance of the controls would be required until contaminant concentrations are below MCLs.

6.3.2.6 Implementability

Technical Feasibility

All components of this alternative are readily implementable. Minimal technical concerns exist that would hinder the implementation of this alternative because no remedial activities other than sampling under the MNA program would be performed under this alternative. However, maintenance of the LUCs would be required. All equipment, services and materials are readily available to conduct the activities for this alternative.

Administrative Feasibility

All actions under this alternative are implemented on site and thus do not require permits, though substantive provisions of permits that would otherwise be required are considered to be ARARs. By legal agreement (i.e., the FFA), the Army shall submit to the USEPA and TCEQ a Responsiveness Summary and a draft ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the Army and USEPA, or if they are unable to reach agreement about the selection of the remedial action, by the USEPA Administrator. By addressing the identified ARARs in the ROD, it is anticipated that the alternative would adequately address administrative barriers.

LUCs, although administratively implementable, would require development of an implementation plan as part of the remedial design, and internal notices to relevant regulatory offices of the existence of the LUCs. Approval by the USEPA and the State of Texas is required prior to the modification or termination of LUCs, implementation actions, or modification of land-use by the Army. The Army shall also seek concurrence from the USEPA and the State of Texas prior to any action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs.

6.3.2.7 Cost

The total project present worth cost of this alternative is approximately $492,800. The details of the cost estimates for all of the alternatives are presented in **Appendix C**.

Direct Capital Cost

The total direct capital cost is estimated at $60,500. The direct capital cost includes the design and installation of two additional monitoring wells.

MNA and O&M Cost

The total MNA and O&M cost is estimated at approximately $432,300. The O&M cost includes maintenance of LUCs and LTM through year 30. The LTM sampling frequency is quarterly for the first year, annual for years two through five and every five years thereafter. The LTM monitoring would support the required CERCLA 5-year reviews.

6.3.3 Alternative 3 – In Situ Bioremediation with Short-Term LUCs and LTM

This alternative reduces contamination in the area of highest concentrations in the groundwater plume via in situ bioremediation using bioaugmentation. Bioremediation will accelerate the degradation of contaminants that is naturally occurring. The residual COCs remaining in the plume after in situ bioremediation are estimated to attenuate to acceptable levels in approximately 10 years, and future industrial reuse of the site would be achieved. However, this is just an estimate based on assumptions of the effectiveness of the in situ bioremediation and current data defining the hydrogeologic conditions and extent of contamination. LUCs and LTM would be components of this alternative in the short term until such time that the groundwater meets cleanup levels (i.e., MCLs are achieved throughout the plumes). The in situ bioremediation would reduce COC concentrations to MCLs within the treated area of the plumes within a relatively short time period provided bioremediation results are favorable. COC concentrations in the groundwater outside of the treated area will attenuate over time until MCLs are met.

6.3.3.1 Overall Protection of Human Health and the Environment

Protection of Human Health

The remedial action proposed for this alternative would eventually achieve the destruction of the COCs present in groundwater above preliminary remediation goals established for LHAAP-35A(58). Therefore, the residual site risk upon completion of these actions would be within the target risk range for an industrial user. This alternative is protective of human health and achieves the RAO for LHAAP-35A(58).

Protection of the Environment

The Installation-Wide Baseline Ecological Risk Assessment identified no potential risk to ecological receptors from the contaminants at LHAAP-35A(58) (Shaw, 2007a). Restoration of

LHAAP-35A(58) groundwater would protect Goose Prairie Creek from potential discharges of contaminated groundwater that could affect aquatic organisms.

6.3.3.2 Compliance with ARARs

Chemical-Specific ARARs

This alternative would comply with chemical-specific ARARs for groundwater throughout the site because it is estimated that the contaminant MCLs would be achieved in an approximate 10 year time frame.

Location-Specific ARARs

The activities that would be conducted under this alternative would comply with location-specific ARARs. No activities would take place in sensitive environments such as wetlands, and no impacts to archeological resources or threatened and endangered species are anticipated.

Action-Specific ARARs

The activities that would be conducted under this alternative would comply with action-specific ARARs.

6.3.3.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risks

Upon completion of groundwater biotreatment (approximately 2 years), the risk within the treated groundwater plume would be within the target risk range for an industrial user by reducing COCs to levels that meet their MCLs. However, residual contamination above the MCLs may remain in the untreated portions of the plume. Groundwater use restrictions would be required until multiple rounds of sampling document that residual contamination is not above the MCLs.

Adequacy and Reliability of Controls

In situ groundwater bioremediation should be effective for reducing COC concentrations to the MCLs in LHAAP-35A(58) groundwater. However, optimum groundwater conditions would be required to increase the effectiveness of biological activity on these contaminants. More extensive aquifer characterization/treatability study may be needed before designing the system for optimum bioaugmentation. The success of these bioremediation technologies in high concentration areas may be limited due to the toxicity of the contaminants to the microorganisms. Also, because of the low groundwater velocity, a somewhat longer period of time is expected for degradation to occur throughout the plume. Attenuation data on the current plume is limited, and the effectiveness of this technology at LHAAP-35A(58) cannot be fully assessed.

Short-term LUCs would prevent exposure to the groundwater COCs exceeding the MCLs during the time required to restore the groundwater through bioremediation. The reliability of LUCs would depend on the maintenance of the controls. Maintenance of the LUCs would not be required once MCLs for the COCs in groundwater are met at LHAAP-35A(58). Compliance with the risk-reduction goals would be monitored and performance of the controls would be assessed throughout the duration of this alternative. The assessment may indicate the need for components of this alternative to be maintained, modified, or replaced.

6.3.3.4 Reduction of Toxicity, Mobility, or Volume through Treatment

In situ bioremediation would irreversibly reduce the toxicity, mobility and volume of the contaminants in the treated portions of LHAAP-35A(58) shallow groundwater. This alternative proposes that the groundwater COCs would be treated to the preliminary remediation goals in the areas of highest contamination only. This alternative would satisfy the USEPA statutory preference for remedial actions that permanently reduce contaminant toxicity, mobility and volume and utilize treatment as a principle element.

6.3.3.5 Short-Term Effectiveness

Protection of the Community during Remedial Action

This alternative is protective of the surrounding community during remedy implementation primarily because activities would occur on site with very little disturbance of contaminated material.

Protection of Workers during Remedial Action

This alternative would involve potential short-term risks to workers associated with the operation of drilling equipment and potential exposure to contaminated groundwater during sampling activities. The implementation of an effective health and safety program would minimize potential short-term risks to remediation personnel. Remediation workers would conform to the site health and safety program and would be equipped with the necessary PPE. A site-specific health and safety plan would be prepared prior to implementing this alternative.

Short-Term Environmental Effects

Some minor clearing and grubbing to install monitoring wells or injection points for bioremediation of groundwater may be required. It is unlikely that there are any sensitive species that would be impacted. Should any sensitive species be found, the appropriate regulations and best management practices would be followed.

Duration of Remedial Activities

The duration of this alternative is estimated to be approximately 30 years. It is assumed that, in year 1, a treatability study may be conducted to determine the effectiveness of the proposed bioaugmentation, plans are prepared and one bioaugmentation injection/treatment performed. In

year two, four quarters of monitoring are performed as well as a second bioaugmentation injection/treatment. The second treatment is followed by 8 years of additional groundwater water monitoring, if warranted. The time frames for this alternative are difficult to estimate since it uncertain how effective the bioaugmentation will be and how well it may disperse to influence the degradation of the plume outside the treated areas. In addition residual COCs may be present in the clay matrix surrounding the permeable lenses which could continue to impact water quality into the future. Aquifer studies will be needed to determine the most effective location for injection. Monitoring would be needed until preliminary remediation goals are met to determine trends in groundwater contamination levels and effectiveness of the remedial action. The monitoring time may increase or decrease, depending on the effectiveness of the treatment method.

6.3.3.6 Implementability

Technical Feasibility

All components of this alternative are implementable. There are some technical concerns regarding the effectiveness of the bioremediation at the site. A treatability study may be conducted to assess the most effective bioaugmentation additive to fully reduce the COCs to harmless by-products and to disperse to treat a larger area. Either of these variables (additive and how well it disperses) could impact the effectiveness of this alternative as well as the technical feasibility of implementation. There are no technical concerns with the LUCs required as part of this alternative. The equipment and materials required for microbe and carbon source delivery are commercially available, but specialized knowledge of in situ biological treatment would be required for implementation. Very few commercial vendors have the required expertise. With sufficient study, it is likely that an implementable design could be developed, however subsurface conditions could impact the effectiveness and cost.

Administrative Feasibility

All actions under this alternative would be implemented on the site and thus do not require permits, though substantive provisions of permits that would otherwise be required are considered to be ARARs. By legal agreement (i.e., the FFA), the Army shall submit to the USEPA and TCEQ a Responsiveness Summary and a draft ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the Army and USEPA, or if they are unable to reach agreement about the selection of the remedial action, by the USEPA Administrator. By addressing the identified ARARs in the ROD and subsequent documents, it is anticipated that the alternative would adequately address all administrative barriers.

LUCs, although administratively implementable, would require the following: development of an implementation plan as part of the remedial design; a site approval process to approve land-use changes to ensure the integrity of the controls, and internal notices to relevant regulatory offices

of the existence of the LUCs. Approval by the USEPA and the State of Texas is required prior to the modification or termination of LUCs, implementation actions, or modification of land-use by the Army. The Army shall also seek concurrence from the USEPA and the State of Texas prior to any action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs.

6.3.3.7 Cost

The total project present worth cost of Alternative 3 is approximately $1,343,200. The details of the cost estimates for all of the alternatives are presented in **Appendix C**.

Capital Cost

The total direct capital cost is estimated at approximately $860,100. The direct capital cost includes the activities associated with LUCs (access controls), in situ bioremediation, and monitoring well installation.

LTM and O&M Cost

The total LTM and O&M cost is estimated at approximately $483,100. The O&M cost includes a second bioremediation treatment and LTM through year 10 associated with the LUCs and the assessment of in situ bioremediation performance. Monitoring will be conducted quarterly the first 2 years, semiannually for years three through five, annually for years 6 through 10, and every five years thereafter.

6.3.4 Alternative 4 – In Situ Bioremediation for Eastern Plume followed by MNA and LUCs; MNA and LUCs for Western Plume

<u>Eastern Plume</u>

This alternative reduces contamination in the area of highest concentrations in the groundwater plume via in situ bioremediation using bioaugmentation. COC concentrations in the groundwater outside of the treated area will naturally attenuate over time until MCLs are met. Bioremediation will accelerate the degradation of contaminants that is naturally occurring. The in situ bioremediation would reduce COC concentrations to MCLs within the treated area of the plumes within a relatively short time period (approximately 2 years), provided that bioremediation results are favorable. However, this is just an estimate based on assumptions of the effectiveness of the in situ bioremediation and current data defining the hydrogeologic conditions and extent of contamination. LUCs and LTM would be components of this alternative until such time that the groundwater meets cleanup levels (i.e., MCLs are achieved throughout the plumes).

Western Plume

The western plume remediation relies on monitoring the natural reduction of contaminant levels in groundwater in an MNA program combined with the maintenance of LUCs to prevent human exposure to contaminated groundwater at LHAAP-35A(58). LUCs are a major portion of the alternative as the groundwater contamination presenting an unacceptable risk to human health would not be actively treated, although it will naturally attenuate to acceptable levels. LTM activities would monitor COC concentrations in groundwater for plume stability and natural degradation.

6.3.4.1 Overall Protection of Human Health and the Environment

Protection of Human Health

This alternative would eventually achieve the destruction of the COCs present in the groundwater plumes and the RAO for LHAAP-35A(58). Continued maintenance of the LUCs would prevent human access and exposure to groundwater that poses an unacceptable risk to human health, until COCs have sufficiently degraded to below the action levels. Therefore, the residual risk upon completion of the remedial actions will be within the risk range for the hypothetical future maintenance worker. This alternative is protective of human health and the environment and achieves the RAOs for LHAAP-35A(58).

Protection of the Environment

The Installation-Wide Baseline Ecological Risk Assessment identified no potential risk to ecological receptors from the contaminants at LHAAP-35A(58) (Shaw, 2007a).

6.3.4.2 Compliance with ARARs

Chemical-Specific ARARs

This alternative would comply with chemical-specific ARARs for groundwater through MNA and in situ biotreatments.

Location-Specific ARARs

The activities that would be conducted under this alternative would comply with location-specific ARARs. No activities would take place in sensitive environments such as wetlands, and no impacts to archeological resources or threatened and endangered species are anticipated.

Action-Specific ARARs

The activities that would be conducted under this alternative would comply with action-specific ARARs.

6.3.4.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risks

Upon completion of groundwater biotreatment in the eastern plume (approximately 2 years), the risk within the treated groundwater plume would be reduced to within the target risk range for the hypothetical future maintenance worker in portions of the plumes. However, residual contamination above MCLs is expected to remain in the untreated portions of the eastern plume and in the western plume for several years until they attenuate. Thus, groundwater use restrictions would be required until multiple rounds of sampling document that contamination in both groundwater plumes is not above the MCLs.

Adequacy and Reliability of Controls

The implementation of LUCs would protect the hypothetical future maintenance worker from exposure to contaminated groundwater at LHAAP-35A(58) until MCLs are met. The reliability of LUCs would depend on the long-term maintenance of the controls. Maintenance of the LUCs and MNA implemented with these controls would be required until groundwater COC concentrations attenuate to their respective MCLs over the long term. Compliance with the risk-reduction goals will be monitored and will be consistent with the required 5-year review. The performance of the controls will be assessed throughout the duration of this alternative. The 5-year reviews may indicate the need for components of this alternative to be maintained, modified, or replaced.

6.3.4.4 Reduction of Toxicity, Mobility, or Volume through Treatment

In situ bioremediation would irreversibly reduce the toxicity, mobility and volume of the contaminants in the treated portions of the eastern groundwater plume. This alternative proposes that the groundwater COCs would be treated to the preliminary remediation goals in the eastern plume in the areas of highest contamination only. This alternative would satisfy the USEPA statutory preference for remedial actions that permanently reduce contaminant toxicity, mobility and volume and utilize treatment as a principle element.

MNA will reduce the toxicity and volume of COCs in the western groundwater plume through natural biological and chemical processes.

6.3.4.5 Short-Term Effectiveness

Protection of the Community During Remedial Action

This alternative is protective of the surrounding community during remedy implementation primarily because activities would occur on site with very little disturbance of contaminated material.

Protection of Workers During Remedial Action

This alternative would involve potential short-term risks to workers associated with the operation of drilling equipment and potential exposure to contaminated groundwater during sampling activities. The implementation of an effective health and safety program would minimize potential short-term risks to remediation personnel. Remediation workers would conform to the site health and safety program and would be equipped with the necessary PPE. A site-specific health and safety plan would be prepared prior to implementing this alternative.

Short-Term Environmental Effects

Some minor clearing and grubbing to install monitoring wells or injection points for bioremediation of groundwater may be required. It is unlikely that there are any sensitive species that would be impacted since these areas were cleared in the past. If any sensitive species are found, the appropriate regulations would be followed. The implementation of proper engineering controls would minimize the risk of environmental impacts.

Duration of Remedial Activities

Eastern Plume

The duration of this alternative is estimated to be more than 10 years. It is assumed that, in year 1, a treatability study may be conducted to determine the effectiveness of the proposed bioaugmentation, plans are prepared and one bioaugmentation injection/treatment performed for the eastern plume, if warranted. In year two, four quarters of monitoring are performed as well as a second bioaugmentation injection/treatment may be made for the eastern plume, if required. The second treatment is followed by at least 8 years of additional groundwater water monitoring for the eastern plume. The time frames for the eastern plume are difficult to estimate since it uncertain how well bioaugmentation may disperse to influence the degradation of the plume outside the treated areas. In addition residual COCs may be present in the clay matrix surrounding the permeable lenses which could continue to impact water quality into the future. Aquifer studies will be needed to determine the most effective location for injection. Monitoring would be needed until MCLs are met and to determine trends in groundwater contamination levels and effectiveness of the remedial action (biotreatment and MNA). The monitoring time may increase or decrease, depending on the effectiveness of the treatment method, and 5-year reviews for the eastern plume are not expected to continue beyond the western plume's 5-year review time frame.

Western Plume

Implementation of LUCs would prevent exposure to contaminated groundwater by prohibiting installation of potable water wells at LHAAP-35A(58) in the western plume. This alternative could provide almost immediate protection because LUCs can be implemented relatively quickly (e.g., within six months). Maintenance of the controls would be required until contaminant

concentrations are below MCLs. It is estimated as long as 135 years for natural attenuation processes to reduce the contaminants to their MCLs, and 5-year reviews will continue throughout this time frame.

6.3.4.6 Implementability

Technical Feasibility

All components of this alternative are implementable. There are some technical concerns regarding the effectiveness of the bioremediation at the site. A treatability study may be conducted to assess the most effective bioaugmentation additive to fully reduce the COCs to harmless by-products and to disperse to treat a larger area. Either of these variables (additive and how well it disperses) could impact the effectiveness of this alternative as well as the technical feasibility of implementation. There are no technical concerns with the LUCs required as part of this alternative. The equipment and materials required for microbe and carbon source delivery are commercially available, but specialized knowledge of in situ biological treatment would be required for implementation. Very few commercial vendors have the required expertise. With sufficient study, it is likely that an implementable design could be developed, however subsurface conditions could impact the effectiveness and cost.

Administrative Feasibility

All actions under this alternative would be implemented on the site and thus do not require permits, though substantive provisions of permits that would otherwise be required are considered to be ARARs. By legal agreement (i.e., the FFA), the Army shall submit to the USEPA and TCEQ a Responsiveness Summary and a ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the Army and USEPA, or if they are unable to reach agreement about the selection of the remedial action, by the USEPA Administrator. By addressing the identified ARARs in the ROD and subsequent documents, it is anticipated that the alternative would adequately address all administrative barriers.

LUCs, although administratively implementable, would require development of an implementation plan as part of the remedial design and internal notices to relevant regulatory offices of the existence of the LUCs. Approval by the USEPA and the State of Texas is required prior to the modification or termination of LUCs, implementation actions, or modification of land-use by the Army. The Army shall also seek concurrence from the USEPA and the State of Texas prior to any action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs.

6.3.4.7 Cost

The total project present worth cost of Alternative 4 is approximately $785,000. The details of the cost estimates for all of the alternatives are presented in **Appendix C**.

Capital Cost

The total direct capital cost is estimated at approximately $191,000. The direct capital cost includes the activities associated with LUCs (access controls), in situ bioremediation, and monitoring well installation.

LTM and O&M Cost

The total LTM and O&M cost is estimated at approximately $594,000. The O&M cost includes a second bioremediation treatment and MNA through year 15 associated with the LUCs and the assessment of in situ bioremediation performance for the eastern plume and for 30 years for the western plume. Note: MNA is expected to take approximately 135 years, but 30 years is used for the estimates.

6.4 Comparative Analysis of Alternatives

6.4.1 Introduction

This section presents a comparative analysis of the remedial alternatives for LHAAP-35A(58) according to the CERCLA evaluation criteria described in **Section 6.2**. This analysis is the second stage of the detailed evaluation process and provides information that forms the basis for selecting a preferred remedy.

This comparative analysis considers two of the three criteria categories, the threshold criteria and primary balancing criteria. The threshold category contains two criteria that must be satisfied by the selected alternative:

- Overall protection of human health and the environment and
- Compliance with ARARs.

These criteria are important because they reflect the key statutory mandates of CERCLA. If an alternative does not satisfy both of these criteria, it is not eligible to be selected.

The primary balancing category contains five criteria under which the relative advantages and disadvantages of the alternatives are compared to determine the most appropriate remedy. The five criteria are the following:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost

The comparison of these five criteria for the alternatives forms the basis of the comparative analysis. The first and second balancing criteria address the statutory preference for treatment as a principal element of the remedy. Together with the third and fourth criteria, they form the basis for determining the general feasibility of each alternative and for determining whether costs are proportional to the overall effectiveness.

The two modifying criteria, state and community acceptance, must be satisfied if the alternative is to be accepted. The modifying criteria of state and community acceptance are typically not evaluated until the public has had an opportunity to comment on the Proposed Plan. Because specific alternatives have not been presented to the state and community, these two criteria are not formally compared in the FS.

A comparative analysis under the threshold and primary balancing criteria is presented in **Sections 6.4.2** and **6.4.3**, respectively, and is consistent with the format of the individual analysis of alternatives in **Section 6.3**.

6.4.2 Threshold Criteria

6.4.2.1 Overall Protection of Human Health and the Environment

The four alternatives provide varying levels of human health protection. Alternative 1, no action, would not be protective of human health or the environment because no measures would be implemented to eliminate the pathway for human exposure to the groundwater contamination. Alternative 1 does not achieve RAOs and provides the least protection of all the alternatives.

All three action alternatives (Alternatives 2, 3, and 4) satisfy the RAOs for LHAAP-35A(58). Alternative 2, which relies most heavily on LUCs combined with MNA, would be protective of human health because the controls would prevent human access to the contaminated groundwater. However, if MNA is not effective and the plume is not stable and migrates to an area where LUCs are not in place, there is a potential for human access. Alternative 4 provides a slightly higher level of overall protection than Alternative 2 because the MCLs for the groundwater COCs posing unacceptable exposure risks would be achieved in a shorter time frame for the eastern plume through in situ biotreatment. Alternative 3 provides a slightly higher level of overall protection than Alternative 4 because the MCLs for the groundwater COCs posing unacceptable risks would be achieved in both plumes in a shorter time frame.

6.4.2.2 Compliance with ARARs

Alternative 1 does not comply with chemical-specific ARARs because no remedial action or measures would be implemented. Alternatives 2, 3, and 4 comply with chemical-specific ARARs for groundwater.

Location-specific and action-specific ARARs would not apply to Alternative 1 since no remedial activities would be conducted. Alternatives 2, 3, and 4 comply with location-specific and action-specific ARARs.

6.4.3 Primary Balancing Criteria

6.4.3.1 Long-Term Effectiveness and Permanence

Alternative 1 would be the least effective and permanent in the long term because no contaminant removal or treatment would take place and no measures would be implemented to control exposure risks posed by contaminated site groundwater.

Alternative 2 offers a moderate degree of long-term effectiveness through the implementation of MNA with LUCs, which would minimize the potential risk posed by the contaminated groundwater. If MNA is not effective, Alternative 2 may pose same risk as Alternative 1 if the plume is not stable and migrates.

Although Alternatives 3 and 4 may significantly reduce groundwater contaminant concentrations and achieve the MCLs in a shorter time frame, the actual potential effectiveness will be controlled by the time to achieve MCLs which is controlled by: (1) the nature of the permeable water-bearing zones and (2) the distribution and presence of COCs remaining in the groundwater in untreated areas.

6.4.3.2 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1 does not employ active treatment and would not result in a reduction of toxicity, mobility, or volume of contaminants through treatment.

Alternatives 3 and 4 would provide reduction in toxicity, mobility and volume of the groundwater contaminants via active treatment. Alternative 2 relies on MNA, a passive treatment. However, this reduction would only occur if further evaluations of MNA and in situ bioremediation are favorable.

6.4.3.3 Short-Term Effectiveness

Because Alternative 1 does not involve any remedial measures, no short-term risk to workers, the community or the environment would exist.

Alternatives 2, 3 and 4 involve potential short-term risks to workers associated with exposure to contaminated groundwater and/or operation of drilling/construction equipment. The time period to achieve the groundwater preliminary remediation goals is the most significant difference between Alternatives 2, 3, and 4. Alternative 4 is expected to take less time to achieve the remediation goals than Alternative 2 and Alternative 3 is expected to take less time to achieve the remediation goals than Alternative 4, provided subsurface conditions for in situ

bioremediation are favorable. The implementation of Alternatives 3 and 4 would require more time than for Alternative 2 due to the requirement for a remedial design and pre-design testing. Alternative 2 would provide almost immediate protection because the LUCs could be implemented relatively quickly, but maintenance of these controls would be required for a longer period than Alternative 3.

6.4.3.4 Implementability

Administratively, all of the alternatives are implementable. Under the no action alternative, no remedial action would be taken. Therefore, no difficulties or uncertainties would be associated with its implementation. Alternative 2 is easily implemented from a technical standpoint because no construction activities would be performed, although routine maintenance of the LUCs and groundwater sampling would be required.

Alternatives 3 and 4 are also technically implementable, although less so than Alternative 2 because of the uncertainties associated with the ability of in situ bioremediation to lower contaminant levels sufficiently to reach the MCLs. Alternatives 3 and 4 would also be more difficult to implement than Alternative 2 from a technical standpoint due to the specialized expertise required to design and construct the in situ bioremediation treatment elements.

6.4.3.5 Cost

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

Costs developed are capital costs (including fixed-price remedial construction) and long-term O&M costs (post-remediation). Present worth costs are developed for each alternative assuming a discount rate of 2.8 percent. Total project present worth costs for each alternative is presented in **Appendix C**.

The progression of present worth costs from the least expensive alternative to the most expensive alternative is as follows: Alternative 1, Alternative 2, Alternative 4 (with no conditional enhancement) and Alternative 3. No costs are associated with Alternative 1 because no remedial activities would be conducted. Alternative 2 has the lowest present worth and capital costs of the remediation alternatives (Alternatives 2 through 4). The present worth costs for Alternative 2 is lower than that of Alternatives 3 and 4, primarily due to the costs and activities associated with the installation of the bioremediation system and the two injection phases of in situ

bioremediation for the eastern plume. Alternative 3 is approximately 35% more than the cost of Alternative 2.

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Appendix A

Natural Attenuation Evaluation

APPENDIX A
NATURAL ATTENUATION EVALUATION

FINAL
FEASIBILITY STUDY
LHAAP-35A(58), SHOP AREA, GROUP 4
LONGHORN ARMY AMMUNITION PLANT

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Contract No. W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591

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Table of Contents

List of Tables

List of Figures

Acronyms and Abbreviations

cells/L	cells per liter
CO_2	carbon dioxide
COC	chemicals of concern
DCA	dichloroethane
DCE	dichloroethene
DHC	*Dehalococcoides*
DO	dissolved oxygen
DPT	direct push technology
Fe^{+3}	ferric iron
LHAAP	Longhorn Army Ammunition Plant
LOE	lines of evidence
MARC	Multiple Award Remediation Contract
MCL	maximum contaminant level
µg/L	micrograms per liter
MNA	monitored natural attenuation
MSL	mean sea level
mV	millivolts
NO_3^-	nitrate
O_2	oxygen
ORP	oxidation-reduction potential
PCE	tetrachloroethene
Plexus	Plexus Scientific Corporation
Shaw	Shaw Environmental, Inc.
SO_4^{-2}	sulfate
TBC	to be considered
TCA	trichloroethane
TCE	trichloroethene
TOC	total organic carbon
USAFCEE	U.S. Air Force Center for Environmental Excellence
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

1.0 Introduction

The U.S. Army Corps of Engineers, Tulsa District, contracted Shaw Environmental, Inc. (Shaw), under Louisville District's Multiple Award Remediation Contract (MARC) Number W912QR-04-D-0027, Task Order No. DS02, to conduct environmental restoration at Longhorn Army Ammunition Plant (LHAAP). This report presents the evaluation for the occurrence of natural attenuation of groundwater contaminants at LHAAP-35A(58).

The primary chemicals of concern (COCs) in groundwater at LHAAP-35A(58) are 1,1-dichloroethene (DCE), trichloroethene (TCE), tetrachloroethene (PCE), 1,1,2-trichloroethane (TCA), and vinyl chloride (VC). Sampling was conducted in February 2007 to collect data to evaluate the occurrence of natural attenuation of the groundwater contaminants. This data along with historic and subsequent data for LHAAP-35A(58) were used in the evaluation.

1.1 Site Operation History

LHAAP-58 was the Shop Area and provided a wide range of support services with shops for laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical. The operations were from 1942 to 1996/1997. Degreasing operations and solvent use were recorded at several buildings across the site (Plexus, 2005).

1.2 Site Geology and Hydrogeology

The soils at LHAAP-35A(58) consist of clays and silty clays with thin lenses of sand. Groundwater is present within these sand layers and is located in three groundwater zones. The shallow and shallow/intermediate zone is approximately 10 to 30 feet bgs. Well 35AWW01 was completed in the intermediate zone at 71 feet bgs. Well 35AWW02 was completed in the deep zone at 136 feet bgs. The November 2008 groundwater elevation data from the shallow zone ranged from approximately 15 feet bgs feet on the western side to 23 feet bgs on the eastern side. The water level has dropped approximately 5 to 10 feet in the shallow groundwater zone since 1998. The shallow groundwater flows radially towards the west and east from the south central portion of the site. In November 2007, water level readings were collected for the Production Area, and the groundwater gradient was to the east and to the west as noted above. Additional wells were installed in 2008, and a new groundwater gradient map was developed based on November 2008 readings (**Figure A-2**).

Modeling was conducted to evaluate the groundwater to surface water pathway (Shaw, 2007). The Jacobs 1998 groundwater gradiant map was used for the modeling and generally indicates a similar flow path as the current gradient, and that the general gradient from LHAAP-35A(58) to Goose Prairie Creek has not changed. To further evaluate any impact to the creek tributary on

the western side, the elevation of groundwater on the western side of the site was evaluated versus the Goose Prairie Creek elevation. The elevation of the bottom of the creek approximately 1,000 feet downgradient of LHAAP-35A(58) is 203 feet mean sea level (MSL). Thus, the tributary to the creek adjacent to the site would be higher in elevation (i.e., approximately 213 feet MSL [using 1:100 rise:run]). In 1998, the groundwater elevation was higher than in recent years, and the RI groundwater gradient map indicates that the groundwater level at the tributary is approximately 205 feet MSL. Thus, the groundwater from LHAAP-35A(58) would not impact the creek tributary that runs on the western side of LHAAP-35A(58).

1.3 Conceptual Site Model

Operations conducted at LHAAP-35A(58) used degreasers and solvents, and work practices/spills from 1942 through 1996/1997 were probably the source of the groundwater contamination. The soils are not a media of concern at LHAAP-35A(58) since contaminants in the soil do not pose any risk or have volatile organic compound (VOC) concentrations that would leach into the water from soil contamination. LHAAP-03, located physically within LHAAP-35A(58), has a soil action planned to eliminate soil contaminated with metals that could potentially leach into the groundwater.

The shallow groundwater poses a risk to human health. There are no COCs identified for the intermediate or deep groundwater zones. The primary COCs in the shallow groundwater zone at LHAAP-35A(58) are VOCs as follows: 1,1,2-trichloroethane (1,1,2-TCA) and PCE with the daughter products TCE, 1,1-DCE, and VC. Chlorinated solvents typically contain PCE, TCE, or 1,1,1-TCA. Based on historic documentation and detected concentrations, it is assumed that PCE and 1,1,1-TCA were probably the primary chlorinated solvents used.

The western plume, associated primarily with automotive operations, is comprised of 1,1-DCE with some TCE. There have been some PCE detections in the past, but concentrations were not high enough to cause a large plume. Thus, it can be assumed that the degreaser used in the automotive operations was probably TCA since 1,1-DCE (a daughter product) has been detected.

The eastern plume is primarily associated with maintenance and painting operations, and it contains a higher concentration of PCE along with TCE (a degradation product). Thus, it can be assumed that the degreaser/solvent used in these operations was primarily PCE.

Sampling has been conducted at LHAAP-35A(58) since 1994. In February 2007, data were collected to evaluate the occurrence of natural attenuation of the groundwater contaminants. Also, additional groundwater samples were collected to better define the plumes and to obtain a more recent data set for the feasibility study, because much of the data was four years old or older. Additional information on the investigations can be found in the main text of this feasibility study. The laboratory data reports from the February 2007 through November 2008

sampling events are included on the compact disk as **Appendix B** of the Feasibility Study. This data along with historic data for these sites was used in the evaluation.

2.0 Description of Natural Attenuation

Natural attenuation is defined as the reduction of contaminants from the combined effect of intrinsic biodegradation, advection, dispersion, dilution, volatilization, and absorption mechanisms. Generally, intrinsic biodegradation is the most important natural attenuation mechanism to result in contaminant destruction. Intrinsic biodegradation can occur in any environment that supports microbial activity. The biodegradation may be limited by the lack of a suitable respiratory substrate (e.g., oxygen) or inorganic nutrients, extreme pH, or limited contaminant bioavailability. Accurate contamination delineation, subsurface conditions characterization, and contaminant migration determination are critical for defining the contribution of intrinsic biodegradation to concentration reduction, for evaluating the effectiveness of natural attenuation, and for establishing regulatory support for use of natural attenuation at a site. Monitored natural attenuation (MNA) entails the use of natural attenuation within the context of a monitoring plan to demonstrate reductions in contaminant concentrations and achievement of remedial objectives.

2.1 Natural Attenuation Lines of Evidence

The U.S. Environmental Protection Agency (USEPA) guidance, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater (USEPA, 1998), will be used as a to-be-considered (TBC) requirement during the natural attenuation evaluation. The USEPA guidance specifies a tiered approach of recommended lines of evidence (LOEs) required for demonstrating that MNA is an effective remedy.

There are three LOEs according to the USEPA guidance document based on the OSWER Directive 9200.4-17, which are described as follows:

1. ***First line of evidence.*** Observed Reduction in Contaminant Mass and Concentration. Relies on use of historical groundwater data that demonstrate a clear trend of stable or decreasing COC concentrations over time at appropriate monitoring or sampling points.
2. ***Second line of evidence.*** Identified and Quantified Natural Attenuation Processes. Uses geochemical indicators to document certain geochemical signatures or "footprints" in the groundwater that demonstrate (indirectly) the type of natural attenuation process(es) occurring at the site and the rate at which such processes will reduce COCs to the maximum contaminant levels (MCLs).
3. ***Third line of evidence.*** Microcosm Studies. Most often consists of predictive modeling studies and other laboratory/field studies that demonstrate the occurrence of natural attenuation process(es) at the site and its ability to degrade the COCs.

All three LOEs were evaluated for LHAAP-35A(58) to demonstrate the occurrence of natural attenuation of groundwater COCs.

2.2 Biodegradation

Biodegradation occurs when bacteria use contaminants as carbon sources or electron acceptors. The chlorinated solvents constituting the groundwater COCs at LHAAP-35A(58) are classified as either parent compounds (PCE, TCE, 1,1,1-TCA, and 1,1,2-TCA) that biodegrade via multiple pathways or daughter products (cis-1,2-DCE, 1,1-DCE, 1,2-dichloroethane [DCA], and VC) that are generated from biotic or abiotic degradation of those parent compounds. Trends indicating COC degradation and generation of daughter products are direct evidence for the occurrence of biodegradation supporting the first LOEs.

The technical protocol for evaluating natural attenuation of chlorinated solvents in groundwater (USEPA, 1998) has a preliminary screening worksheet for evaluating whether anaerobic biodegradation is occurring. The worksheet assigns points for geochemistry and the presence of daughter products. A point total of 5 or less, indicates inadequate evidence of anaerobic degradation. A point total of 15 or more is adequate evidence for anaerobic biodegradation. If the point total is between 5 and 15, the score represents limited evidence for anaerobic degradation. The preliminary screening worksheet only addresses anaerobic degradation, not any of the other pathways for natural attenuation (aerobic biodegradation, diffusion, adsorption, etc.).

One of the most prevalent pathways for biodegradation of chlorinated solvents such as those identified at LHAAP-35A(58) is via reductive dechlorination. During this process, a chlorinated hydrocarbon is used as an electron acceptor resulting in the replacement of a chlorine atom with a hydrogen atom. The degradation of PCE via this pathway produces TCE, which undergoes further reductive dechlorination producing primarily cis-1,2-DCE, with a trace amount of trans-1,2-DCE. DCE isomers undergo reductive dechlorination resulting in the formation of VC, and subsequently the innocuous product ethene. When the DCE isomers are created, the cis-isomer is produced 10 to 100 times more often than the trans-isomer (Bouwer, 1994 and USEPA, 1998). The microbiological preference for producing the cis-isomer may be due to steric hindrances or enzyme active site configurations that favor the removal of the chlorine atom in the trans position. The TCA compounds can also undergo reductive dechlorination, resulting in the formation of DCA isomers, followed by chloroethane, and then the harmless product ethane. The isomer 1,1-DCE is predominantly produced via abiotic hydrolysis of 1,1,1-TCA.

Alternately, the DCE isomers, DCA and VC can be utilized as carbon sources and undergo biodegradation to carbon dioxide (CO_2) and chloride ion via aerobic or anaerobic oxidation. Although the COCs can degrade via multiple biodegradation pathways, reductive dechlorination is typically the most common pathway observed.

2.3 Geomicrobiology

Biological monitoring parameters are indicators of microbiological activity in the subsurface and are evaluated in support of the second line of evidence. Microbial respiration is the biochemical process that leads to the oxidation of reduced organic carbon. Frequently encountered respiratory substrates (or electron acceptors) include oxygen (O_2), nitrate (NO_3^-), ferric iron (Fe^{+3}), sulfate (SO_4^{-2}), and CO_2. Respiratory substrates are used preferentially based on the amount of energy that can be derived from each of them. Respiratory substrates are used in the following order:

$$O_2 > NO_3^- > Fe^{+3} > SO_4^{-2} > CO_2$$

Reductive dechlorination of chlorinated solvents occurs under anaerobic (reducing) conditions such as sulfate reducing and methanogenic conditions (USEPA, 1998). Sulfate reduction and methanogenesis are inhibited until oxygen, nitrate, and ferric iron have been depleted (USAFCEE, 2004). Since sulfate reduction provides more energy to microorganisms than methanogenesis, sulfate reducers out-compete methanogens and dominate the microbial population as long as sulfate is abundant. Reductive dechlorination of PCE, TCE, and TCA isomers may occur under sulfate-reducing conditions; however, DCE isomers, 1,2-DCA, and VC require the more reducing methanogenic conditions to undergo reductive dechlorination, which typically commence once the sulfate concentrations near depletion.

As discussed above, the concentrations of microbial respiratory substrates and products can be used to demonstrate intrinsic biodegradation. Expected changes include depressed concentrations of dissolved oxygen (DO) and negative oxidation-reduction potential (ORP) values within and downgradient of actively degrading contaminant plumes. The concentrations of anaerobic respiratory substrates such as nitrate and sulfate should decrease in groundwater located within and downgradient of a contaminant plume that is actively undergoing intrinsic anaerobic biodegradation. Similarly, the concentrations of the products of anaerobic microbial respiration, specifically ferrous iron and methane, should increase under similar circumstances.

The biodegradation of chlorinated solvents, whether via reductive dechlorination, dichloroelimination, or anaerobic oxidation, releases chloride ions into groundwater. In areas where the groundwater has a very low background chloride concentration, an elevation in chloride concentration may be observed as a result of biodegradation of chlorinated solvents. However, high background chloride concentrations were observed at LHAAP, thus the slight contribution of chloride to groundwater through biodegradation is not quantifiable.

2.4 Microbial Analysis

Microbial analysis can provide evidence to support the third line of evidence. There are multiple strains that can dechlorinate TCE and TCA under anaerobic reductive conditions, but only one strain *Dehalococcoides* (DHC) can completely reduce the DCE isomers and VC to ethene. The presence of DHC in the groundwater can be used as evidence to support the third line of evidence.

3.0 Natural Attenuation Evaluation Results

This section presents the results of the natural attenuation evaluation in accordance with the three LOEs. Current data along with historical data for wells in the shallow zone used in this evaluation are summarized in **Table A-1** and **Table A-2** at the end of this report. **Figures A-3** through **A-7** present concentration trends of individual COCs. **Figures A-8** and **A-9** present concentrations versus distance for the eastern and western plumes. **Figures A-10** through **A-13** present concentrations over distance from the plume to downgradient wells to evaluate distance-dependent attenuation rates. The figures are presented at the end of the report following the tables.

Shallow groundwater at LHAAP-35A(58) was sampled during several events between 1994 and 2008. Groundwater samples were collected from permanent monitoring wells, temporary monitoring wells, and direct push technology (DPT) sampling points. Results are listed in **Table A-1**.

During a groundwater monitoring event in February 2007, wells LHSMW04, LHSMW06, and LHSMW07 were sampled for VOCs and natural attenuation parameters. Well LHSMW05 was dry at the time of the sampling event. Natural attenuation parameters from February 2007 and other sampling events are included in **Table A-2**. In 2003, Plexus, Inc. installed and sampled temporary wells 1004TW001 and 1004TW006 at the site and 1003TW001 and 1003TW007 near the site (Plexus, 2005). New monitoring wells 35AWW06, 35AWW07 and 35AWW08 were installed in 2008 along with DPT sampling.

Based on groundwater elevations and current and historical analytical results, two separate plume areas have been identified at LHAAP-35A(58) as shown on **Figure A-3**. In this evaluation, those areas are hereafter referred to as the western plume and the eastern plume. An evaluation of MNA LOEs is presented below with respect to the natural attenuation of the five COCs: PCE, TCE, 1,1-DCE, 1,1,2-TCA, and VC. For the purposes of the evaluation, the USEPA MCLs for drinking water were used as the cleanup levels.

The preliminary screening worksheet was evaluated for multiple well locations in the plumes at LHAAP-35A(58) and for wells with most of the recommended analytical test results. The point totals ranged from 8 to 12 for the western plume, and 6 points for wells in the eastern plume. These scores show evidence of anaerobic degradation. Because the preliminary screening shows evidence for anaerobic biodegradation, this natural attenuation evaluation will evaluate that evidence in greater detail.

The evaluation of MNA LOEs for the shallow groundwater at LHAAP-35A(58) is presented below.

3.1 Change in COC Concentrations Over Time and with Distance

The change in groundwater COC concentrations over time and with distance was evaluated at LHAAP-35A(58). Because the intermediate and deep groundwater zones are not impacted with COCs, the MNA evaluation was conducted for the shallow zone only. Wells within and near the eastern plume include LHSMW03, LHSMW04, LHSMW05, 03WW01, 35AWW03, 35AWW07, and 35AWW08. Wells within and near the western plume include LHSMW06, LHSMW07, 35AWW04, and 35AWW06 (see **Figure A-3**).

According to historical and current data, 1,1,2-TCA, 1,1-DCE, PCE, TCE, and VC were detected above their respective MCLs. Daughter products are also discussed in this section. **Figure A-3** shows the current extent of COCs exceeding the MCLs in shallow groundwater at LHAAP-35A(58). **Table A-1** presents concentrations of various COCs and daughter products in the groundwater at LHAAP-35A(58).

3.1.1 Tetrachloroethene (PCE)

PCE was detected exceeding its MCL (5 micrograms per liter [µg/L]) in six monitoring wells (03WW01, 35AWW08, LHSMW04, and LHSMW05 in the eastern plume, and 35AWW06 and LHSMW07 in the western plume). LHSMW07 had PCE exceeding the MCL in early 1996, with later results indicating that PCE was not detected or was below the MCL. At the five wells in the eastern plume, PCE concentrations exceed the MCL in the most recent sample results. Monitoring Wells 03WW01, 35AWW06 and 35AWW08 have been sampled only once since their installation in 2008. Monitoring wells LHSMW04, LHSMW05, and LHSMW07 had three or more PCE results available and are plotted on **Figure A-4**.

3.1.2 Trichloroethene (TCE)

TCE may be either a daughter product from degradation of PCE or an independent contaminant. TCE was detected exceeding its MCL (5 µg/L) in five monitoring wells (03WW01, 35AWW08, LHSMW04, and LHSMW05 in the eastern plume, and LHSMW07 in the western plume). All five monitoring wells have TCE results exceeding the MCL in the most recent sample results. Monitoring wells 03WW01 and 35AWW08 have only one result available for each well. Monitoring wells LHSMW04, LHSMW05, and LHSMW07 had three or more TCE results and these are plotted on **Figure A-5**.

3.1.3 Trichloroethane (TCA)

The 1,1-DCE is a daughter product of TCA. While neither 1,1,1-TCA or 1,1,2-TCA exceed their MCLs in the most recent results, 1,1,2-TCA was detected in the past exceeding its MCL (5 µg/L)

at monitoring well LHSMW07 in the western plume in January 1996 and May 1998. Later results indicate that 1,1,2-TCA was below the MCL and has decreased to 1.92 µg/L in November 2008 (**Table A-1**). Historical data suggest that degradation of TCA occurred in the western plume and has almost completely been converted to 1,1-DCE.

3.1.4 Dichloroethene (DCE)

As TCE is degraded via reductive dechlorination, the next lower chlorinated daughter products formed are cis-1,2-DCE and trans-1,2-DCE at a ratio between 100 to 1 and 10 to 1. Historically, cis-1,2-DCE and trans-1,2-DCE have not been detected exceeding their MCLs (70 and 100 µg/L respectively). Only three samples showed detectable concentrations of both the cis- and trans-isomers, one in temporary well 1004TW006, and two at LHSMW07 (**Table A-1**). The ratio of detected cis-1,2-DCE to trans-1,2-DCE concentrations range from 15.0 to 18.9. This suggests that degradation of TCE is occurring at monitoring well LHSMW07 in the western plume.

The daughter product 1,1-DCE can be produced by decomposition of TCA (common) or TCE (less common). 1,1-DCE was detected exceeding its MCL (7 µg/L) in two monitoring wells (35AWW06 and LHSMW07) in the western plume. Two temporary monitoring wells (1004TW001 and 1004TW006) had 1,1-DCE exceeding the MCL in December 2003, and 35AWW06 has only one result. Monitoring well LHSMW07 has more than three 1,1-DCE results and these are plotted on **Figure A-6**. The concentration trend for 1,1-DCE at LHSMW07 is decreasing, from 750 µg/L in December 1994 to 576 µg/L in November 2008, with a maximum of 1,341 µg/L in January 1996.

3.1.5 Vinyl Chloride (VC)

The final chlorinated daughter product of PCE and TCE during reductive dechlorination is VC. VC was detected exceeding its MCL (2 µg/L) in monitoring well LHSMW07 in the western plume. Two temporary monitoring wells (1004TW001 and 1004TW006) had VC results exceeding the MCL in single sample results from December 2003. Monitoring well LHSMW07 has more than three VC results and these are plotted on **Figure A-7**. LHSMW07 shows a trend of increasing concentrations of VC from 10.0 µg/L in January 1996 to 14.4 µg/L in November 2008. The presence of VC suggests that some degradation of DCE isomers is occurring at LHSMW07.

3.1.6 Distance

The evaluation of changes in COC concentrations with respect to distance further elucidates that natural attenuation mechanisms have controlled plume migration. The historical and current VOC data indicate a clear decreasing trend in COC concentrations with distance away from the sources of contamination.

In the eastern plume, downgradient monitoring well 35AWW07 and lateral monitoring wells 35AWW03 and LHSMW03 show undetectable COC concentrations during their most recent sampling events (**Table A-1**). These data show that the elevated COC concentrations have attenuated before they reach downgradient or lateral monitoring wells. **Figure A-8** shows the most recent PCE and TCE concentrations (November 2008) along the eastern plume from upgradient monitoring well LHSMW06 to 35AWW08 by the source area, and then progressively downgradient to 03WW01, LHSMW04, and 35AWW07. The almost identical shape of the PCE and TCE concentrations over distance indicate either a consistent initial mix of solvents, or relatively consistent rates of degradation from PCE to TCE over the length of the plume.

In the western plume, upgradient monitoring well LHSMW06, downgradient monitoring well 35AWW04, and lateral DPT sample points 58DPT06 and 58DPT03 show undetectable COC concentrations during their most recent sampling events (**Table A-1**). These data show that the elevated PCE, TCE, VC, and 1,1-DCE concentrations have attenuated before they reach downgradient or lateral locations. **Figure A-9** shows the most recent COC concentrations (November 2008, but September 2004 at 35AWW04) along the western plume from upgradient monitoring well LHSMW06 to LHSMW07 by the source area, and then progressively downgradient to 35AWW06 and ultimately 35AWW04.

3.1.7 Summary of First Line of Evidence

Historical and current VOC data indicate the eastern plume, composed primarily of PCE with some TCE, is bounded. PCE and TCE concentrations are stable or rising at monitoring wells within the plume limits, but there are upgradient and downgradient monitoring wells where PCE and TCE are not detectable. The lack of detections in lateral wells and downgradient monitoring well 35AWW07 is an indicator that the eastern plume PCE and TCE concentrations are attenuating with distance.

Historical and current VOC data indicate the western plume of primarily 1,1-DCE with small amounts of PCE, TCE, and VC is bounded. Concentrations of 1,1-DCE show a decreasing concentration trend, though the most recent result is higher than the previous one. PCE concentrations are very low and have fallen below the MCL at LHSMW07, but are above the MCL at the newly installed 35AWW06. TCE concentrations are a bit higher than the PCE, and only above the MCL at LHSMW07. VC concentrations show variable concentrations over time, suggesting VC is being created by degradation of the 1,1-DCE, and then attenuating. The lack of detections in lateral DPT points and downgradient monitoring well 35AWW04 is an indicator that the western plume is attenuating with distance.

3.2 Geochemical Indicators

Groundwater field parameters, including DO, ORP, pH, temperature, and conductivity were analyzed in the field during the February 2007 and November 2008 sampling events. In addition, laboratory analysis for the following natural attenuation parameters was performed during the same sampling event: gases (methane, ethane, and ethene), anions (sulfate, nitrate, nitrite, and chloride), and total organic carbon (TOC). The current and historical results of natural attenuation parameters at LHAAP-35A(58) are presented in **Table A-2**.

Dissolved Oxygen: Oxygen is the preferred terminal electron acceptor during aerobic microbial respiration. A DO level less than 500 µg/L is the most favorable condition for anaerobic reductive dechlorination, and anaerobic microbial activity would not tolerate DO levels above 5,000 µg/L (USEPA, 1998). DO levels ranged from 850 to 7,760 µg/L in the eastern plume and from 160 to 4,150 µg/L in the western plume (**Table A-2**). The range of DO levels is for the most part appropriate for anaerobic microbial activity (11 of 12 readings <5,000 µg/L), and most favorable at monitoring well LHSMW06 (160 µg/L).

Oxygen Reduction Potential: ORP often correlates with the dominant type of microbial activity. The more negative the measurement, the more likely that sulfate-reducing or methanogenic conditions can occur in the subsurface. Reductive dechlorination could occur under an ORP level of less than 50 millivolts (mV) (USEPA, 1998). The ORP measurements in the shallow groundwater zone at LHAAP-35A(58) ranged from -85.1 to 237.5 mV in the eastern plume, and from -0.19 to 282 mV in the western plume (**Table A-2**). The range of ORP readings indicate conditions favorable for reductive dechlorination at some monitoring wells, but not at all wells, and ORP conditions improved between February 2007 and November 2008. At 35AWW08, where PCE and TCE concentrations are the highest, the ORP was -44.1 mV indicating favorable conditions for reductive dechlorination.

Nitrate: Following oxygen, microorganisms preferentially use nitrate as a terminal electron acceptor. Concentrations of nitrate less than 1,000 µg/L are not expected to interfere with anaerobic reductive dechlorination (USEPA, 1998). Active nitrate-reducing conditions are often indicated by a depletion of nitrate in groundwater and a possible increase in nitrite. Nitrate concentrations from 1996 and February 2007 were below 1,000 µg/L in 18 of 19 samples (**Table A-2**). Nitrate was generally not detected, with the highest nitrite concentration being 2,000 µg/L at LHSMW05 from August 1996. Nitrate was not detected in any of the samples. From these results, nitrate reduction may be taking place at LHAAP-35A(58).

Ferrous Iron: Once nitrate has been depleted, microorganisms use ferric iron as the next terminal electron acceptor. As a measurement of reduced ferric iron, an accumulation of ferrous iron may be observed. Ferrous iron levels above 1,000 µg/L suggest the iron-reducing conditions are likely established (USEPA, 1998). Reductive dechlorination cannot occur under iron-reducing

conditions. During the February 2007 sampling event, levels of ferrous iron above 1,000 µg/L were not observed (**Table A-2**). These data suggest that groundwater conditions at LHAAP-35A(58) are favorable for reductive dechlorination.

Sulfate: Reductive dechlorination of highly chlorinated compounds such as TCE occurs under sulfate-reducing conditions, but the reductive dechlorination of cis-1,2-DCE and VC is unlikely to occur under the same conditions. Sulfate-reducing conditions are favored when other electron acceptors such as oxygen, nitrate, and bioavailable ferric iron are depleted, leaving sulfate as the primary acceptor. Active sulfate reduction is often indicated by a depletion of sulfate in groundwater and a possible increase in sulfide. Concentrations of sulfate greater than 20,000 µg/L may cause competitive exclusion of reductive dechlorination (USEPA, 1998). TCE can be transformed via biogeochemical pathways under elevated iron and sulfate concentrations (USAFCEE, 2003). **Table A-2** indicates that the sulfate concentrations at LHAAP-35A(58) in 1996 and February 2007 ranged from 3,000 to 2,550,000 µg/L. Sulfide was not detected in the samples. The data suggest that sulfate reducing conditions are not occurring in the wells at LHAAP-35A(58). Much of the LHAAP-35A(58) groundwater is not under favorable conditions for complete reductive dechlorination at this time.

Methane: Methanogenesis occurs in highly reducing conditions and an accumulation of methane above 500 µg/L is considered to be methanogenic conditions (USEPA, 1998). During the February 2007 sampling event, methane concentrations ranged from 2.88 to 17.0 µg/L. Thus, methanogenic conditions were not observed (**Table A-2**).

Ethane and Ethene: Ethane and ethene are the end products of reductive dechlorination of chlorinated ethenes. Ethane and ethene were not detected in groundwater from the February 2007 sampling event (**Table A-2**). The lack of significant detection of ethane and ethane suggests that complete dechlorination is not occurring in the shallow groundwater zone at LHAAP-35A(58).

Chloride: Elevated chloride levels more than two times above the background concentrations may be evidence that degradation of chlorinated compounds are occurring. During the February 2007 sampling, chloride concentrations ranged from 513,000 to 2,750,000 µg/L. Similar chloride levels were found in previous sampling (**Table A-2**). The background chloride level in groundwater (6,630,000 µg/L) was measured as the 95% UPL of collected perimeter well results (Shaw, 2007). Therefore, the background chloride concentration is too high to determine any influence by the degradation of the COCs.

Total Organic Carbon: Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. TOC concentrations greater than 20,000 µg/L are considered adequate to support microbial activity (USEPA, 1998).

In the wells sampled in February 2007, TOC ranged from 5,000 µg/L in LHSMW06 to 11,000 µg/L in LHSMW04 (**Table A-2**). Although the TOC levels are lower than the USEPA suggested concentrations, data suggest that TOC levels are adequate to sustain some limited microbial degradation of chlorinated solvents in the groundwater at this time.

pH: Optimal pH range for microbial activity is between 6 and 8 standard units. The pH within the shallow groundwater zone ranged from 5.8 to 6.46 standard units during the February 2007 sampling event (**Table A-2**). Measurements of pH from other dates ranged from 5.83 to 6.93 standard units. The pH values in shallow groundwater at LHAAP-35A(58) are generally within the optimal range to support biodegradation.

3.3 Natural Attenuation Rate Estimation and Microbial Analysis

Natural attenuation rate estimation and microbial analysis provide evidence supporting the third line of evidence for natural attenuation in the shallow groundwater at LHAAP-35A(58).

3.3.1 Time Dependent Natural Attenuation

Attenuation rates were computed and evaluated in accordance with the USEPA guidance material (USEPA, 2002). Time-dependent attenuation rate constants and estimated in-well cleanup times were determined based 1,1-DCE concentration data over time at LHSMW07 assuming first order degradation kinetics. Attenuation rates for PCE, TCE and VC were not calculated because either the concentration had fallen below the MCL, or the trend of concentrations was not decreasing.

A time-dependent attenuation rate constant for 1,1-DCE was calculated for monitoring well LHSMW07 due to elevated 1,1-DCE concentrations (576 µg/L) and available sequential data (**Figure A-6**). The time-dependent attenuation rate at LHSMW07 is 0.0000898 per day, which corresponds to an attenuation half-life of 21 years. The cleanup time to achieve the MCL for 1,1-DCE (7 µg/L) at monitoring well LHSMW07 is 135 years (**Table A-3**).

3.3.2 Distance Dependent Natural Attenuation

Distance dependent natural attenuation and intrinsic biodegradation were calculated for PCE and TCE using a vector comprising wells aligned in the direction of groundwater flow on the eastern plume. The method of Buscheck and Alcantar (1995) was used to calculate an intrinsic biodegradation rate from the plot of concentration versus distance. This intrinsic biodegradation rate represents biodegradation of dissolved contaminants once they have left the source, combined with transverse dispersion. It does not account for longitudinal dispersion or sorption effects. The distance dependent attenuation rates for PCE and TCE were estimated using the November 2008 sampling results. An eastern flow pattern may be represented by a well vector comprising monitoring wells 35AWW08, 03WW01, LHSMW04, and 35AWW07. Monitoring well 35AWW08 was used as the starting point where the maximum concentrations of PCE and

TCE have been observed in the eastern plume. **Figure A-10** is a graphical presentation of a distance dependent attenuation rate calculation for the eastern flow pattern for PCE using the November 2008 analytical data. The intrinsic biodegradation rate and distance dependent natural attenuation rate are estimated as 0.0891 and 0.1640 per year, respectively. The corresponding half-lifes are 7.8 and 4.2 years respectively. Based on this result, intrinsic biodegradation of PCE contributes to 54% of distance dependent natural attenuation. **Figure A-11** is a graphical presentation of a distance dependent natural attenuation rate calculation for TCE using the November 2008 data and an eastern flow pattern. The intrinsic biodegradation rate and distance dependent natural attenuation rate are estimated as 0.0745 and 0.1076 per year, respectively. The corresponding half-lifes are 9.3 and 6.4 years, respectively. Based on this result, intrinsic biodegradation of TCE contributes to 69% of distance dependent natural attenuation.

Distance dependent natural attenuation and intrinsic biodegradation rates were calculated for 1,1-DCE and VC using a vector comprising wells aligned in the direction of groundwater flow on the western plume. The distance dependent natural attenuation rates for 1,1-DCE and VC were estimated using the November 2008 sampling results (and September 2004 for 35AWW04). A south then east flow pattern may be represented by a well vector comprising monitoring wells LHSMW07, 35AWW06, and 35AWW04. Monitoring well LHSMW07 was used as the starting point where the maximum concentrations of 1,1-DCE and VC have been observed in the western plume. **Figure A-12** is a graphical presentation of a distance dependent natural attenuation rate calculation for the western plume flow pattern for 1,1-DCE using the November 2008 analytical data. The intrinsic biodegradation rate and distance dependent natural attenuation rate are estimated as 0.2476 and 0.2838 per year, respectively. The corresponding half-lifes are 2.8 and 2.4 years, respectively. Based on this result, intrinsic biodegradation of 1,1-DCE contributes to 87% of distance dependent natural attenuation. **Figure A-13** is a graphical presentation of a distance dependent natural attenuation rate calculation for VC using the November 2008 data and the western plume flow pattern. The intrinsic biodegradation rate and distance dependent natural attenuation rate are estimated as 0.1107 and 0.1316 per year, respectively. The corresponding half-lifes are 6.3 and 5.3 years, respectively. Based on this result, intrinsic biodegradation of VC contributes to 84% of distance dependent natural attenuation.

The calculated percent contribution of intrinsic biodegradation to distance dependent attenuation can be used to evaluate whether destruction of COCs is occurring. A percent contribution of 100% indicates that destruction of COCs is occurring and the intrinsic biodegradation mechanisms account for all the observed attenuation. A percent contribution of 50% indicates that half the observed attenuation is accounted for by destruction of COCs and half by nondestructive attenuation mechanisms, so the plume would be larger without the contribution of COC destruction. For the eastern plume, the percent contribution of intrinsic biodegradation for

PCE was 54%, and for TCE was 69%. These percentages indicate the eastern plume is smaller than it would be if only nondestructive attenuation mechanisms were involved, so some PCE and TCE is being destroyed. For the western plume, the percent contribution of intrinsic biodegradation for 1,1-DCE was 87%, and for VC was 84%. These percentages indicate the western plume is much smaller than it would be if only nondestructive attenuation mechanisms were involved, so some 1,1-DCE and VC is being destroyed.

The *Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies* (USEPA, 2002) indicates that distance dependent natural attenuation rates cannot be used to accurately forecast plume lifetimes because no time component is involved when calculating them. Keeping this in mind, estimated cleanup times to reach the MCLs were estimated using the distance-dependent natural attenuation rates and ranged from 35 years for 1,1-DCE at LHSMW07 in the western plume to 121 years for TCE at 35AWW08 in the eastern plume (**Table A-3**). Only one time dependent natural attenuation rate is available for comparison, for 1,1-DCE at LHSMW07 in the western plume, and the estimated cleanup time there was 135 years. The difference in cleanup times, 135 versus 35, illustrates the reason for the USEPA warning about using distance dependent natural attenuation rates to calculate plume lifetimes.

3.3.3 Microbial Analysis

An important indicator of reductive dechlorination is the presence of DHC, the only known species capable of complete dechlorination of TCE and its daughter products to innocuous ethene via reductive dechlorination. During the February 2007 sampling event, DHC was observed at 68,000 cells per liter (cells/L) in LHSMW07 and at 86,000 cells/L at LHSMW06 in the western plume, but was not detected at LHSMW04 in the eastern plume (**Table A-2**). The presence of the dechlorinating microorganisms suggests that localized areas in shallow groundwater of LHAAP-35A(58) are able to support complete reductive dechlorination.

4.0 Summary of Results and Conclusions

Historical VOC data and geochemical indicators were evaluated for the groundwater at LHAAP-35A(58) to determine if MNA can be used as a feasible remedy for chlorinated solvents present in the groundwater. Preliminary screening of multiple wells at LHAAP-35A(58) indicated limited evidence for anaerobic biodegradation, and a more detailed evaluation was made. A tiered approach using three LOEs was used to demonstrate the occurrence of natural attenuation in the groundwater. The first line of evidence evaluated reductions in COC concentrations over time and with distance, the second line of evidence evaluated geochemical indicators, while the third line of evidence entailed estimation of natural attenuation rate and microbial analysis. The results of the tiered evaluation and the conclusions are summarized below.

The COCs exceeding MCLs at LHAAP-35A(58) are PCE, TCE, 1,1-DCE, and VC in the groundwater. These COCs were present in wells designated as shallow. Two distinct plumes are present, an eastern plume with PCE and a smaller amount of TCE, and a western plume with 1,1-DCE and smaller amounts of PCE, TCE, and VC.

First line of evidence: Historical analytical trends in the western plume indicate the occurrence of TCA and 1,1-DCE biodegradation at LHAAP-35A(58). In the groundwater, 1,1-DCE exhibited a decreasing trend, suggesting natural attenuation is effectively controlling the contaminant. The time for 1,1-DCE to reach its MCL would be more than 100 years. Downgradient and upgradient wells have COC concentrations less than the MCLs so the western groundwater plume is bounded horizontally. Historical analytical trends in the eastern plume showed no indication of biodegradation.

Second line of evidence: The qualitative assessment of the geochemical indicators in the groundwater at LHAAP-35A(58) presents evidence that geochemical conditions are adequate for the reductive dechlorination of chlorinated solvents in localized areas. The DO, ORP, nitrate, and ferrous iron values observed throughout the site suggest that the groundwater conditions are acceptable for anaerobic reductive dechlorination in both eastern and western plumes. The elevated sulfate concentrations observed in most wells are currently at levels able to inhibit complete reductive dechlorination. The TOC concentrations observed at LHAAP-35A(58) are at levels able to support some limited microbial activity in both eastern and western plumes, although not up to the level recommended by USEPA for sustained microbial activity. Groundwater near well LHSMW06 by the western plume has been observed with conditions that are more favorable for reductive dechlorination. Unfortunately, LHSMW06 is not within either plume. Therefore, an evaluation of the second line of evidence demonstrates that conditions favorable for MNA occur in limited areas, although most the areas within the eastern and

western plumes are not favorable for the complete reduction of COCs in groundwater at LHAAP-35A(58) at this time.

Third line of evidence: An important indicator of reductive dechlorination is the presence of DHC which is the only known species capable of complete dechlorination of TCE. During the February 2007 sampling event, DHC was observed in two wells, LHSMW06 and LHSMW07 in the western plume, at 86,000 and 68,000 cells/L. The presence of the dechlorinating microorganisms, coupled with the production of TCE and 1,1-DCE daughter products is further evidence that site conditions are conducive for the reduction of site COCs via natural attenuation in localized areas.

Time-dependent in-well natural attenuation rates were calculated for 1,1-DCE at LHSMW07 in the western plume. The 1,1-DCE attenuation rate was 0.0000898 day^{-1} in the groundwater, and the estimated time to achieve the MCL was 135 years. Time-dependent in-well natural attenuation rates could not be calculated for other wells and COCs because of a lack of sequential data, a lack of decreasing concentration trends, or that the COC concentration had already fallen to less than the MCL.

An analysis of distance dependent natural attenuation suggested the eastern plume was smaller than would be expected for just nondestructive mechanisms of intrinsic biodegradation. The western plume was also smaller than would be expected. As noted in **Section 1.2**, groundwater modeling predicts that contaminated groundwater will not migrate to surface water at concentrations above the MCL.

Conclusion: Reductions in concentrations of 1,1-DCE in the western plume demonstrate that natural attenuation is occurring in the groundwater at LHAAP-35A(58). Even though natural attenuation may not currently be active in some individual monitoring wells (rising PCE and TCE concentrations in the eastern plume), a comparison of estimated intrinsic biodegradation to current COC concentrations suggest that destructive degradation of COCs has kept the plumes smaller than would be expected. Reduction of COC concentrations is occurring by reductive dechlorination at some locations, but is also occurring through other natural attenuation processes including dispersion, dilution, and sorption as shown by reduction of concentration with distance.

In the western plume, the 1,1-DCE is expected to have been created by degradation of TCA. Nearly all of the TCA has disappeared, and 1,1-DCE is degrading to become VC. VC concentrations fluctuate, but have so far remained below 20 µg/L, indicating VC destruction roughly equal to the rate of VC creation (1,1-DCE degradation). Hypothetically, this could mean an additional 70 years to degrade remnant VC after 1,1-DCE has completed attenuation (**Table A-3**). The distance dependent natural attenuation rate calculation estimated plume

migration rates of 13.6 to 15.2 feet/year. This would result in a plume length of 911 to 1018 feet over the 67 years since 1942. The entire plume length for **Figure A-3** is approximately 600 feet, and the difference could be attributed to contaminant destruction. The concentrations of PCE and TCE in the western plume are relatively small compared to the MCLs, and not considered significant by comparison to 1,1-DCE and VC.

In the eastern plume, time-dependent natural attenuation rates cannot be calculated for PCE and TCE because of a lack of time sequential data (35AWW07, 35AWW08, and 03WW01) or a lack of decreasing concentration trends (LHSMW04 and LHSMW05). However, the distance-dependent attenuation rate calculation estimated plume migration rates of 4.8 to 6.9 feet per year. This would result in a plume length of 322 to 462 feet from 35AWW08 to the downgradient edge of the eastern plume over the 67 years since 1942. The measured plume length from 35AWW08 to the downgradient edge on **Figure A-3** is approximately 400 feet. This suggests little or no destruction of PCE and TCE is occurring in the eastern plume.

Thus, this evaluation concludes natural attenuation is occurring at LHAAP-35A(58). In the western plume, natural attenuation would take approximately 200 or more years to eliminate the plume. In the eastern plume, no cleanup time can be estimated, and natural attenuation has apparently slowed the plume, but not stopped it completely. Neither of the plumes is expected to affect surface water, as noted in **Section 1.2**.

5.0 References

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Tables

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

			Location					Location					Location				
			Sample Number	03WW01-112408				Sample Number	1003TW001				Sample Number	1003TW007			
			Date	11/24/2008				Date	12/13/2003				Date	12/13/2003			
			Purpose	REG				Purpose	REG				Purpose	REG			
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	2570				1	1	U			1	1	U			1
Trichloroethene	µg/L	5	196				1	1	U			1	1	U			1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	5	U	U		1	1	U			1	1	U			1
trans-1,2-Dichloroethene	µg/L	100	5	U	U		1	1	U			1	1	U			1
1,1-Dichloroethene	µg/L	7	10	U	U		1	0.13	J			1	0.36	J			1
Vinyl chloride	µg/L	7	5	U	U		1	1	U			1	1	U			1
1,1,1-Trichloroethane	µg/L	-	5	U	U		1	1	U			1	1	U			1
1,1,2-Trichloroethane	µg/L	5	5	U	U		1	1	U			1	1	U			1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

			Location					1004TW001					1004TW006					35AWW03				
			Sample Number					1004TW001					1004TW006					35AWW03-981108				
			Date					12/14/2003					12/13/2003					11/8/1998				
			Purpose					REG					REG					REG				
Parameter	**Units**	**MCL**	Result		Qual	VQ	RC	DF	Result		Qual	VQ	RC	DF	Result		Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	1	U				1	1	U				1	1	<	U			1
Trichloroethene	µg/L	5	0.2	J				1	0.31	J				1	1	<	U			1
1,2-Dichloroethene	µg/L	70																		
cis-1,2-Dichloroethene	µg/L	70	0.48	J				1	3					1	1	<	U			1
trans-1,2-Dichloroethene	µg/L	100	1	U				1	0.2	J				1	1	<	U			1
1,1-Dichloroethene	µg/L	7	24					1	370	J				1	1	<	U			1
Vinyl chloride	µg/L	7	4.1					1	7					1	1	<	U			1
1,1,1-Trichloroethane	µg/L	-	1	U				1	1	U				1	1	<	U			1
1,1,2-Trichloroethane	µg/L	5	1	U				1	0.31	J				1	1	<	U			1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			35AWW03					35AWW04					35AWW04				
Sample Number			35AWW03-040908					35AWW04-980930					35AWW04-981108				
Date			9/8/2004					9/30/1998					11/8/1998				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	5	U	U		1	1	<	U		1	1	<	U		1
Trichloroethene	µg/L	5	5	U	U		1	3.6				1	1	<	U		1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	5	U	U		1	1	<	U		1	1	<	U		1
trans-1,2-Dichloroethene	µg/L	100	5	U	U		1	1	<	U		1	1	<	U		1
1,1-Dichloroethene	µg/L	7	5	U	U		1	1	<	U		1	1	<	U		1
Vinyl chloride	µg/L	7	5	U	U		1	1	<	U		1	1	<	U		1
1,1,1-Trichloroethane	µg/L	-	5	U	U		1	1	<	U		1	1	<	U		1
1,1,2-Trichloroethane	µg/L	5	5	U	U		1	1	<	U		1	1	<	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

			Location														
			Sample Number														
			Date														
			Purpose														
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	5	U	U		1	5	U	U		1	7.19				1
Trichloroethene	µg/L	5	5	U	U		1	5	U	U		1	0.811	J	J	15	1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	5	U	U		1	5	U	U		1	0.37	J	J		1
trans-1,2-Dichloroethene	µg/L	100	5	U	U		1	5	U	U		1	0.25	U	U		1
1,1-Dichloroethene	µg/L	7	5	U	U		1	5	U	U		1	57.6				1
Vinyl chloride	µg/L	7	5	U	U		1	5	U	U		1	0.25	U	U		1
1,1,1-Trichloroethane	µg/L	-	5	U	U		1	5	U	U		1	0.25	U	U		1
1,1,2-Trichloroethane	µg/L	5	5	U	U		1	5	U	U		1	0.25	U	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			35AWW07					35AWW08					58DPT01				
Sample Number			35AWW07-112408					35AWW08-112408					58DPT-01				
Date			11/24/2008					11/24/2008					10/2/2008				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	0.25	U	U		1	9590				1	0.25	U	U		1
Trichloroethene	µg/L	5	0.562	J	J	15	1	675				1	0.263	J	J	15	1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	0.25	U	U		1	25	U	U		1	1.2				1
trans-1,2-Dichloroethene	µg/L	100	0.25	U	U		1	25	U	U		1	0.25	U	U		1
1,1-Dichloroethene	µg/L	7	0.5	U	U		1	50	U	U		1	0.5	U	U		1
Vinyl chloride	µg/L	7	0.25	U	U		1	25	U	U		1	0.754	J	J	15	1
1,1,1-Trichloroethane	µg/L	-	0.25	U	U		1	25	U	U		1	0.25	U	U		1
1,1,2-Trichloroethane	µg/L	5	0.25	U	U		1	25	U	U		1	0.25	U	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			58DPT02					58DPT03					58DPT04				
Sample Number			58DPT02					58DPT03					58DPT-04				
Date			10/15/2008					10/15/2008					10/1/2008				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	0.25	U	U		1	0.25	U	U		1	520				1
Trichloroethene	µg/L	5	0.607	J	J	15	1	0.25	U	U		1	93.1				1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	0.25	U	U		1	0.25	U	U		1	0.293	J	J	15	1
trans-1,2-Dichloroethene	µg/L	100	0.25	U	U		1	0.25	U	U		1	0.25	U	U		1
1,1-Dichloroethene	µg/L	7	0.5	U	U		1	0.5	U	U		1	0.5	U	U		1
Vinyl chloride	µg/L	7	0.25	U	U		1	0.25	U	U		1	0.25	U	U		1
1,1,1-Trichloroethane	µg/L	-	0.25	U	U		1	0.25	U	U		1	0.25	U	U		1
1,1,2-Trichloroethane	µg/L	5	0.25	U	U		1	0.25	U	U		1	0.25	U	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

			Location	58DPT05					58DPT06					58DPT07				
			Sample Number	58DPT-05					58DPT06					58DPT-07				
			Date	10/2/2008					10/15/2008					10/2/2008				
			Purpose	REG					REG					REG				
Parameter	**Units**	**MCL**		Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5		1.43				1	0.25	U	U		1	0.25	U	U		1
Trichloroethene	µg/L	5		3.31				1	0.258	J	J	15	1	0.25	U	U		1
1,2-Dichloroethene	µg/L	70																
cis-1,2-Dichloroethene	µg/L	70		0.921	J	J	15	1	0.25	U	U		1	0.25	U	U		1
trans-1,2-Dichloroethene	µg/L	100		0.25	U	U		1	0.25	U	U		1	0.25	U	U		1
1,1-Dichloroethene	µg/L	7		0.5	U	U		1	1.25				1	0.5	U	U		1
Vinyl chloride	µg/L	7		0.25	U	U		1	0.25	U	U		1	0.25	U	U		1
1,1,1-Trichloroethane	µg/L	-		0.25	U	U		1	0.25	U	U		1	0.25	U	U		1
1,1,2-Trichloroethane	µg/L	5		0.25	U	U		1	0.25	U	U		1	0.25	U	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

			Location	58DPT08					LHSMW03					LHSMW03				
			Sample Number	58DPT-08					LHSMW03-941129					LHSMW03-960131				
			Date	10/2/2008					11/29/1994					1/31/1996				
			Purpose	REG					REG					REG				
Parameter	**Units**	**MCL**		Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5		0.25	U	U		1	5	<	U		1	4				1
Trichloroethene	µg/L	5		0.25	U	U		1	5	<	U		1					1
1,2-Dichloroethene	µg/L	70							5	<	U		1					
cis-1,2-Dichloroethene	µg/L	70		0.25	U	U		1					1					1
trans-1,2-Dichloroethene	µg/L	100		0.25	U	U		1					1					1
1,1-Dichloroethene	µg/L	7		0.5	U	U		1	5	<	U		1					1
Vinyl chloride	µg/L	7		0.25	U	U		1					1					1
1,1,1-Trichloroethane	µg/L	-		0.25	U	U		1	5	<	U		1					1
1,1,2-Trichloroethane	µg/L	5		0.25	U	U		1	5	<	U		1					1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

			Location					Sample Number					Date					Purpose				
			LHSMW03					LHSMW03-960813					8/13/1996					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	0.25	<	U		1	1	<	U		1	0.25	U	U		1					
Trichloroethene	µg/L	5	0.25	<	U		1	1	<	U		1	0.25	U	U		1					
1,2-Dichloroethene	µg/L	70																				
cis-1,2-Dichloroethene	µg/L	70	0.2	<	U		1	1	<	U		1	0.25	U	U		1					
trans-1,2-Dichloroethene	µg/L	100	0.29	<	U		1	1	<	U		1	0.25	U	U		1					
1,1-Dichloroethene	µg/L	7	0.2	<	U		1	1	<	U		1	0.5	U	U		1					
Vinyl chloride	µg/L	7	0.24	<	U		1	1	<	U		1	0.25	U	U		1					
1,1,1-Trichloroethane	µg/L	-	0.2	<	U		1	1	<	U		1	0.25	U	U		1					
1,1,2-Trichloroethane	µg/L	5	0.65	<	U		1	1	<	U		1	0.25	U	U		1					

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

			Location	LHSMW04					LHSMW04					LHSMW04				
			Sample Number	LHSMW04-941201					LHSMW04-960812					LHSMW04-980513				
			Date	12/1/1994					8/12/1996					5/13/1998				
			Purpose	REG					REG					REG				
Parameter	**Units**	**MCL**		Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5		5	<	U		1	0.25	<	U		1	1	<	U		1
Trichloroethene	µg/L	5		5	<	U		1	0.25	<	U		1	1	<	U		1
1,2-Dichloroethene	µg/L	70		5	<	U		1										
cis-1,2-Dichloroethene	µg/L	70						1	0.2	<	U		1	1	<	U		1
trans-1,2-Dichloroethene	µg/L	100						1	0.29	<	U		1	1	<	U		1
1,1-Dichloroethene	µg/L	7		5	<	U		1	0.2	<	U		1	1	<	U		1
Vinyl chloride	µg/L	7						1	0.24	<	U		1	1	<	U		1
1,1,1-Trichloroethane	µg/L	-		5	<	U		1	0.2	<	U		1	1	<	U		1
1,1,2-Trichloroethane	µg/L	5		5	<	U		1	0.65	<	U		1	1	<	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW04					LHSMW04					LHSMW04				
Sample Number			LHSMW04-040909					LHSMW04-FEB2007					LHSMW04-013008				
Date			9/9/2004					2/20/2007					1/30/2008				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	5	U	U		1	6.4				1	8.74				1
Trichloroethene	µg/L	5	5	U	U		1	4.6				1	5.74				1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	5	U	U		1	0.83	U	U		1	0.25	U	U		1
trans-1,2-Dichloroethene	µg/L	100	5	U	U		1	0.75	U	U		1	0.25	U	U		1
1,1-Dichloroethene	µg/L	7	5	U	U		1	0.68	U	U		1	0.5	U	U		1
Vinyl chloride	µg/L	7	5	U	U		1	0.32	U	U		1	0.25	U	U		1
1,1,1-Trichloroethane	µg/L	-	5	U	U		1	0.37	U	U		1	0.25	U	U		1
1,1,2-Trichloroethane	µg/L	5	5	U	U		1	0.66	U	U		1	0.25	U	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW04					LHSMW05					LHSMW05				
Sample Number			LHSMW04-112508					LHSMW05-941201					LHSMW05-960131				
Date			11/25/2008					12/1/1994					1/31/1996				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	25.7				1	870				1	4884				1
Trichloroethene	µg/L	5	11.3				1	49				1	99				1
1,2-Dichloroethene	µg/L	70						5	<	U		1					
cis-1,2-Dichloroethene	µg/L	70	0.292	J	J	15	1					1	1	ND	U		1
trans-1,2-Dichloroethene	µg/L	100	0.25	U	U		1					1	1	ND	U		1
1,1-Dichloroethene	µg/L	7	0.5	U	U		1	5	<	U		1	1	ND	U		1
Vinyl chloride	µg/L	7	0.25	U	U		1					1	1	ND	U		1
1,1,1-Trichloroethane	µg/L	-	0.25	U	U		1	5	<	U		1					1
1,1,2-Trichloroethane	µg/L	5	0.25	U	U		1	5	<	U		1	1	ND	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW05					LHSMW05					LHSMW05				
Sample Number			LHSMW05-960812					LHSMW05-980513					LHSMW05-040909				
Date			8/12/1996					5/13/1998					9/9/2004				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	2700				1	4900				1	5100	D			1
Trichloroethene	µg/L	5	39.7				1	160				1	230	D			1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	0.21				1	40	<	U		1	5	U	U		1
trans-1,2-Dichloroethene	µg/L	100	0.29	<	U		1	40	<	U		1	5	U	U		1
1,1-Dichloroethene	µg/L	7	0.2	<	U		1	40	<	U		1	5	U	U		1
Vinyl chloride	µg/L	7	0.24	<	U		1	40	<	U		1	5	U	U		1
1,1,1-Trichloroethane	µg/L	-	0.2	<	U		1	40	<	U		1	5	U	U		1
1,1,2-Trichloroethane	µg/L	5	0.65	<	U		1	40	<	U		1	5	U	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW06					LHSMW06					LHSMW06				
Sample Number			LHSMW06-941201					LHSMW06-960813					LHSMW06-980513				
Date			12/1/1994					8/13/1996					5/13/1998				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	5	<	U		1	0.27				1	0.69		J		1
Trichloroethene	µg/L	5	5	<	U		1	0.43				1	0.53		J		1
1,2-Dichloroethene	µg/L	70	5	<	U		1										
cis-1,2-Dichloroethene	µg/L	70					1	0.98				1	1.4				1
trans-1,2-Dichloroethene	µg/L	100					1	0.29	<	U		1	1	<	U		1
1,1-Dichloroethene	µg/L	7	5	<	U		1	2				1	1.3				1
Vinyl chloride	µg/L	7					1	0.62				1	1	<	U		1
1,1,1-Trichloroethane	µg/L	-	5	<	U		1	0.2	<	U		1	1	<	U		1
1,1,2-Trichloroethane	µg/L	5	5	<	U		1	0.65	<	U		1	1	<	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW06					LHSMW06					LHSMW06				
Sample Number			LHSMW06-040908					LHSMW06-FEB2007					LHSMW06-111908				
Date			9/8/2004					2/21/2007					11/19/2008				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	2	J	J	15	1	0.74	U	U		1	0.25	U	U		1
Trichloroethene	µg/L	5	5	U	U		1	0.77	J	JH	07A	1	0.486	J	J	15	1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	5	U	U		1	5.1				1	2.26				1
trans-1,2-Dichloroethene	µg/L	100	5	U	U		1	0.75	U	U		1	0.25	U	U		1
1,1-Dichloroethene	µg/L	7	5	U	U		1	0.68	U	U		1	0.5	U	U		1
Vinyl chloride	µg/L	7	5	U	U		1	0.32	U	U		1	0.25	U	U		1
1,1,1-Trichloroethane	µg/L	-	5	U	U		1	0.37	U	U		1	0.25	U	U		1
1,1,2-Trichloroethane	µg/L	5	5	U	U		1	0.66	U	U		1	0.25	U	U		1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW07					LHSMW07					LHSMW07			
Sample Number			LHSMW07-941201					LHSMW07-941201FD					LHSMW07-960131			
Date			12/1/1994					12/1/1994					1/31/1996			
Purpose			REG					FD					REG			
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	5	<	U		1	5	<	U		1	7				1
Trichloroethene	µg/L	5	16				1	19				1	24				1
1,2-Dichloroethene	µg/L	70	10				1	11				1	16				1
cis-1,2-Dichloroethene	µg/L	70					1					1					1
trans-1,2-Dichloroethene	µg/L	100					1					1					1
1,1-Dichloroethene	µg/L	7	750				1	660				1	1341				1
Vinyl chloride	µg/L	7					1					1	10				1
1,1,1-Trichloroethane	µg/L	-	5	<	U		1	5	<	U		1					1
1,1,2-Trichloroethane	µg/L	5	4		J		1	5		J		1	8				1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW07					LHSMW07					LHSMW07				
Sample Number			LHSMW07-960812					LHSMW07-980513					LHSMW07-040908				
Date			8/12/1996					5/13/1998					9/8/2004				
Purpose			REG					REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	2.7				1	1	<	U		1	5	U	U		1
Trichloroethene	µg/L	5	5.9				1	25				1	24				1
1,2-Dichloroethene	µg/L	70															
cis-1,2-Dichloroethene	µg/L	70	2.5				1	11				1	6				1
trans-1,2-Dichloroethene	µg/L	100	0.29	<	U		1	0.73		J		1	5	U	U		1
1,1-Dichloroethene	µg/L	7	311				1	950				1	590	D			1
Vinyl chloride	µg/L	7	1.1				1	7.2				1	9				1
1,1,1-Trichloroethane	µg/L	-	0.2	<	U		1	1	<	U		1	5	U	U		1
1,1,2-Trichloroethane	µg/L	5	1.6				1	7.1				1	2	J	J	15	1

Table A-1
Summary of VOC Analytical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location			LHSMW07					LHSMW07				
Sample Number			LHSMW07-FEB2007					LHSMW07-111908				
Date			2/21/2007					11/21/2008				
Purpose			REG					REG				
Parameter	**Units**	**MCL**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Tetrachloroethene	µg/L	5	0.74	U	U		1	0.25	U	U		1
Trichloroethene	µg/L	5	15.8				1	25				1
1,2-Dichloroethene	µg/L	70										
cis-1,2-Dichloroethene	µg/L	70	3.6				1	7.96				1
trans-1,2-Dichloroethene	µg/L	100	0.75	U	U		1	0.421	J	J	15	1
1,1-Dichloroethene	µg/L	7	394				1	576				1
Vinyl chloride	µg/L	7	3				1	14.4				1
1,1,1-Trichloroethane	µg/L	-	0.37	U	U		1	0.25	U	U		1
1,1,2-Trichloroethane	µg/L	5	1.1	J	J	15	1	1.92				1

Notes:

DF - Dilution Factor

FD - field duplicate

MCL - maximum contaminant level

µg/L - micrograms per liter

Qual - laboratory data qualifier

VQ - validation data qualifier

- < Same as U.
- D Result from a dilution of the originally tested sample.
- H Result may be biased high.
- J The analyte was positively identified; the reported value is the estimated concentration.
- ND Same as U.
- U Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

RC - reason code

- 07A Sample
- 15 Quantitation

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location		35AWW06					35AWW07					35AWW08				
Sample Number		35AWW06-120308					35AWW07-112408					35AWW08-112408				
Date		12/3/2008					11/24/2008					11/24/2008				
Purpose		REG					REG					REG				
Parameter	**Units**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Field Tests																
Dissolved Oxygen	µg/L	4150				1	1012				1	3123				1
Ferrous iron	µg/L															
Oxidation Reduction Potential	mV	17.3				1	-85.1				1	-44.1				1
pH	Std Units	6.45				1	6.64				1	6.33				1
Salinity	mg/L															
Specific Conductivity	uS/cm	7380				1	394				1	7919				1
Temperature	Deg C	18.99				1	17.01				1	18.61				1
Turbidity	NTU	3.2				1	2.4				1	1.5				1
Gases																
Ethane	µg/L															
Ethylene	µg/L															
Methane	µg/L															
General Chemistry																
Carbon Dioxide	µg/L															
Chloride	µg/L															
Cyanide	mg/L															
Nitrate	µg/L															
Nitrate / Nitrite	µg/L															
Nitrite	µg/L															
pH	Std Units															
Specific Conductivity	uS/cm															
Sulfate	µg/L															
Sulfide	µg/L															
Total Alkalinity	mg/L															
Total Organic Carbon	µg/L															
DHE																
Dehalococcoides	cells/L															

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location		LHSMW03					LHSMW03					LHSMW03				
Sample Number		LHSMW03-960131					LHSMW03-960813					LHSMW03-980513				
Date		1/31/1996					8/13/1996					5/13/1998				
Purpose		REG					REG					REG				
Parameter	**Units**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Field Tests																
Dissolved Oxygen	µg/L															
Ferrous iron	µg/L															
Oxidation Reduction Potential	mV											-19.9				1
pH	Std Units											6.31				1
Salinity	mg/L															
Specific Conductivity	uS/cm											1017				1
Temperature	Deg C											19.11				1
Turbidity	NTU											62.1				1
Gases																
Ethane	µg/L															
Ethylene	µg/L															
Methane	µg/L															
General Chemistry																
Carbon Dioxide	µg/L															
Chloride	µg/L	4800				1	3600				1					
Cyanide	mg/L															
Nitrate	µg/L	500	<	U		1	500				1					
Nitrate / Nitrite	µg/L															
Nitrite	µg/L	500	<	U		1	500	<	U		1					
pH	Std Units															
Specific Conductivity	uS/cm															
Sulfate	µg/L	10000				1	10000				1					
Sulfide	µg/L															
Total Alkalinity	mg/L															
Total Organic Carbon	µg/L															
DHE																
Dehalococcoides	cells/L															

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location		LHSMW04					LHSMW04					LHSMW04				
Sample Number		LHSMW04-960131					LHSMW04-960812					LHSMW04-FEB2007				
Date		1/31/1996					8/12/1996					2/20/2007				
Purpose		REG					REG					REG				
Parameter	**Units**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Field Tests																
Dissolved Oxygen	µg/L											920				1
Ferrous iron	µg/L											70				1
Oxidation Reduction Potential	mV											237.5				1
pH	Std Units											5.8				1
Salinity	mg/L											2.85				1
Specific Conductivity	uS/cm											5291				1
Temperature	Deg C											18.58				1
Turbidity	NTU											3.4				1
Gases																
Ethane	µg/L											0.6	U	U		1
Ethylene	µg/L											0.8	U	U		1
Methane	µg/L											7.75				1
General Chemistry																
Carbon Dioxide	µg/L											170000				1
Chloride	µg/L	280000				1	275000				1	1530000				1
Cyanide	mg/L															
Nitrate	µg/L	500	<	U		1	500	<	U		1	5	U	U		1
Nitrate / Nitrite	µg/L											20	B	J	15	1
Nitrite	µg/L	500	<	U		1	500	<	U		1	3	U	U		1
pH	Std Units											5.8				1
Specific Conductivity	uS/cm											5530				1
Sulfate	µg/L	31000				1	34000				1	316000				1
Sulfide	µg/L											200	U	U		1
Total Alkalinity	mg/L											54				1
Total Organic Carbon	µg/L											11000				1
DHE																
Dehalococcoides	cells/L											10000	U	U		1

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location		LHSMW04					LHSMW05					LHSMW05				
Sample Number		LHSMW04-112508					LHSMW05-960131					LHSMW05-960812				
Date		11/25/2008					1/31/1996					8/12/1996				
Purpose		REG					REG					REG				
Parameter	**Units**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Field Tests																
Dissolved Oxygen	µg/L	850				1										
Ferrous iron	µg/L															
Oxidation Reduction Potential	mV	65.1				1										
pH	Std Units	5.83				1										
Salinity	mg/L															
Specific Conductivity	uS/cm	5117				1										
Temperature	Deg C	19.31				1										
Turbidity	NTU	23.5				1										
Gases																
Ethane	µg/L															
Ethylene	µg/L															
Methane	µg/L															
General Chemistry																
Carbon Dioxide	µg/L															
Chloride	µg/L						1390000				1	165000				1
Cyanide	mg/L						0.01	<	U		1					
Nitrate	µg/L						500	<	UJ	02B	1	2000				1
Nitrate / Nitrite	µg/L															
Nitrite	µg/L						500	<	UJ	02B	1	500	<	U		1
pH	Std Units															
Specific Conductivity	uS/cm															
Sulfate	µg/L						1422000				1	485000				1
Sulfide	µg/L															
Total Alkalinity	mg/L															
Total Organic Carbon	µg/L															
DHE																
Dehalococcoides	cells/L															

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location		LHSMW06					LHSMW06					LHSMW06				
Sample Number		LHSMW06-960201					LHSMW06-960813					LHSMW06-FEB2007				
Date		2/1/1996					8/13/1996					2/21/2007				
Purpose		REG					REG					REG				
Parameter	**Units**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Field Tests																
Dissolved Oxygen	µg/L											960				1
Ferrous iron	µg/L											0				1
Oxidation Reduction Potential	mV											211.1				1
pH	Std Units											6.25				1
Salinity	mg/L											1.9				1
Specific Conductivity	uS/cm											3630				1
Temperature	Deg C											24.05				1
Turbidity	NTU															1
Gases																
Ethane	µg/L											0.6	U	U		1
Ethylene	µg/L											0.8	U	U		1
Methane	µg/L											17				1
General Chemistry																
Carbon Dioxide	µg/L											510000				1
Chloride	µg/L	635000				1	584000				1	513000				1
Cyanide	mg/L															
Nitrate	µg/L	500	<	U		1	500	<	U		1	5	U	U		1
Nitrate / Nitrite	µg/L											20	B	J	15	1
Nitrite	µg/L	500	<	U		1	500	<	U		1	3	U	U		1
pH	Std Units											6.2				1
Specific Conductivity	uS/cm											2800				1
Sulfate	µg/L	473000				1	462000				1	398000				1
Sulfide	µg/L											200	U	U		1
Total Alkalinity	mg/L											407				1
Total Organic Carbon	µg/L											5000				1
DHE																
Dehalococcoides	cells/L											86000				1

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location		LHSMW06					LHSMW06					LHSMW07				
Sample Number		LHSMW06-120507					LHSMW06-111908					LHSMW07-960131				
Date		12/5/2007					11/19/2008					1/31/1996				
Purpose		REG					REG					REG				
Parameter	**Units**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Field Tests																
Dissolved Oxygen	µg/L	160				1	1950				1					
Ferrous iron	µg/L															
Oxidation Reduction Potential	mV	116.9				1	33.9				1					
pH	Std Units	6.38				1	6.48				1					
Salinity	mg/L															
Specific Conductivity	uS/cm	3416				1	3273				1					
Temperature	Deg C	20.05				1	18.15				1					
Turbidity	NTU					1	65.6				1					
Gases																
Ethane	µg/L															
Ethylene	µg/L															
Methane	µg/L															
General Chemistry																
Carbon Dioxide	µg/L															
Chloride	µg/L											2605000				1
Cyanide	mg/L															
Nitrate	µg/L											500	<	U		1
Nitrate / Nitrite	µg/L															
Nitrite	µg/L											500	<	U		1
pH	Std Units															
Specific Conductivity	uS/cm															
Sulfate	µg/L											2550000				1
Sulfide	µg/L															
Total Alkalinity	mg/L															
Total Organic Carbon	µg/L															
DHE																
Dehalococcoides	cells/L															

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Location		LHSMW07					LHSMW07					LHSMW07				
Sample Number		LHSMW07-960812					LHSMW07-FEB2007					LHSMW07-111908				
Date		8/12/1996					2/21/2007					11/21/2008				
Purpose		REG					REG					REG				
Parameter	**Units**	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Field Tests																
Dissolved Oxygen	µg/L						2480				1	2100				1
Ferrous iron	µg/L						50				1					
Oxidation Reduction Potential	mV						282				1	-0.19				1
pH	Std Units						6.46				1	6.93				1
Salinity	mg/L						5.11				1					
Specific Conductivity	uS/cm						9122				1	1114				1
Temperature	Deg C						22.94				1	19.47				1
Turbidity	NTU						3.8				1	9.6				1
Gases																
Ethane	µg/L						0.6	U	U		1					
Ethylene	µg/L						0.8	U	U		1					
Methane	µg/L						2.88				1					
General Chemistry																
Carbon Dioxide	µg/L						620000				1					
Chloride	µg/L	196000				1	2750000				1					
Cyanide	mg/L															
Nitrate	µg/L	500	<	U		1	5	U	U		1					
Nitrate / Nitrite	µg/L						5	U	U		1					
Nitrite	µg/L	500	<	U		1	3	U	U		1					
pH	Std Units						6.3				1					
Specific Conductivity	uS/cm						10600				1					
Sulfate	µg/L	301000				1	2070000				1					
Sulfide	µg/L						200	U	U		1					
Total Alkalinity	mg/L						619				1					
Total Organic Carbon	µg/L						6000				1					
DHE																
Dehalococcoides	cells/L						68000				1					

Table A-2
Summary of Geochemical Results
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Parameter	Units
Location	
Sample Number	
Date	
Purpose	
Field Tests	
Dissolved Oxygen	µg/L
Ferrous iron	µg/L
Oxidation Reduction Potential	mV
pH	Std Units
Salinity	mg/L
Specific Conductivity	uS/cm
Temperature	Deg C
Turbidity	NTU
Gases	
Ethane	µg/L
Ethylene	µg/L
Methane	µg/L
General Chemistry	
Carbon Dioxide	µg/L
Chloride	µg/L
Cyanide	mg/L
Nitrate	µg/L
Nitrate / Nitrite	µg/L
Nitrite	µg/L
pH	Std Units
Specific Conductivity	uS/cm
Sulfate	µg/L
Sulfide	µg/L
Total Alkalinity	mg/L
Total Organic Carbon	µg/L
DHE	
Dehalococcoides	cells/L

Notes:

cells/ml - cells per milliliter
DF - Dilution Factor
mV - millivolts
µg/L - micrograms per liter
Qual - laboratory data qualifier
VQ - validation data qualifier
- < Same as U.
- B The analyte reported was detected in the associated blank.
- J The analyte was positively identified; the reported value is the estimated concentration.
- U Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

RC - reason code
- 02B Analysis
- 15 Quantitation

Table A-3
Summary of Natural Attenuation Rates and Estimated Cleanup Times
LHAAP-35A(58), Shop Area, Group 4
Longhorn Army Ammunition Plant, Karnack, Texas

Monitoring Well	Attenuation Rate Constant (day^{-1})	Attenuation Half-Life		Most Recent Concentration		Target Concentration (µg/L)	Estimated Cleanup Time (years)
		(days)	(years)	Date	(µg/L)		
Time Dependent Attenuation for 1,1-DCE in Western Plume							
LHSMW07	0.0000898	7,719	21	11/21/08	576	7	135
Hypothetical Time Dependent Attenuation for VC in Western Plume							
LHSMW07	0.0000898	7,719	21	year 2143	20	2	70
Distance Dependent Attenuation for PCE in Eastern Plume *							
35AWW08	0.000244	2841	7.8	11/24/08	9590	5	85
Distance Dependent Attenuation for TCE in Eastern Plume *							
35AWW08	0.000204	3398	9.3	11/24/08	675	5	121
Distance Dependent Attenuation for 1,1-DCE in Western Plume *							
LHSMW07	0.000678	1022	2.8	11/21/08	576	7	35
Distance Dependent Attenuation for VC in Western Plume *							
LHSMW07	0.000303	2288	6.3	11/21/08	14.4	2	89

Notes:

µg/L - micrograms per liter

1,1-DCE - 1,1-Dichloroethene

PCE - Tetrachloroethene

TCE - Trichloroethene

VC - Vinyl Chloride

* Distance Dependent Natural Attenuation Rates are not recommended for calculating plume lifetimes (USEPA, 2002).

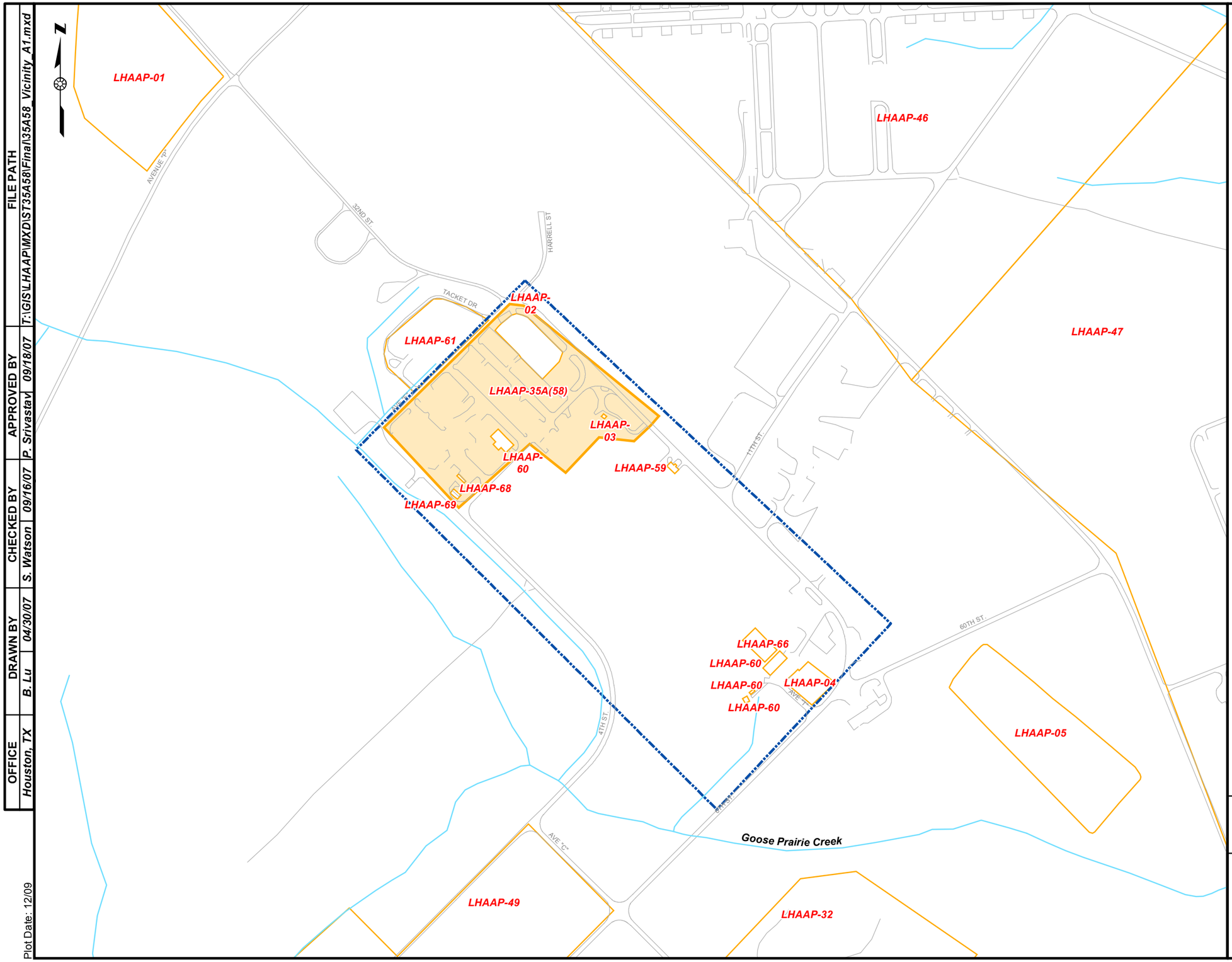
Figures

00079492

FILE PATH	
T:\GIS\LHAAP\MXD\ST35A58\Final\35A58_Vicinity_A1.mxd	

	DRAWN BY	CHECKED BY	APPROVED BY
OFFICE	B. Lu	S. Watson	P. Srivastav
Houston, TX	04/30/07	09/16/07	09/18/07

Plot Date: 12/09



LEGEND

- Stream
- Road
- Existing Building
- Historic LHAAP-35A(58) Site Boundary
- Other LHAAP Site
- LHAAP-35A(58) Site
- Lake/Pond

0 200 400 800 Feet

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE A-1

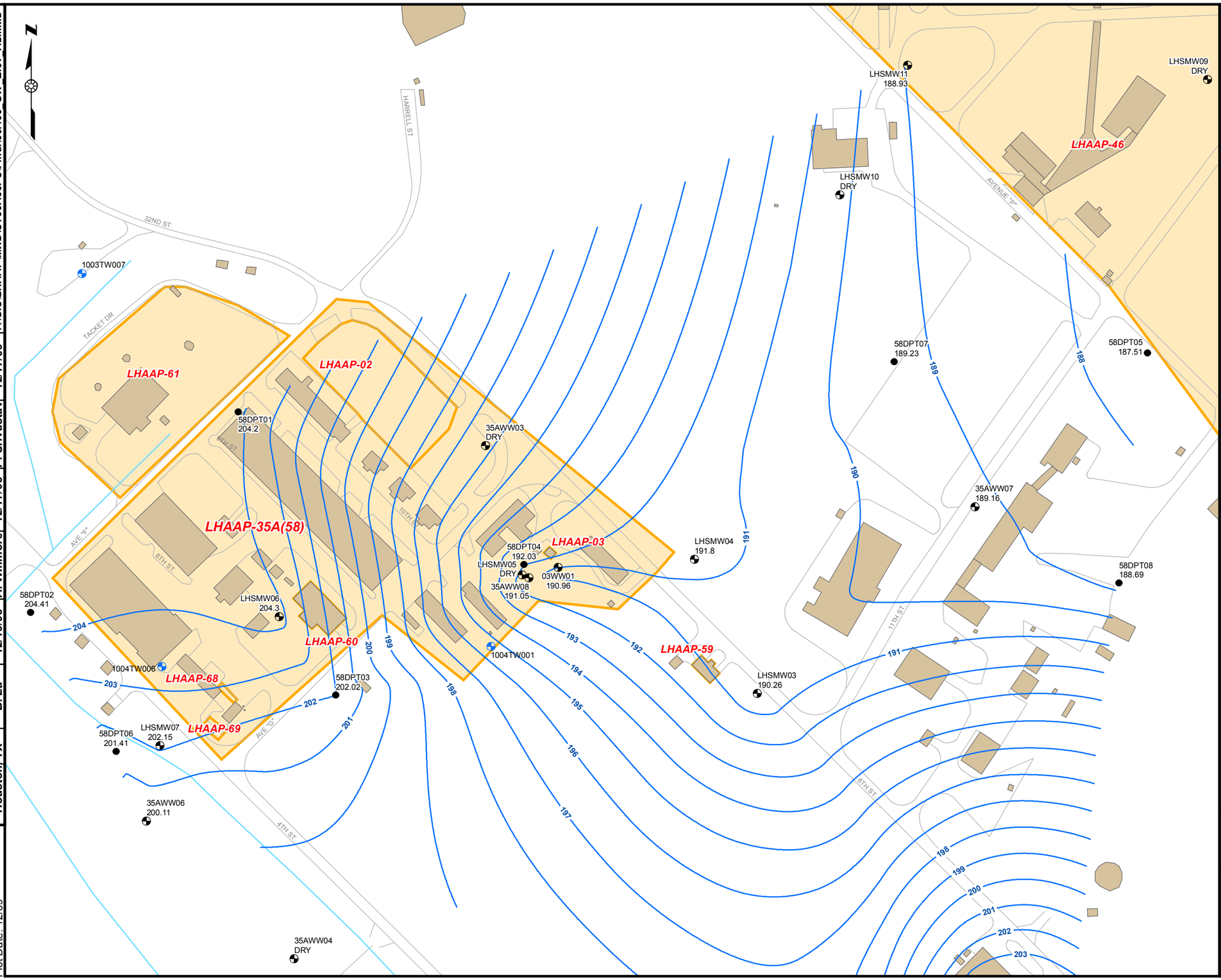
SITE LOCATION MAP
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079493

FILE PATH	T:\GIS\LHAAP\MXD\ST35A58FS\Final\35A58_GW_Elev_A2.mxd
APPROVED BY	P. Srivastav 12/17/09
CHECKED BY	A. Willmore 12/17/08
DRAWN BY	B. Lu 12/16/08
OFFICE	Houston, TX

Plot Date: 12/09



LEGEND

- Plexus Temporary Monitoring Well
- Shallow Monitoring Well
- DPT Location
- Groundwater Elevation Contour
- Stream
- Road
- Former Building or Tank
- Site

NOTE:

1. Contours generated using 3D Analyst Extension in ArcGIS 9.3.
2. Groundwater Elevation (ft MSL) measured in November 2008.

0 90 180 360 Feet

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE A-2

MONITORING WELL LOCATIONS
AND GROUNDWATER ELEVATIONS
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00079494

	1003TW001	1003TW007	1004TW001	1004TW006	58DPT01	58DPT02	58DPT03	58DPT04	58DPT06	58DPT07
SAMPLE DATE	12/13/2003	12/13/2003	12/14/2003	12/13/2003	10/2/2008	10/15/2008	10/15/2008	10/1/2008	10/15/2008	10/2/2008
1,1-Dichloroethene	0.13 J	0.36 J	24	370 J	<0.5	<0.5	<0.5	<0.5	1.25	<0.5
cis-1,2-Dichloroethene	<1	<1	0.48 J	3	1.2	<0.25	<0.25	0.293 J	<0.25	<0.25
Tetrachloroethene	<1	<1	<1	<1	<0.25	<0.25	<0.25	520	<0.25	<0.25
Trichloroethene	<1	<1	0.2 J	0.31 J	0.263 J	0.607 J	<0.25	93.1	0.258 J	<0.25
Vinyl chloride	<1	<1	4.1	7	0.754 J	<0.25	<0.25	<0.25	<0.25	<0.25

EASTERN PLUME	03WW01
SAMPLE DATE	11/24/2008
1,1-Dichloroethene	<10
cis-1,2-Dichloroethene	<5
Tetrachloroethene	2570
Trichloroethene	196
Vinyl chloride	<5
	35AWW07
SAMPLE DATE	11/24/2008
1,1-Dichloroethene	<0.25
cis-1,2-Dichloroethene	<0.25
Tetrachloroethene	<0.25
Trichloroethene	0.562 J
Vinyl chloride	<0.25
	35AWW08
SAMPLE DATE	11/24/2008
1,1-Dichloroethene	<50
cis-1,2-Dichloroethene	<25
Tetrachloroethene	9590
Trichloroethene	675
Vinyl chloride	<25

	35AWW03	35AWW03	35AWW03
SAMPLE DATE	11/8/1998	9/8/2004	11/24/2008
1,1-Dichloroethene	<1	<5	
cis-1,2-Dichloroethene	<1	<5	
Tetrachloroethene	<1	<5	Dry
Trichloroethene	<1	<5	
Vinyl chloride	<1	<5	

	LHSMW03	LHSMW03	LHSMW03	LHSMW03	LHSMW03
SAMPLE DATE	11/29/1994	1/31/1996	8/13/1996	5/13/1998	11/19/2008
1,1-Dichloroethene	<5	NA	<0.2	<1	<0.5
cis-1,2-Dichloroethene	NA	NA	<0.2	<1	<0.25
Tetrachloroethene	<5	4	<0.25	<1	<0.25
Trichloroethene	<5	NA	<0.25	<1	<0.25
Vinyl chloride	NA	NA	<0.24	<1	<0.25

	LHSMW04	LHSMW04	LHSMW04	LHSMW04	LHSMW04	LHSMW04
SAMPLE DATE	12/1/1994	8/12/1996	5/13/1998	9/9/2004	2/20/2007	11/25/2008
1,1-Dichloroethene	<5	<0.2	<1	<5	<0.68	<0.5
cis-1,2-Dichloroethene	NA	<0.2	<1	<5	0.83	0.292 J
Tetrachloroethene	<5	<0.25	<1	<5	6.4	25.7
Trichloroethene	<5	<0.25	<1	<5	4.6	11.3
Vinyl chloride	NA	<0.24	<1	<5	<0.32	<0.25

	LHSMW05	LHSMW05	LHSMW05	LHSMW05	LHSMW05	LHSMW05	LHSMW05
SAMPLE DATE	12/1/1994	1/31/1996	8/12/1996	5/13/1998	9/9/2004	2/21/2007	11/19/2008
1,1-Dichloroethene	<5	NA	<0.2	<40	<5		
cis-1,2-Dichloroethene	NA	NA	0.21	<40	<5		
Tetrachloroethene	870	4884	2700	5400	5100 D	Dry	Dry
Trichloroethene	49	99	39.7	160	230 D		
Vinyl chloride	NA	NA	<0.24	<40	<5		

WESTERN PLUME	35AWW06
SAMPLE DATE	12/3/2008
1,1-Dichloroethene	57.6
cis-1,2-Dichloroethene	0.37 J
Tetrachloroethene	7.19
Trichloroethene	0.811 J
Vinyl chloride	<0.25

	35AWW04	35AWW04	35AWW04	35AWW04
SAMPLE DATE	9/30/1998	11/8/1998	9/8/2004	11/24/2008
1,1-Dichloroethene	<1	<1	<5	
cis-1,2-Dichloroethene	<1	<1	<5	
Tetrachloroethene	<1	<1	<5	Dry
Trichloroethene	3.6	<1	<5	
Vinyl chloride	<1	<1	<5	

	LHSMW06	LHSMW06	LHSMW06	LHSMW06	LHSMW06	LHSMW06
SAMPLE DATE	12/1/1994	8/13/1996	5/13/1998	9/8/2004	2/21/2007	11/19/2008
1,1-Dichloroethene	<5	2	1.3	<5	<0.68	<0.5
cis-1,2-Dichloroethene	NA	0.98	1.4	<5	5.1	2.26
Tetrachloroethene	<5	0.27	0.69 J	2 J	<0.74	<0.25
Trichloroethene	<5	0.43	0.53 J	<5	0.77 JH	0.486 J
Vinyl chloride	NA	0.62	<1	<5	<0.32	<0.25

	LHSMW07	LHSMW07	LHSMW07	LHSMW07	LHSMW07	LHSMW07	LHSMW07
SAMPLE DATE	12/1/1994	1/31/1996	8/12/1996	5/13/1998	9/8/2004	2/21/2007	11/21/2008
1,1-Dichloroethene	750	1341	311	1200	590 D	394	576
cis-1,2-Dichloroethene	NA	16	2.5	11	6	3.6	7.96
Tetrachloroethene	<5	7	2.7	<1	<5	<0.74	<0.25
Trichloroethene	16	24	5.9	25	24	15.8	25
Vinyl chloride	NA	10	1.1	7.2	9	3	14.4

LEGEND

- DPT Location
- Shallow Monitoring Well
- Plexus Temporary Monitoring Well
- Groundwater Elevation Contour
- Estimated Trichloroethene Contamination Extent at Concentration = 5 µg/L
- Estimated Tetrachloroethene Contamination Extent at Concentration = 5 µg/L
- Estimated 1,1-Dichloroethene Contamination Extent at Concentration = 7 µg/L
- Stream
- Road
- Former Building or Tank
- Site

Notes:

1. Groundwater concentrations reported in micrograms per liter (µg/L).
2. Groundwater elevation reported in feet MSL from 11/2008 data.
3. Groundwater elevation contours generated using ArcGIS 8.3 (spline as interpolation algorithm)
4. NA is not available or not analyzed.
5. D, J or JH - the concentration is estimated, and the analytes positively identified.
   U - not detected. The analyte was not detected above the associated reporting limit.

0 100 200 400 Feet

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE A-3

VOC CONCENTRATIONS
IN SHALLOW GROUNDWATER
LHAAP-35A(58) FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

FILE PATH	APPROVED BY	CHECKED BY	DRAWN BY	OFFICE
T:\GIS\LHAAP\MXD\ST35A58_FSIFinal\35A58_GW_TCE.mxd	P. Srivastav	S. Watson	B. Lu	Houston, TX
12/17/09	12/17/09	04/17/09	04/28/08	

Plot Date: 12/09

Figure A-4
PCE Concentrations Trends

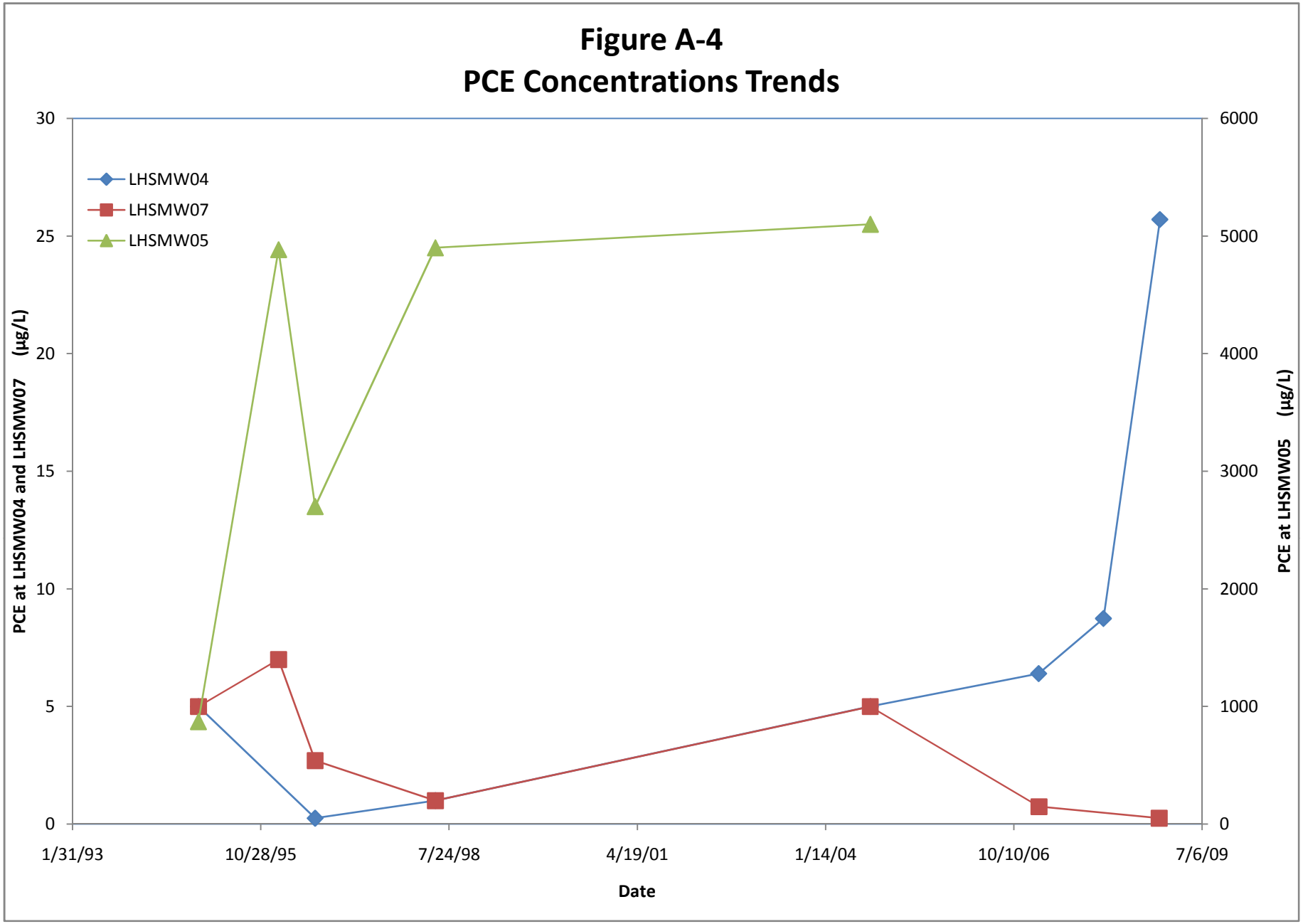


Figure A-5
TCE Concentrations Trends

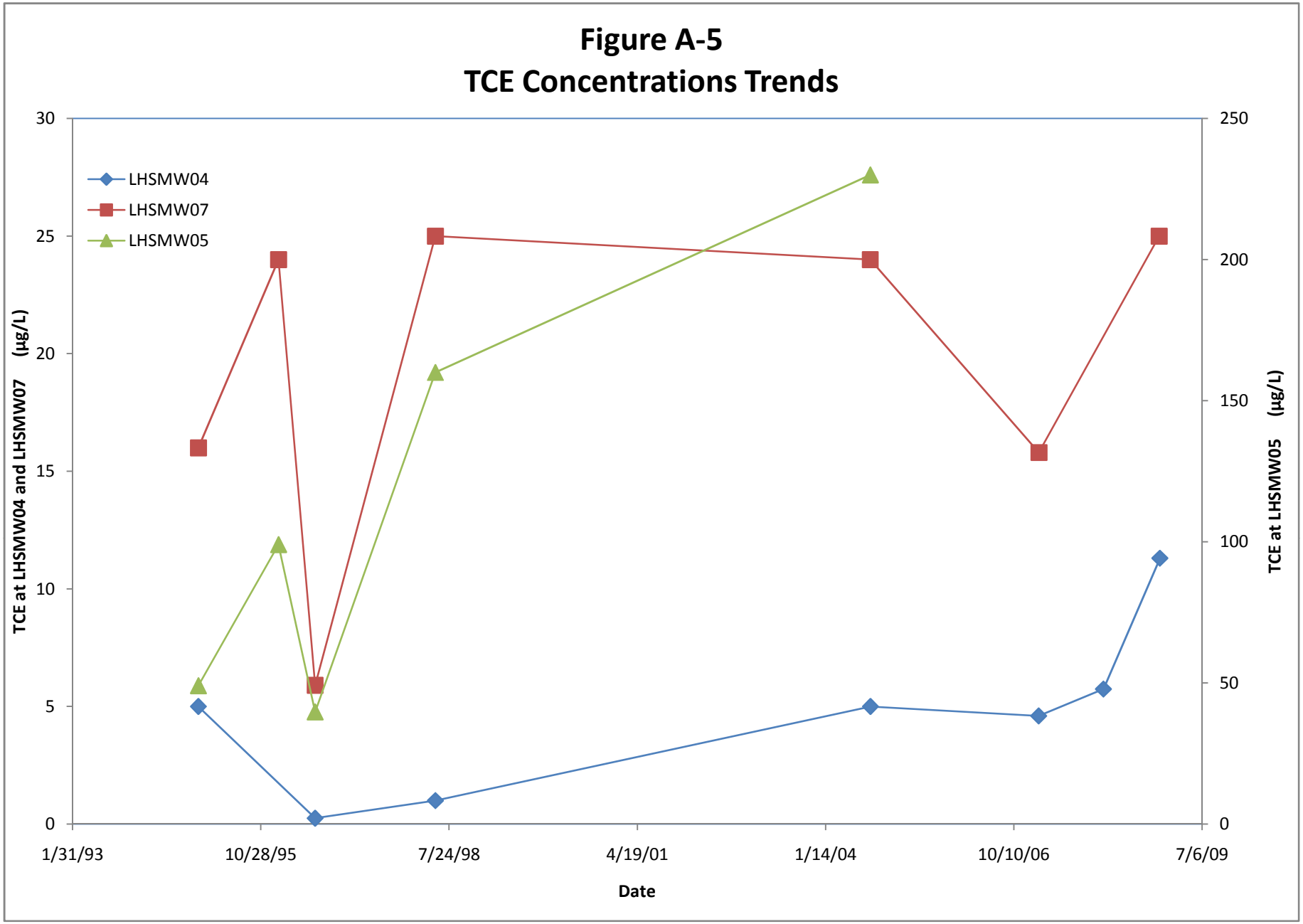


Figure A-6
1,1-DCE Concentrations Trends

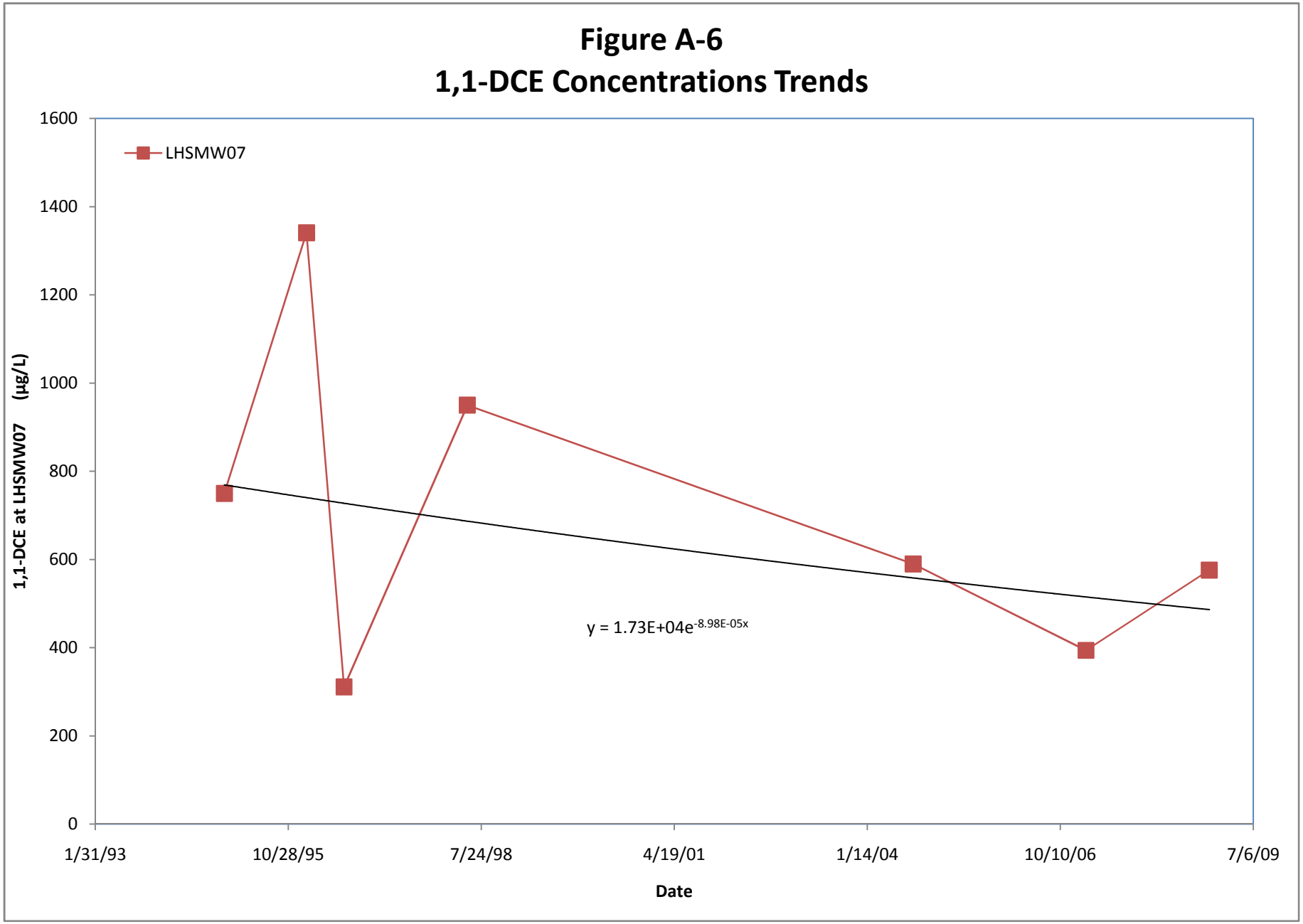


Figure A-7
VC Concentrations Trends

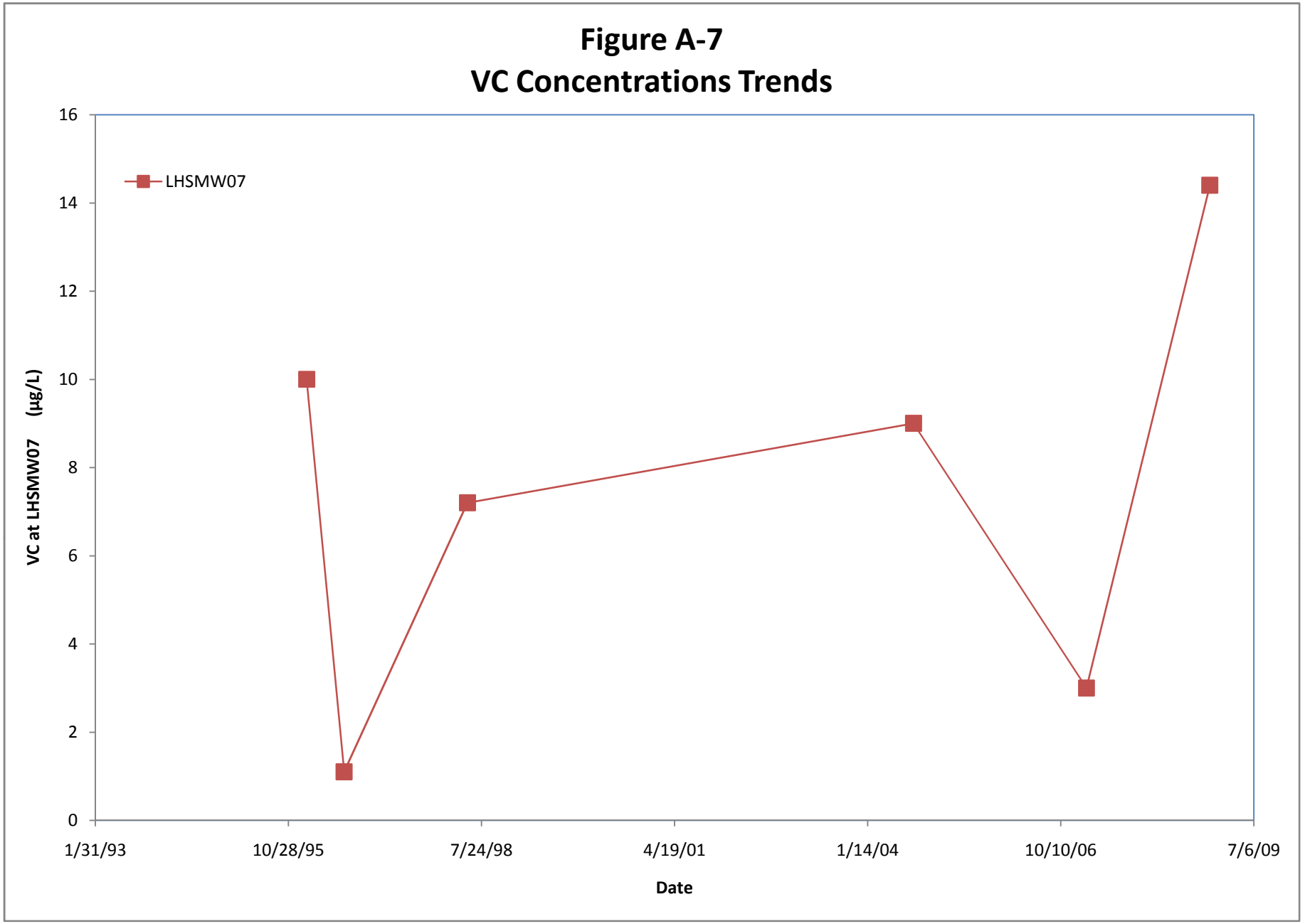


Figure A-8
Eastern Plume COC Concentrations vs. Distance

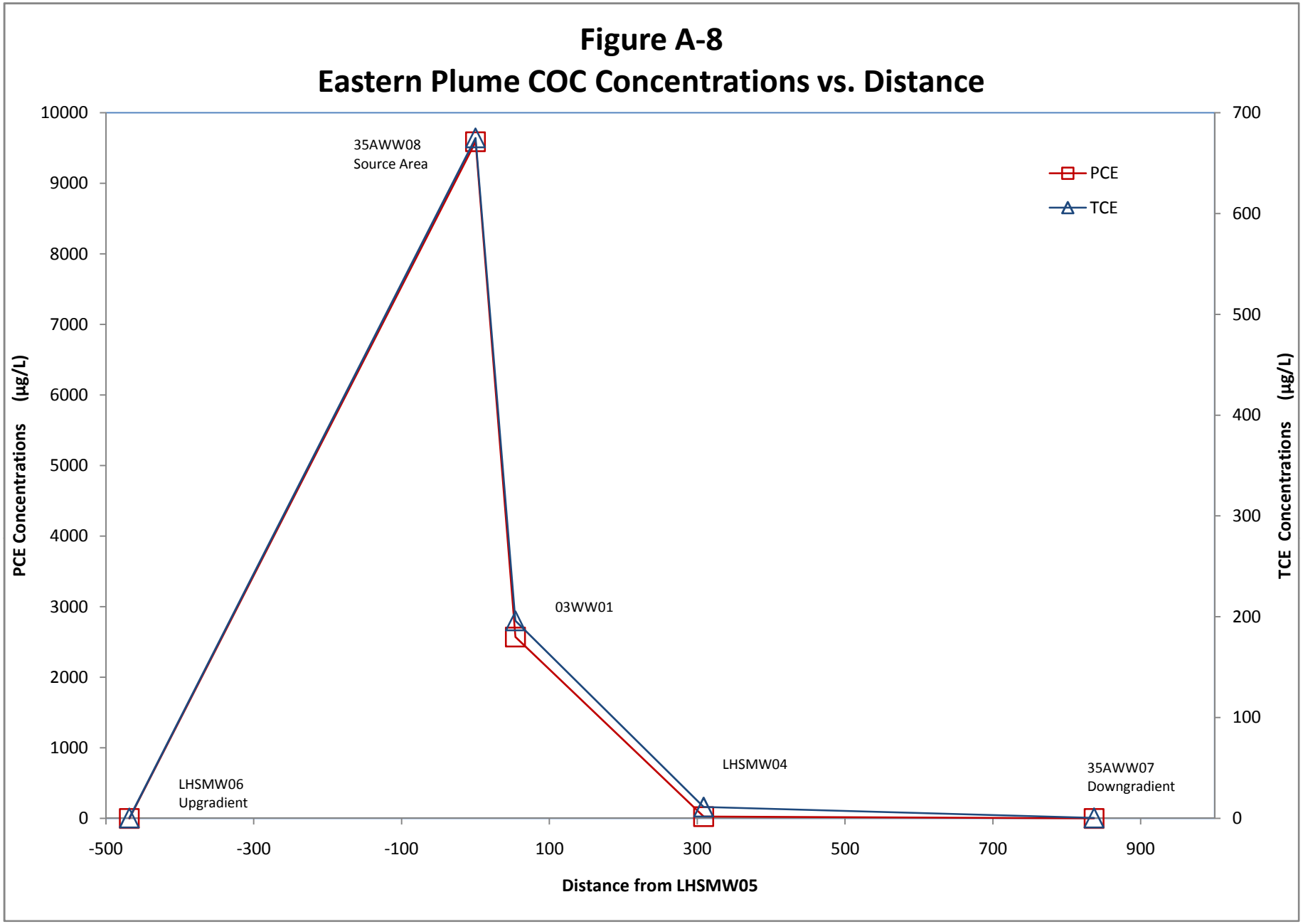


Figure A-9
Western Plume COC Concentrations vs. Distance

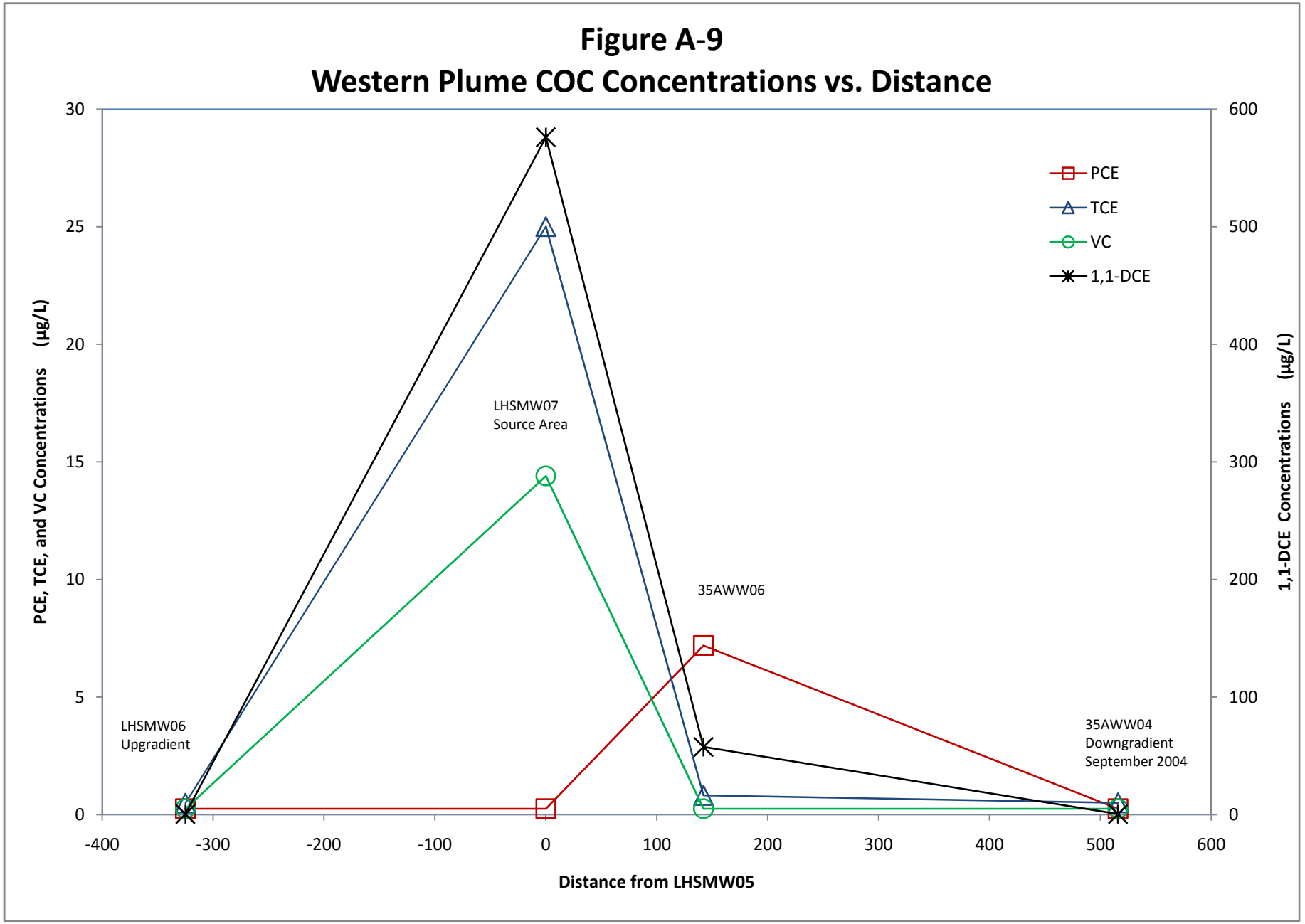


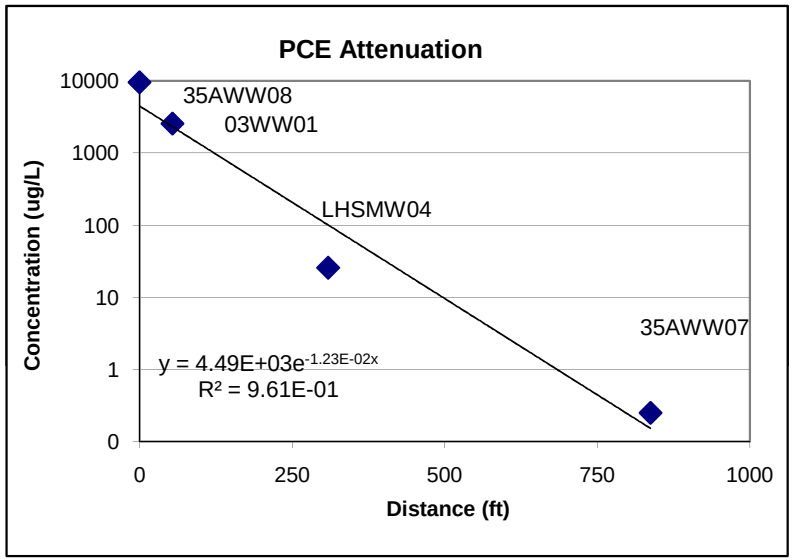
Figure A-10
Distance-Dependent PCE Attenuation and Biodegradation Rates
LHAAP-35A(58)

Natural Attenuation Rate Calculation, Buscheck and Alcantar Equation,
Reference: Buscheck, T. E. and C. M. Alcantar (1995) Regression Techniques and Analytical Solutions to Demonstrate Intrinsic Biodegradation in Intrinsic Bioremediation, eds. R. E. Hinchee, J. T. Wilson, and D. C. Downey, Battelle Press, Columbus, OH.
Slope of exponential regression versus distance (k/v_x)

Location: LHAAP-35A(58) Shallow Groundwater PCE November 2008 Data

Monitoring Well	35AWW08	03WW01	LHSMW04	35AWW07	Slope	R^2
Feet	**0**	**54**	**309**	**837**	-0.0123	0.96
Concentration	**9590**	**2570**	**25.7**	**0.3**		

Hydraulic Conductivity	**3.97** ft/day	At LHSMW04 as noted from RI (Jacobs, 2002) converted to ft/day
Groundwater Gradient	**0.0023** ft/ft	Gradient measured from 035AWW08 to 035AWW07 for November 2008.
Total Porosity	**0.25** unitless	An assumed value.
Average groundwater velocity, v_x =	**0.037** ft/day	
	13.3 ft/year	



λ = $(v_c/4\alpha_x)$ $([1+2\alpha_x(k/v_x)]^2 - 1)$

α_x = 5 % of flow field (distance separating two furthest wells)
41.85 ft
f_{oc} = **0.001** fraction organic carbon, default value.
K_{oc} = **263** L/kg
K_d = $K_{oc}f_{oc}$
0.263 L/kg
ρ_b = 1.7 kg/L bulk density default value
n = 0.25 total porosity
R = $1 + (\rho_b K_d/n)$ retardation factor
2.788
v_c = v_x/R
4.8 ft/year

Intrinsic Biodegradation

$(v_c/4\alpha_x)$ =	0.0286	/yr
(k/v_x) =	0.0123	/ft, slope of graph
$[1+2\alpha_x(k/v_x)]$	2.0295	
λ =	**0.0891**	/year
Half-life	**7.8**	years

Natural Attenuation Rate

k = average groundwater velocity (v_x) multiplied by slope of graph (k/v_x)

k = **0.1640** /year 0.0004489 /day
half-life = **4.2** years for Table A-3
λ/k = **54%** λ = **0.000244** /day

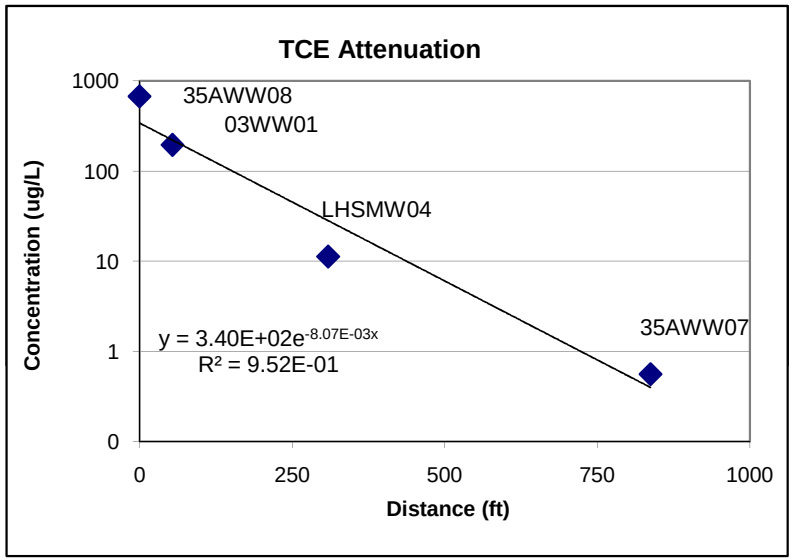
Figure A-11
Distance-Dependent TCE Attenuation and Biodegradation Rates
LHAAP-35A(58)

Natural Attenuation Rate Calculation, Buscheck and Alcantar Equation,
Reference: Buscheck, T. E. and C. M. Alcantar (1995) Regression Techniques and Analytical Solutions to Demonstrate Intrinsic Biodegradation in Intrinsic Bioremediation, eds. R. E. Hinchee, J. T. Wilson, and D. C. Downey, Battelle Press, Columbus, OH.
Slope of exponential regression versus distance (k/v_x)

Location: LHAAP-35A(58) Shallow Groundwater TCE November 2008 Data

Monitoring Well	35AWW08	03WW01	LHSMW04	35AWW07	Slope	R^2
Feet	**0**	**54**	**309**	**837**	-0.0081	0.95
Concentration	**675**	**196**	**11.3**	**0.562**		

Hydraulic Conductivity	**3.97** ft/day	At LHSMW04 as noted from RI (Jacobs, 2002) converted to ft/day
Groundwater Gradient	**0.0023** ft/ft	Gradient measured from 035AWW08 to 035AWW07 for November 2008.
Total Porosity	**0.25** unitless	An assumed value.
Average groundwater velocity, v_x =	**0.037** ft/day	
	13.3 ft/year	



λ = $(v_c/4\alpha_x)\ ([1+2\alpha_x(k/v_x)]^2 - 1)$

α_x = 5 % of flow field (distance separating two furthest wells)
41.85 ft

f_{oc} = **0.001** fraction organic carbon, default value.

K_{oc} = **137** L/kg

K_d = $K_{oc}f_{oc}$
0.137 L/kg

ρ_b = 1.7 kg/L bulk density default value

n = 0.25 total porosity

R = $1 + (\rho_b K_d/n)$ retardation factor
1.932

v_c = v_x/R
6.9 ft/year

Intrinsic Biodegradation

$(v_c/4\alpha_x)$ =	0.0412	/yr
(k/v_x) =	0.0081	/ft, slope of graph
$[1+2\alpha_x(k/v_x)]$	1.6755	
λ =	**0.0745**	/year
Half-life	**9.3**	years

Natural Attenuation Rate

k = average groundwater velocity (v_x) multiplied by slope of graph (k/v_x)

k = **0.1076** /year 0.0002945 /day

half-life = **6.4** years for Table A-3

λ/k = **69%** λ = **0.000204** /day

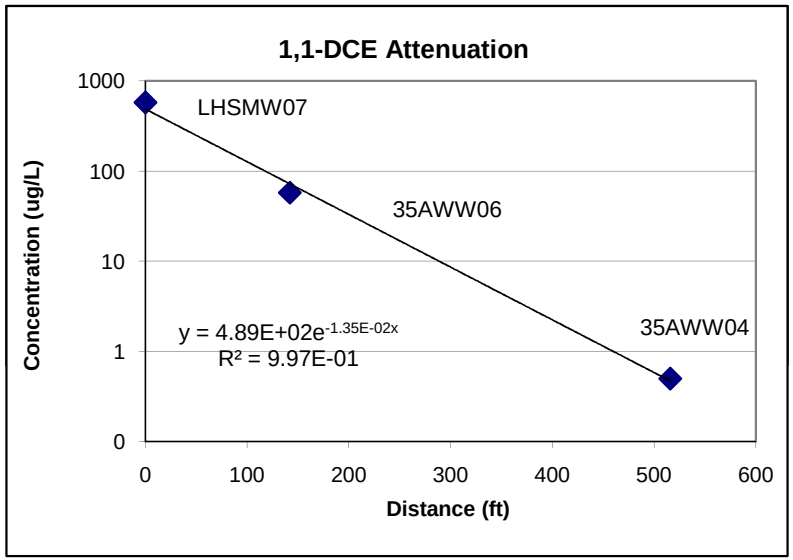
Figure A-12
Distance-Dependent 1,1-DCE Attenuation and Biodegradation Rates
LHAAP-35A(58)

Natural Attenuation Rate Calculation, Buscheck and Alcantar Equation,
Reference: Buscheck, T. E. and C. M. Alcantar (1995) Regression Techniques and Analytical Solutions to Demonstrate Intrinsic Biodegradation in Intrinsic Bioremediation, eds. R. E. Hinchee, J. T. Wilson, and D. C. Downey, Battelle Press, Columbus, OH.
Slope of exponential regression versus distance (k/v_x)

Location: LHAAP-35A(58) Shallow Groundwater 1,1-DCE November 2008 Data

Monitoring Well	LHSMW07	35AWW06	35AWW04	Slope	R^2
Feet	**0**	**142**	**516**	-0.0135	0.997
Concentration	**576**	**58**	**0.5**		

Hydraulic Conductivity	**1.60**	ft/day	Average of LHSMW07 and 35AWW04 from RI (Jacobs, 2002) converted to ft/day
Groundwater Gradient	**0.0090**	ft/ft	Gradient measured from LHSMW06 to 35AWW06 for November 2008.
Total Porosity	**0.25**	unitless	An assumed value.
Average groundwater velocity, v_x =	**0.058**	ft/day	
	21.0	ft/year	



λ = $(v_c/4\alpha_x)\,([1+2\alpha_x(k/v_x)]^2 - 1)$

α_x = 5 % of flow field (distance separating two furthest wells)
25.8 ft

f_{oc} = **0.001** fraction organic carbon, default value.

K_{oc} = **80** L/kg

K_d = $K_{oc}f_{oc}$
0.0802 L/kg

ρ_b = 1.7 kg/L bulk density default value

n = 0.25 total porosity

R = $1 + (\rho_b K_d/n)$ retardation factor
1.545

v_c = v_x/R
13.6 ft/year

Intrinsic Biodegradation

$(v_c/4\alpha_x)$ =	0.1318	/yr
(k/v_x) =	0.0135	/ft, slope of graph
$[1+2\alpha_x(k/v_x)]$	1.6966	
λ =	**0.2476**	/year
Half-life	**2.8**	years

Natural Attenuation Rate

k = average groundwater velocity (v_x) multiplied by slope of graph (k/v_x)

k = **0.2838** /year 0.0007771 /day

half-life = **2.4** years for Table A-3

λ/k = **87%** λ = **0.000678** /day

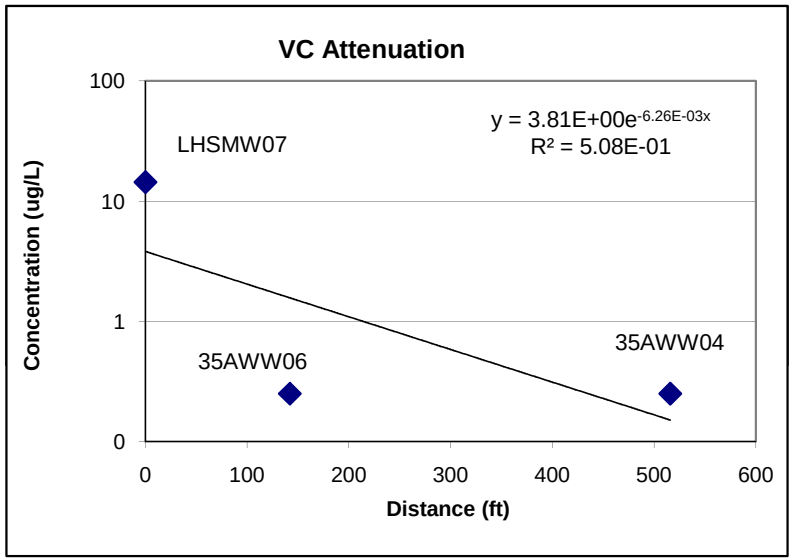
Figure A-13
Distance-Dependent VC Attenuation and Biodegradation Rates
LHAAP-35A(58)

Natural Attenuation Rate Calculation, Buscheck and Alcantar Equation,
Reference: Buscheck, T. E. and C. M. Alcantar (1995) Regression Techniques and Analytical Solutions to Demonstrate Intrinsic Biodegradation in Intrinsic Bioremediation, eds. R. E. Hinchee, J. T. Wilson, and D. C. Downey, Battelle Press, Columbus, OH.
Slope of exponential regression versus distance (k/v_x)

Location: LHAAP-35A(58) Shallow Groundwater VC November 2008 Data

Monitoring Well	LHSMW07	35AWW06	35AWW04	Slope	R^2
Feet	**0**	**142**	**516**	-0.00626	0.51
Concentration	**14.4**	**0.25**	**0.25**		

Hydraulic Conductivity	**1.60**	ft/day	Average of LHSMW07 and 35AWW04 from RI (Jacobs, 2002) converted to ft/day
Groundwater Gradient	**0.0090**	ft/ft	Gradient measured from LHSMW06 to 35AWW06 for November 2008.
Total Porosity	**0.25**	unitless	An assumed value.
Average groundwater velocity, v_x =	**0.058**	ft/day	
	21.0	ft/year	



λ = $(v_c/4\alpha_x)$ $([1+2\alpha_x(k/v_x)]^2 - 1)$

α_x = 5 % of flow field (distance separating two furthest wells)
25.8 ft

f_{oc} = **0.001** fraction organic carbon, default value.

K_{oc} = **56** L/kg

K_d = $K_{oc}f_{oc}$
0.056 L/kg

ρ_b = 1.7 kg/L bulk density default value

n = 0.25 total porosity

R = $1 + (\rho_b K_d/n)$ retardation factor
1.381

v_c = v_x/R
15.2 ft/year

Intrinsic Biodegradation

$(v_c/4\alpha_x)$ =	0.1475	/yr
(k/v_x) =	0.0063	/ft, slope of graph
$[1+2\alpha_x(k/v_x)]$	1.3230	
λ =	**0.1107**	/year
Half-life	**6.3**	years

Natural Attenuation Rate

k = average groundwater velocity (v_x) multiplied by slope of graph (k/v_x)

k = **0.1316** /year 0.0003603 /day

half-life = **5.3** years for Table A-3

λ/k = **84%** λ = **0.000303** /day

Appendix B

2007 and 2008 Laboratory Data and Field Documentation, including Boring Logs and Well Completion Forms

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	03WW01						35AWW06						35AWW07						35AWW08						58DPT01						58DPT02					
		Sample No	03WW01-112408						35AWW06-120308						35AWW07-112408						35AWW08-112408						58DPT-01						58DPT02					
		Sample Date	24-Nov-08						3-Dec-08						24-Nov-08						24-Nov-08						2-Oct-08						15-Oct-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
DHE	Dehalococcoides	cells/ml																																				
FIELD TESTS	Dissolved Oxygen	ug/L							4150				300		1012				300		3123				300													
FIELD TESTS	Ferrous iron	ug/L																																				
FIELD TESTS	Oxygen Reduction Potential	mV							17.3				0.02		-85.1				0.02		-44.1				0.02													
FIELD TESTS	pH	PH UNITS							6.45				0		6.64				0		6.33				0													
FIELD TESTS	Salinity	ug/L																																				
FIELD TESTS	Specific Conductivity	uS/cm							7.38				0		0.394				0		7.919				0													
FIELD TESTS	Temperature	Deg C							18.99				0		17.01				0		18.61				0													
FIELD TESTS	Turbidity	NTU							3.2				10		2.4				10		1.5				10													
GASES	Ethane	ug/L																																				
GASES	Ethylene	ug/L																																				
GASES	Methane	ug/L																																				
GEN CHEMISTRY	Carbon Dioxide	ug/L																																				
GEN CHEMISTRY	Chloride	ug/L																																				
GEN CHEMISTRY	Nitrate	ug/L																																				
GEN CHEMISTRY	Nitrate / Nitrite	ug/L																																				
GEN CHEMISTRY	Nitrite	ug/L																																				
GEN CHEMISTRY	Perchlorate	ug/L																																				
GEN CHEMISTRY	pH	PH UNITS																																				
GEN CHEMISTRY	Specific Conductivity	uS/cm																																				
GEN CHEMISTRY	Sulfate	ug/L																																				
GEN CHEMISTRY	Sulfide	ug/L																																				
GEN CHEMISTRY	Total Alkalinity	ug/L																																				
GEN CHEMISTRY	TOTAL DISSOLVED SOLIDS	ug/L																																				
GEN CHEMISTRY	Total Organic Carbon	ug/L																																				
GEN CHEMISTRY	TOTAL SUSPENDED SOLIDS	ug/L																																				
METALS	Aluminum	ug/L	1330			100	50		449			100	50		2610			100	50		50	U	U	100	50													
METALS	Antimony	ug/L	1.31			1	0.25		1.85			1	0.25		1.32			1	0.25		0.25	U	U	1	0.25													
METALS	Arsenic	ug/L	41.4			1	0.25		51.9			1	0.25		33.8			1	0.25		13.3			1	0.25													
METALS	Barium	ug/L	69.9			3	0.5		105			3	0.5		97.1			3	0.5		148			3	0.5													
METALS	Beryllium	ug/L	0.64	J	J	15	2	0.5	0.607	J	J	15	2	0.5	0.52	J	J	15	2	0.5	0.96	J	J	15	2	0.5												
METALS	Cadmium	ug/L	0.486	J	J	15	0.5	0.125	1.17				0.5	0.125	0.222	J	J	15	0.5	0.125	2.27				0.5	0.125													
METALS	Calcium	ug/L	176000			200	100		508000			2000	1000		10800			200	100		335000			200	100													
METALS	Chromium	ug/L	5.23			2	0.5		6.36			2	0.5		6.01			2	0.5		4			2	0.5													
METALS	Cobalt	ug/L	20.9			5	2.5		4.57	J	J	15	5	2.5	4.14	J	J	15	5	2.5	52.5			5	2.5													
METALS	Copper	ug/L	4.04			2	0.5		6.78			2	0.5		3.62			2	0.5		4.22			2	0.5													
METALS	Iron	ug/L	1030			100	25		653			100	25		3300			100	25		510			100	25													
METALS	Lead	ug/L	5.75			0.5	0.25		5.97			0.5	0.25		7.05			0.5	0.25		2.43			0.5	0.25													
METALS	Magnesium	ug/L	115000			500	250		280000			500	250		7810			500	250		205000			500	250													
METALS	Manganese	ug/L	1610			20	5		1240			200	50		150			2	0.5		5320			200	50													
METALS	Mercury	ug/L	0.1	U	U	0.2	0.1		0.1	U	U	0.2	0.1		0.1	U	U	0.2	0.1		0.1	U	U	0.2	0.1													
METALS	Nickel	ug/L	23.6			4	1		56.9			4	1		5.53			4	1		114			4	1													
METALS	Potassium	ug/L	1470			1000	250		5260			1000	250		1530			1000	250		3770			1000	250													
METALS	Selenium	ug/L	44.8			1	0.5		52.7			1	0.5		5.07			1	0.5		57.5			1	0.5													
METALS	Silver	ug/L	0.25	U	U	1	0.25		0.25	U	U	1	0.25		0.25	U	U	1	0.25		0.25	U	U	1	0.25													
METALS	Sodium	ug/L	388000			2500	1250		777000			5000	2500		44900			500	250		658000			2500	1250													
METALS	Strontium	ug/L																																				
METALS	Thallium	ug/L	0.139	J	J	15	0.2	0.05	0.327				0.2	0.05	0.107	J	J	15	0.2	0.05	0.18	J	J	15	0.2	0.05													
METALS	Vanadium	ug/L	5	U	U	10	5		5	U	U	10	5		5	U	U	10	5		5	U	U	10	5													
METALS	Zinc	ug/L	18	J	J	15	20	5	23.2			20	5		12.2	J	J	15	20	5	36.4			20	5													
METALS-DISS	Aluminum	ug/L																																				
METALS-DISS	Antimony	ug/L																																				
METALS-DISS	Arsenic	ug/L																																				

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	03WW01						35AWW06						35AWW07						35AWW08						58DPT01						58DPT02					
		Sample No	03WW01-112408						35AWW06-120308						35AWW07-112408						35AWW08-112408						58DPT-01						58DPT02					
		Sample Date	24-Nov-08						3-Dec-08						24-Nov-08						24-Nov-08						2-Oct-08						15-Oct-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
METALS-DISS	Barium	ug/L																																				
METALS-DISS	Beryllium	ug/L																																				
METALS-DISS	Cadmium	ug/L																																				
METALS-DISS	Calcium	ug/L																																				
METALS-DISS	Chromium	ug/L																																				
METALS-DISS	Cobalt	ug/L																																				
METALS-DISS	Copper	ug/L																																				
METALS-DISS	Iron	ug/L																																				
METALS-DISS	Lead	ug/L																																				
METALS-DISS	Magnesium	ug/L																																				
METALS-DISS	Manganese	ug/L																																				
METALS-DISS	Mercury	ug/L																																				
METALS-DISS	Nickel	ug/L																																				
METALS-DISS	Potassium	ug/L																																				
METALS-DISS	Selenium	ug/L																																				
METALS-DISS	Silver	ug/L																																				
METALS-DISS	Sodium	ug/L																																				
METALS-DISS	Thallium	ug/L																																				
METALS-DISS	Vanadium	ug/L																																				
METALS-DISS	Zinc	ug/L																																				
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	2.5	U	U		20	2.5	7.14				1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	10	U	U		20	10	57.6				1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	3	U	U		20	3	0.15	U	U		1	0.15	0.15	U	U		1	0.15	15	U	U		100	15	0.15	U	U		1	0.15	0.15	U	U		1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	10	U	U		20	10	0.5	U	U		1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	4	U	U		20	4	0.2	U	U		1	0.2	0.2	U	U		1	0.2	20	U	U		100	20	0.562	J	J		15	1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	20	U	U		100	20	1	U	U		5	1	1	U	U		5	1	100	U	U		500	100	1	U	U		5	1	1	U	U		5	1
VOLATILES	1,2-Dibromoethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.68	J	J		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	4	U	U		20	4	0.2	U	U		1	0.2	0.2	U	U		1	0.2	20	U	U		100	20	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.442	J	J		15	1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	4	U	U		20	4	0.2	U	U		1	0.2	0.2	U	U		1	0.2	20	U	U		100	20	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	2.03				1	0.125	0.125	U	U		1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	2-Butanone	ug/L	50	U	U		200	50	2.5	U	U		10	2.5	2.5	U	U		10	2.5	250	U	U		1000	250	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	40	U	U		200	40	2	U	U		10	2	2	U	U		10	2	200	U	U		1000	200	2	U	U		10	2	2	U	U		10	2
VOLATILES	2-Chlorotoluene	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	2-Hexanone	ug/L	50	U	U		200	50	2.5	U	U		10	2.5	2.5	U	U		10	2.5	250	U	U		1000	250	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	4-Chlorotoluene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Acetone	ug/L	50	U	U		200	50	2.5	U	U		10	2.5	2.5	U	U		10	2.5	250	U	U		1000	250	3.61	J	J,B	15,06D	10	2.5	2.5	U	U		10	2.5
VOLATILES	Benzene	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.201	J	J,B	15,06D	1	0.125	0.129	J	J	15	1	0.125
VOLATILES	Bromobenzene	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Bromochloromethane	ug/L	4	U	U		20	4	0.2	U	U		1	0.2	0.2	U	U		1	0.2	20	U	U		100	20	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	Bromodichloromethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Bromoform	ug/L	10	U	U		20	10	0.5	U	U		1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	03WW01						35AWW06						35AWW07						35AWW08						58DPT01						58DPT02					
		Sample No	03WW01-112408						35AWW06-120308						35AWW07-112408						35AWW08-112408						58DPT-01						58DPT02					
		Sample Date	24-Nov-08						3-Dec-08						24-Nov-08						24-Nov-08						2-Oct-08						15-Oct-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
VOLATILES	Bromomethane	ug/L	10	U	U		20	10	0.5	U	U		1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon disulfide	ug/L	10	U	U		20	10	0.5	U	U		1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon tetrachloride	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Chlorobenzene	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	15.6				1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloroethane	ug/L	10	U	U		20	10	0.5	U	U		1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Chloroform	ug/L	2.5	U	U		20	2.5	0.228	J	J	15	1	0.125	0.395	J	J	15	1	0.125	12.5	U	U		100	12.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloromethane	ug/L	13.2	J	J	15	20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	1.07				1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	5	U	U		20	5	0.37	J	J		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	1.2				1	0.25	0.25	U	U		1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromochloromethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromomethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.716	J	J	15	1	0.25	0.25	U	U		1	0.25
VOLATILES	Ethylbenzene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Isopropylbenzene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	m,p-Xylenes	ug/L	10	U	U		20	10	0.5	U	U		1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	50	U	U		200	50	2.5	U	U		10	2.5	2.5	U	U		10	2.5	250	U	U		1000	250	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Methylene chloride	ug/L	5	U	U		100	5	0.25	U	U		5	0.25	0.25	U	U		5	0.25	25	U	U		500	25	0.25	U	U		5	0.25	0.25	U	U		5	0.25
VOLATILES	Naphthalene	ug/L	4	U	U		20	4	0.2	U	U		1	0.2	0.2	U	U		1	0.2	20	U	U		100	20	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Styrene	ug/L	2.5	U	U		20	2.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	12.5	U	U		100	12.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Tetrachloroethene	ug/L	2570				20	5	7.19				1	0.25	0.25	U	U		1	0.25	9590				100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Toluene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.285	J	J	15	1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	10	U	U		20	10	0.5	U	U		1	0.5	0.5	U	U		1	0.5	50	U	U		100	50	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Trichloroethene	ug/L	196				20	5	0.811	J	J	15	1	0.25	0.562	J	J	15	1	0.25	675				100	25	0.263	J	J	15	1	0.25	0.607	J	J	15	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Vinyl acetate	ug/L	50	U	U		200	50	2.5	U	U		10	2.5	2.5	U	U		10	2.5	250	U	U		1000	250	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Vinyl chloride	ug/L	5	U	U		20	5	0.25	U	U		1	0.25	0.25	U	U		1	0.25	25	U	U		100	25	0.754	J	J	15	1	0.25	0.25	U	U		1	0.25
VOLATILES	Xylenes, Total	ug/L																																				

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	58DPT03						58DPT04						58DPT05						58DPT06						58DPT07						58DPT08						LHSMW03					
		Sample No	58DPT03						58DPT-04						58DPT-05						58DPT06						58DPT-07						58DPT-08						LHSMW03-111908					
		Sample Date	15-Oct-08						1-Oct-08						2-Oct-08						15-Oct-08						2-Oct-08						2-Oct-08						19-Nov-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
DHE	Dehalococcoides	cells/ml																																										
FIELD TESTS	Dissolved Oxygen	ug/L																																										
FIELD TESTS	Ferrous iron	ug/L																																									
FIELD TESTS	Oxygen Reduction Potential	mV																																			-19.9				0.02				
FIELD TESTS	pH	PH UNITS																																			6.31				0				
FIELD TESTS	Salinity	ug/L																																										
FIELD TESTS	Specific Conductivity	uS/cm																																			1.017				0				
FIELD TESTS	Temperature	Deg C																																			19.11				0				
FIELD TESTS	Turbidity	NTU																																			62.1				10				
GASES	Ethane	ug/L																																										
GASES	Ethylene	ug/L																																										
GASES	Methane	ug/L																																										
GEN CHEMISTRY	Carbon Dioxide	ug/L																																										
GEN CHEMISTRY	Chloride	ug/L																																									
GEN CHEMISTRY	Nitrate	ug/L																																									
GEN CHEMISTRY	Nitrate / Nitrite	ug/L																																									
GEN CHEMISTRY	Nitrite	ug/L																																									
GEN CHEMISTRY	Perchlorate	ug/L																																										
GEN CHEMISTRY	pH	PH UNITS																																									
GEN CHEMISTRY	Specific Conductivity	uS/cm																																									
GEN CHEMISTRY	Sulfate	ug/L																																									
GEN CHEMISTRY	Sulfide	ug/L																																									
GEN CHEMISTRY	Total Alkalinity	ug/L																																										
GEN CHEMISTRY	TOTAL DISSOLVED SOLIDS	ug/L																																										
GEN CHEMISTRY	Total Organic Carbon	ug/L																																										
GEN CHEMISTRY	TOTAL SUSPENDED SOLIDS	ug/L																																										
METALS	Aluminum	ug/L																																			390				100	50			
METALS	Antimony	ug/L																																			0.25	U	U		1	0.25			
METALS	Arsenic	ug/L																																			3.36				1	0.25			
METALS	Barium	ug/L																																			714				30	5			
METALS	Beryllium	ug/L																																			0.5	U	U		2	0.5			
METALS	Cadmium	ug/L																																			0.17	J	J	15	0.5	0.125			
METALS	Calcium	ug/L																																			30300				200	100			
METALS	Chromium	ug/L																																			10.6				2	0.5			
METALS	Cobalt	ug/L																																			3.17	J	J	15	5	2.5			
METALS	Copper	ug/L																																			1.9	J	J	15	2	0.5			
METALS	Iron	ug/L																																			608				100	25			
METALS	Lead	ug/L																																			0.25	U	U		0.5	0.25			
METALS	Magnesium	ug/L																																			21900				500	250			
METALS	Manganese	ug/L																																			93				2	0.5			
METALS	Mercury	ug/L																																			0.1	U	U		0.2	0.1			
METALS	Nickel	ug/L																																			246				40	10			
METALS	Potassium	ug/L																																			1690				1000	250			
METALS	Selenium	ug/L																																			14.2				1	0.5			
METALS	Silver	ug/L																																			0.25	U	U		1	0.25			
METALS	Sodium	ug/L																																			94400				500	250			
METALS	Strontium	ug/L																																										
METALS	Thallium	ug/L																																			0.05	U	U		0.2	0.05			
METALS	Vanadium	ug/L																																			5	U	U		10	5			
METALS	Zinc	ug/L																																			5	U	U		20	5			
METALS-DISS	Aluminum	ug/L																																										
METALS-DISS	Antimony	ug/L																																										
METALS-DISS	Arsenic	ug/L																																										

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	58DPT03						58DPT04						58DPT05						58DPT06						58DPT07						58DPT08						LHSMW03					
		Sample No	58DPT03						58DPT-04						58DPT-05						58DPT06						58DPT-07						58DPT-08						LHSMW03-111908					
		Sample Date	15-Oct-08						1-Oct-08						2-Oct-08						15-Oct-08						2-Oct-08						2-Oct-08						19-Nov-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
METALS-DISS	Barium	ug/L																																									
METALS-DISS	Beryllium	ug/L																																									
METALS-DISS	Cadmium	ug/L																																									
METALS-DISS	Calcium	ug/L																																									
METALS-DISS	Chromium	ug/L																																									
METALS-DISS	Cobalt	ug/L																																									
METALS-DISS	Copper	ug/L																																									
METALS-DISS	Iron	ug/L																																									
METALS-DISS	Lead	ug/L																																									
METALS-DISS	Magnesium	ug/L																																									
METALS-DISS	Manganese	ug/L																																									
METALS-DISS	Mercury	ug/L																																									
METALS-DISS	Nickel	ug/L																																									
METALS-DISS	Potassium	ug/L																																									
METALS-DISS	Selenium	ug/L																																									
METALS-DISS	Silver	ug/L																																									
METALS-DISS	Sodium	ug/L																																									
METALS-DISS	Thallium	ug/L																																									
METALS-DISS	Vanadium	ug/L																																									
METALS-DISS	Zinc	ug/L																																									
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	2.06				1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	1.25				1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U		1	0.15	0.15	U	U		1	0.15	0.15	U	U		1	0.15	0.15	U	U		1	0.15	0.15	U	U		1	0.15	0.15	U	U		1	0.15	0.15	U	U		1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		5	1	1	U	U		5	1	1	U	U		5	1	1	U	U		5	1	1	U	U		5	1	1	U	U		5	1	1	U	U		5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.166	J	J	15	1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		10	2.5	2.62	J	J	15	10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		10	2	2	U	U		10	2	2	U	U		10	2	2	U	U		10	2	2	U	U		10	2	2	U	U		10	2	2	U	U		10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Acetone	ug/L	6.17	J	J	15	10	2.5	7.49	J	J,B	15,06D	10	2.5	2.5	U	U		10	2.5	4.16	J	J	15	10	2.5	17.8				10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	2.31				1	0.125	0.337	J	J,B	15,06D	1	0.125	0.125	U	U		1	0.125	0.138	J	J	15	1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	58DPT03						58DPT04						58DPT05						58DPT06						58DPT07						58DPT08						LHSMW03					
		Sample No	58DPT03						58DPT-04						58DPT-05						58DPT06						58DPT-07						58DPT-08						LHSMW03-111908					
		Sample Date	15-Oct-08						1-Oct-08						2-Oct-08						15-Oct-08						2-Oct-08						2-Oct-08						19-Nov-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	2.79	B			1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.144	J	J	15	1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloromethane	ug/L	1.24				1	0.25	0.25	U	U		1	0.25	0.333	J	J	15	1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25	0.293	J	J	15	1	0.25	0.921	J	J	15	1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Methylene chloride	ug/L	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.25	U	U		5	0.25
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	0.25	520				10	2.5	1.43				1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Toluene	ug/L	0.25	U	U		1	0.25	0.29	J	J	15	1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.531	J	J	15	1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Trichloroethene	ug/L	0.25	U	U		1	0.25	93.1				1	0.25	3.31				1	0.25	0.258	J	J	15	1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Xylenes, Total	ug/L																																									

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	LHSMW04						LHSMW04						LHSMW04						LHSMW06						LHSMW07						LHSMW07					
		Sample No	LHSMW04-FEB2007						LHSMW04-013008						LHSMW04-112508						LHSMW06-111908						LHSMW07-FEB2007						LHSMW07-111908					
		Sample Date	20-Feb-07						30-Jan-08						25-Nov-08						19-Nov-08						21-Feb-07						21-Nov-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
DHE	Dehalococcoides	cells/ml	10	U	U		10	10																			68				10	10						
FIELD TESTS	Dissolved Oxygen	ug/L	920				300								850				300		1950				300		2480				300		2100				300	
FIELD TESTS	Ferrous iron	ug/L	70				42																				50				42							
FIELD TESTS	Oxygen Reduction Potential	mV	237.5				0.02								65.1				0.02		33.9				0.02		282				0.02		-0.19				0.02	
FIELD TESTS	pH	PH UNITS	5.8				0								5.83				0		6.48				0		6.46				0		6.93				0	
FIELD TESTS	Salinity	ug/L	2850				300																				5110				300							
FIELD TESTS	Specific Conductivity	uS/cm	5291				0								5.117				0		3.273				0		9122				0		1.114				0	
FIELD TESTS	Temperature	Deg C	18.58				0								19.31				0		18.15				0		22.94				0		19.47				0	
FIELD TESTS	Turbidity	NTU	3.4				10								23.5				10		65.6				10		3.8				10		9.6				10	
GASES	Ethane	ug/L	0.6	U	U		1	0.6																			0.6	U	U		1	0.6						
GASES	Ethylene	ug/L	0.8	U	U		1	0.8																			0.8	U	U		1	0.8						
GASES	Methane	ug/L	7.75				0.5	0.3																			2.88				0.5	0.3						
GEN CHEMISTRY	Carbon Dioxide	ug/L	170000				5000	5000																			620000				5000	5000						
GEN CHEMISTRY	Chloride	ug/L	1530000				1000	570																			2750000				1000	570						
GEN CHEMISTRY	Nitrate	ug/L	5	U	U		100	5																			5	U	U		100	5						
GEN CHEMISTRY	Nitrate / Nitrite	ug/L	20	B	J	15	50	5																			5	U	U		50	5						
GEN CHEMISTRY	Nitrite	ug/L	3	U	U		50	3																			3	U	U		50	3						
GEN CHEMISTRY	Perchlorate	ug/L	4	U	U		10	4																			4	U	U		10	4						
GEN CHEMISTRY	pH	PH UNITS	5.8				0																				6.3				0							
GEN CHEMISTRY	Specific Conductivity	uS/cm	5530				0.5	0.5																			10600				0.5	0.5						
GEN CHEMISTRY	Sulfate	ug/L	316000				40000	2600																			2070000				200000	2600						
GEN CHEMISTRY	Sulfide	ug/L	200	U	U		200	200																			200	U	U		200	200						
GEN CHEMISTRY	Total Alkalinity	ug/L	54000				5000	300																			619000				5000	300						
GEN CHEMISTRY	TOTAL DISSOLVED SOLIDS	ug/L																																				
GEN CHEMISTRY	Total Organic Carbon	ug/L	11000				1000	92																			6000				1000	92						
GEN CHEMISTRY	TOTAL SUSPENDED SOLIDS	ug/L																																				
METALS	Aluminum	ug/L													63.7	J	J	15	100	50	294				100	50							100	U	U		200	100
METALS	Antimony	ug/L													0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
METALS	Arsenic	ug/L													12.1				1	0.25	9.89				1	0.25							20.7				1	0.25
METALS	Barium	ug/L													58.4				3	0.5	35.9				3	0.5							16.3				3	0.5
METALS	Beryllium	ug/L													0.5	U	U		2	0.5	0.5	U	U		2	0.5							0.5	U	U		2	0.5
METALS	Cadmium	ug/L													0.573				0.5	0.125	0.158	J	J	15	0.5	0.125							2.16				0.5	0.125
METALS	Calcium	ug/L													244000				200	100	184000				200	100							834000				400	200
METALS	Chromium	ug/L													451				40	10	1380				20	5							7.64				2	0.5
METALS	Cobalt	ug/L													19.7				5	2.5	2.5	U	U		5	2.5							2.5	U	U		5	2.5
METALS	Copper	ug/L													9.61				2	0.5	6.63				2	0.5							7.53				2	0.5
METALS	Iron	ug/L													6560				100	25	1310				100	25							25	U	U		100	25
METALS	Lead	ug/L													0.25	U	U		0.5	0.25	0.293	J	J	15	0.5	0.25							0.25	U	U		0.5	0.25
METALS	Magnesium	ug/L													128000				500	250	82000				500	250							517000				1000	500
METALS	Manganese	ug/L													702				40	10	436				20	5							103				2	0.5
METALS	Mercury	ug/L													0.416				0.2	0.1	0.1	U	U		0.2	0.1							0.1	U	U		0.2	0.1
METALS	Nickel	ug/L													1990				80	20	95.9				4	1							43.1				4	1
METALS	Potassium	ug/L													897	J	J	15	1000	250	509	J	J	15	1000	250							4610				1000	250
METALS	Selenium	ug/L													53.5				1	0.5	41.3				1	0.5							90				1	0.5
METALS	Silver	ug/L													0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
METALS	Sodium	ug/L													686000				2500	1250	416000				50000	25000							1340000				50000	25000
METALS	Strontium	ug/L																															23300				1000	500
METALS	Thallium	ug/L													0.157	J	J	15	0.2	0.05	0.0755	J	J	15	0.2	0.05							0.129	J	J	15	0.2	0.05
METALS	Vanadium	ug/L													5	U	U		10	5	5	U	U		10	5							5	U	U		10	5
METALS	Zinc	ug/L													17.7	J	J	15	20	5	5.45	J	J	15	20	5							29				20	5
METALS-DISS	Aluminum	ug/L																																				
METALS-DISS	Antimony	ug/L																																				
METALS-DISS	Arsenic	ug/L																																				

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	LHSMW04						LHSMW04						LHSMW04						LHSMW06						LHSMW07						LHSMW07					
		Sample No	LHSMW04-FEB2007						LHSMW04-013008						LHSMW04-112508						LHSMW06-111908						LHSMW07-FEB2007						LHSMW07-111908					
		Sample Date	20-Feb-07						30-Jan-08						25-Nov-08						19-Nov-08						21-Feb-07						21-Nov-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
METALS-DISS	Barium	ug/L																																				
METALS-DISS	Beryllium	ug/L																																				
METALS-DISS	Cadmium	ug/L																																				
METALS-DISS	Calcium	ug/L																																				
METALS-DISS	Chromium	ug/L																																				
METALS-DISS	Cobalt	ug/L																																				
METALS-DISS	Copper	ug/L																																				
METALS-DISS	Iron	ug/L																																				
METALS-DISS	Lead	ug/L																																				
METALS-DISS	Magnesium	ug/L																																				
METALS-DISS	Manganese	ug/L																																				
METALS-DISS	Mercury	ug/L																																				
METALS-DISS	Nickel	ug/L																																				
METALS-DISS	Potassium	ug/L																																				
METALS-DISS	Selenium	ug/L																																				
METALS-DISS	Silver	ug/L																																				
METALS-DISS	Sodium	ug/L																																				
METALS-DISS	Thallium	ug/L																																				
METALS-DISS	Vanadium	ug/L																																				
METALS-DISS	Zinc	ug/L																																				
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.37	U	U		2	0.37	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.37	U	U		2	0.37	0.25	U	U		1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.46	U	UJ	10A	2	0.46	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.46	U	U		2	0.46	0.125	U	U		1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.66	U	U		2	0.66	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	1.1	J	J	15	2	0.66	1.92				1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.6	J	J	15	2	0.52	0.581	J			1	0.125	0.622	J	J	15	1	0.125	1.35				1	0.125	40.9				2	0.52	56.5				1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.68	U	U		2	0.68	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	394				20	6.8	576				10	5
VOLATILES	1,1-Dichloropropene	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L							0.125	U	U		1	0.125	0.15	U	U		1	0.15	0.15	U	U		1	0.15							0.15	U	U		1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L							0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5							0.5	U	U		1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L							0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2							0.2	U	U		1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L							1	U	U		5	1	1	U	U		5	1	1	U	U		5	1							1	U	U		5	1
VOLATILES	1,2-Dibromoethane	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L							0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125							0.125	U	U		1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	0.53	U	U		2	0.53	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.53	U	U		2	0.53	1.06				1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.59	U	U		2	0.59	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.59	U	U		2	0.59	0.2	U	U		1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	1,3-Dichloropropane	ug/L							0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2							0.2	U	U		1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L							0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125							0.125	U	U		1	0.125
VOLATILES	2,2-Dichloropropane	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	2-Butanone	ug/L	3	U	U		10	3	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	3	U	U		10	3	2.5	U	U		10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L							2	U	U		10	2	2	U	U		10	2	2	U	U		10	2							2	U	U		10	2
VOLATILES	2-Chlorotoluene	ug/L							0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125							0.125	U	U		1	0.125
VOLATILES	2-Hexanone	ug/L	1.9	U	U		10	1.9	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	1.9	U	U		10	1.9	2.5	U	U		10	2.5
VOLATILES	4-Chlorotoluene	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	Acetone	ug/L	2.8	U	UJ	05B	50	2.8	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.8	U	U		50	2.8	2.5	U	U		10	2.5
VOLATILES	Benzene	ug/L	0.23	U	U		2	0.23	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.196	J	J	15	1	0.125	0.23	U	U		2	0.23	0.557	J	J	15	1	0.125
VOLATILES	Bromobenzene	ug/L							0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125							0.125	U	U		1	0.125
VOLATILES	Bromochloromethane	ug/L							0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2							0.2	U	U		1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.33	U	U		2	0.33	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.33	U	U		2	0.33	0.25	U	U		1	0.25
VOLATILES	Bromoform	ug/L	0.65	U	U		2	0.65	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.65	U	U		2	0.65	0.5	U	U		1	0.5

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	LHSMW04						LHSMW04						LHSMW04						LHSMW06						LHSMW07						LHSMW07					
		Sample No	LHSMW04-FEB2007						LHSMW04-013008						LHSMW04-112508						LHSMW06-111908						LHSMW07-FEB2007						LHSMW07-111908					
		Sample Date	20-Feb-07						30-Jan-08						25-Nov-08						19-Nov-08						21-Feb-07						21-Nov-08					
		Sample Purpose	REG						REG						REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
VOLATILES	Bromomethane	ug/L	0.47	U	U		2	0.47	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.47	U	U		2	0.47	0.5	U	U		1	0.5
VOLATILES	Carbon disulfide	ug/L	0.62	U	U		2	0.62	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.62	U	U		2	0.62	0.5	U	U		1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.52	U	U		2	0.52	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.52	U	U		2	0.52	0.25	U	U		1	0.25
VOLATILES	Chlorobenzene	ug/L	0.54	U	U		2	0.54	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.54	U	U		2	0.54	0.191	J	J	15	1	0.125
VOLATILES	Chloroethane	ug/L	0.46	U	U		2	0.46	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.46	U	UJ	05B	2	0.46	0.5	U	U		1	0.5
VOLATILES	Chloroform	ug/L	0.66	U	U		2	0.66	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.66	U	U		2	0.66	0.125	U	U		1	0.125
VOLATILES	Chloromethane	ug/L	0.6	U	U		2	0.6	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.6	U	U		2	0.6	0.25	U	U		1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.83	U	U		2	0.83	0.25	U	U		1	0.25	0.292	J	J	15	1	0.25	2.26				1	0.25	3.6				2	0.83	7.96				1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.59	U	U		2	0.59	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.59	U	U		2	0.59	0.25	U	U		1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.68	U	U		2	0.68	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.68	U	U		2	0.68	0.25	U	U		1	0.25
VOLATILES	Dibromomethane	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	Ethylbenzene	ug/L	0.48	U	U		2	0.48	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.48	U	U		2	0.48	0.25	U	U		1	0.25
VOLATILES	Hexachlorobutadiene	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	Isopropylbenzene	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	m,p-Xylenes	ug/L							0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5							0.5	U	U		1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	7.3	U	U		10	7.3	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5	7.3	U	U		10	7.3	2.5	U	U		10	2.5
VOLATILES	Methylene chloride	ug/L	0.67	U	U		5	0.67	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.67	U	U		5	0.67	0.25	U	U		5	0.25
VOLATILES	Naphthalene	ug/L							0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2							0.2	U	U		1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L							0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125							0.125	U	U		1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	Styrene	ug/L	0.5	U	U		2	0.5	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.5	U	U		2	0.5	0.125	U	U		1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	Tetrachloroethene	ug/L	6.4				2	0.74	8.74				1	0.25	25.7				1	0.25	0.25	U	U		1	0.25	0.74	U	U		2	0.74	0.25	U	U		1	0.25
VOLATILES	Toluene	ug/L	0.54	U	U		2	0.54	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.54	U	U		2	0.54	0.25	U	U		1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.75	U	U		2	0.75	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.75	U	U		2	0.75	0.421	J	J	15	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.61	U	U		2	0.61	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.61	U	U		2	0.61	0.5	U	U		1	0.5
VOLATILES	Trichloroethene	ug/L	4.6				2	0.63	5.74				1	0.25	11.3				1	0.25	0.486	J	J	15	1	0.25	15.8				2	0.63	25				1	0.25
VOLATILES	Trichlorofluoromethane	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25							0.25	U	U		1	0.25
VOLATILES	Vinyl acetate	ug/L							2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5							2.5	U	U		10	2.5
VOLATILES	Vinyl chloride	ug/L	0.32	U	U		2	0.32	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25	3				2	0.32	14.4				1	0.25
VOLATILES	Xylenes, Total	ug/L	1.1	U	U		6	1.1																			1.1	U	U		6	1.1						

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	LHSMW09						LHSMW11						LHSMW11						LHSMW11					
		Sample No	LHSMW09-031508						LHSMW11-090707						LHSMW11-031508						LHSMW11-102708					
		Sample Date	15-Mar-08						7-Sep-07						15-Mar-08						27-Oct-08					
		Sample Purpose	REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
DHE	Dehalococcoides	cells/ml																								
FIELD TESTS	Dissolved Oxygen	ug/L							2690				300								7760				300	
FIELD TESTS	Ferrous iron	ug/L																								
FIELD TESTS	Oxygen Reduction Potential	mV							21.8				0.02								110.8				0.02	
FIELD TESTS	pH	PH UNITS							6.31				0								6.32				0	
FIELD TESTS	Salinity	ug/L																								
FIELD TESTS	Specific Conductivity	uS/cm							5410				0								5.253				0	
FIELD TESTS	Temperature	Deg C							23.33				0								15.49				0	
FIELD TESTS	Turbidity	NTU							17				10								65.3				10	
GASES	Ethane	ug/L																								
GASES	Ethylene	ug/L																								
GASES	Methane	ug/L																								
GEN CHEMISTRY	Carbon Dioxide	ug/L																								
GEN CHEMISTRY	Chloride	ug/L																								
GEN CHEMISTRY	Nitrate	ug/L																								
GEN CHEMISTRY	Nitrate / Nitrite	ug/L																								
GEN CHEMISTRY	Nitrite	ug/L																								
GEN CHEMISTRY	Perchlorate	ug/L																								
GEN CHEMISTRY	pH	PH UNITS																								
GEN CHEMISTRY	Specific Conductivity	uS/cm																								
GEN CHEMISTRY	Sulfate	ug/L																								
GEN CHEMISTRY	Sulfide	ug/L																								
GEN CHEMISTRY	Total Alkalinity	ug/L																								
GEN CHEMISTRY	TOTAL DISSOLVED SOLIDS	ug/L							2990000				20000	10000												
GEN CHEMISTRY	Total Organic Carbon	ug/L																								
GEN CHEMISTRY	TOTAL SUSPENDED SOLIDS	ug/L							25500				5000	2500												
METALS	Aluminum	ug/L							508				100	50							50	U	U		100	50
METALS	Antimony	ug/L							2.5	U	U		10	2.5							0.25	U	U		1	0.25
METALS	Arsenic	ug/L							5.31	J	J	13,15	10	2.5							7.2				1	0.25
METALS	Barium	ug/L							49.5				30	5							51.2				3	0.5
METALS	Beryllium	ug/L							0.5	U	U		2	0.5							0.5	U	U		2	0.5
METALS	Cadmium	ug/L							1.25	U	U		5	1.25							0.391	J	J	15	0.5	0.125
METALS	Calcium	ug/L							269000				200	100							281000				200	100
METALS	Chromium	ug/L							1020				20	5							31.6				2	0.5
METALS	Cobalt	ug/L							22.7				5	2.5							33.4				5	2.5
METALS	Copper	ug/L							28.7	J		13	20	5							81.4				2	0.5
METALS	Iron	ug/L							7880				100	25							815				100	25
METALS	Lead	ug/L							2.5	U	U		5	2.5							0.25	U	U		0.5	0.25
METALS	Magnesium	ug/L							119000				500	250							120000				500	250
METALS	Manganese	ug/L							1380				200	50							743				100	25
METALS	Mercury	ug/L							0.1	U	U		0.2	0.1							0.1	U	U		0.2	0.1
METALS	Nickel	ug/L							2070				400	100							3590				200	50
METALS	Potassium	ug/L							1270				1000	250							265	J	J	15	1000	250
METALS	Selenium	ug/L							18.7	J		13	10	5							32.1				1	0.5
METALS	Silver	ug/L							2.5	U	U		10	2.5							0.25	U	U		1	0.25
METALS	Sodium	ug/L							597000				10000	5000							630000				5000	2500
METALS	Strontium	ug/L																								
METALS	Thallium	ug/L							8.54	J		13	2	0.5							0.0545	J	J	15	0.2	0.05
METALS	Vanadium	ug/L							5	U	U		10	5							50	U	U		100	50
METALS	Zinc	ug/L							8.97	J	J	15	20	5							19.5	J	J	15	20	5
METALS-DISS	Aluminum	ug/L							50	U	U		100	50												
METALS-DISS	Antimony	ug/L							2.5	U	U		10	2.5												
METALS-DISS	Arsenic	ug/L							3.35	J	J	15	10	2.5												

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	LHSMW09						LHSMW11						LHSMW11						LHSMW11					
		Sample No	LHSMW09-031508						LHSMW11-090707						LHSMW11-031508						LHSMW11-102708					
		Sample Date	15-Mar-08						7-Sep-07						15-Mar-08						27-Oct-08					
		Sample Purpose	REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
METALS-DISS	Barium	ug/L							51.4		J	13	30	5												
METALS-DISS	Beryllium	ug/L							0.5	U	U		2	0.5												
METALS-DISS	Cadmium	ug/L							1.25	U	U		5	1.25												
METALS-DISS	Calcium	ug/L							277000				200	100												
METALS-DISS	Chromium	ug/L							9.49	J	J	13,15	20	5												
METALS-DISS	Cobalt	ug/L							20.5				5	2.5												
METALS-DISS	Copper	ug/L							5.42	J	J	15	20	5												
METALS-DISS	Iron	ug/L							25	U	U		100	25												
METALS-DISS	Lead	ug/L							2.5	U	U		5	2.5												
METALS-DISS	Magnesium	ug/L							113000				500	250												
METALS-DISS	Manganese	ug/L							1060		J	13	20	5												
METALS-DISS	Mercury	ug/L							0.1	U	U		0.2	0.1												
METALS-DISS	Nickel	ug/L							1670		J	13	40	10												
METALS-DISS	Potassium	ug/L							1560				1000	250												
METALS-DISS	Selenium	ug/L							13.6				10	5												
METALS-DISS	Silver	ug/L							2.5	U	U		10	2.5												
METALS-DISS	Sodium	ug/L							655000				10000	5000												
METALS-DISS	Thallium	ug/L							10.1		J	13	2	0.5												
METALS-DISS	Vanadium	ug/L							100	U	U		200	100												
METALS-DISS	Zinc	ug/L							5	U	UJ	06B	20	5												
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	0.2							0.2	U	U		1	0.2						
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		5	1							1	U	U		5	1						
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	0.2							0.2	U	U		1	0.2						
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	0.2							0.2	U	U		1	0.2						
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	2-Butanone	ug/L	2.5	U	U		10	2.5							2.5	U	U		10	2.5						
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	UJ	05B	10	2							2	U	U		10	2						
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	2-Hexanone	ug/L	2.5	U	U		10	2.5							2.5	U	U		10	2.5						
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Acetone	ug/L	2.5	U	U		10	2.5							2.5	U	U		10	2.5						
VOLATILES	Benzene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	0.2							0.2	U	U		1	0.2						
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Bromoform	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						

Appendix B
LHAAP-35A (58) - Shallow Wells

		Location Code	LHSMW09						LHSMW11						LHSMW11						LHSMW11					
		Sample No	LHSMW09-031508						LHSMW11-090707						LHSMW11-031508						LHSMW11-102708					
		Sample Date	15-Mar-08						7-Sep-07						15-Mar-08						27-Oct-08					
		Sample Purpose	REG						REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						
VOLATILES	Chloroform	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Dichlorodifluoromethane	ug/L	0.387	J	JL	15,07	1	0.25							0.25	U	U		1	0.25						
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		10	2.5							2.5	U	U		10	2.5						
VOLATILES	Methylene chloride	ug/L	0.25	U	U		5	0.25							0.25	U	U		5	0.25						
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	0.2							0.2	U	U		1	0.2						
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Styrene	ug/L	0.125	U	U		1	0.125							0.125	U	U		1	0.125						
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Toluene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	0.5							0.5	U	U		1	0.5						
VOLATILES	Trichloroethene	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Vinyl acetate	ug/L	2.5	U	UJ	05B	10	2.5							2.5	U	U		10	2.5						
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	0.25							0.25	U	U		1	0.25						
VOLATILES	Xylenes, Total	ug/L																								

Notes:

13	Serial dilution
15	Quantitation
05B	Compound % deviation QC criteria not met
06D	Trip Blank
10A	Recovery
B	The concentration reported was detected in the associated method blank, trip blank, or equipment blank within 5X/10X the blank concentration.
Deg C	degrees Celsius
DF	dilution factor
FD	field duplicate
J	The analyte was positively identified; the reported value is the estimated concentration.
L	Result may be biased low. Details are provided in the validation report.
MDL	method detection limit
mV	millivolts
NTU	nepheletic turbidity units
PH UNITS	standard pH units to measure acidity
Qual	laboratory data qualifier
RC	reason code
REG	regular sample
U	Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
ug/L	micrograms per liter
uS/cm	microseconds per centimeter
VQ	validation data qualifier

Appendix B
LHAAP-35A (58) - Intermediate Wells

		Location Code	35AWW01						35AWW01						35AWW05					
		Sample No	35AWW01-020608						35AWW01-111908						35AWW05-112108					
		Sample Date	6-Feb-08						19-Nov-08						21-Nov-08					
		Sample Purpose	REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
FIELD TESTS	Dissolved Oxygen	ug/L							880				300		730				300	
FIELD TESTS	Oxygen Reduction Potential	mV							-19.2				0.02		-119.4				0.02	
FIELD TESTS	pH	PH UNITS							6.77				0		7.14				0	
FIELD TESTS	Specific Conductivity	uS/cm							0.901				0		2.818				0	
FIELD TESTS	Temperature	Deg C							20.03				0		21.03				0	
FIELD TESTS	Turbidity	NTU							3.4				10		2.1				10	
METALS	Aluminum	ug/L							50	U	U		100	50	50	U	U		100	50
METALS	Antimony	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25
METALS	Arsenic	ug/L							1.15				1	0.25	8.02				1	0.25
METALS	Barium	ug/L							239				30	5	3.4				3	0.5
METALS	Beryllium	ug/L							0.5	U	U		2	0.5	0.5	U	U		2	0.5
METALS	Cadmium	ug/L							0.125	U	U		0.5	0.125	0.125	U	U		0.5	0.125
METALS	Calcium	ug/L							45200				200	100	1910				200	100
METALS	Chromium	ug/L							2.39				2	0.5	20.4				2	0.5
METALS	Cobalt	ug/L							2.5	U	U		5	2.5	2.5	U	U		5	2.5
METALS	Copper	ug/L							0.812	J	J	15	2	0.5	0.54	J	J	15	2	0.5
METALS	Iron	ug/L							4400				100	25	25	U	U		100	25
METALS	Lead	ug/L							0.25	U	U		0.5	0.25	0.25	U	U		0.5	0.25
METALS	Magnesium	ug/L							25000				500	250	53800				500	250
METALS	Manganese	ug/L							61				2	0.5	4.25				2	0.5
METALS	Mercury	ug/L							0.1	U	U		0.2	0.1	0.1	U	U		0.2	0.1
METALS	Nickel	ug/L							1.6	J	J	15	4	1	1	U	U		4	1
METALS	Potassium	ug/L							2370				1000	250	214000				10000	2500
METALS	Selenium	ug/L							4.65				1	0.5	34.5				1	0.5
METALS	Silver	ug/L							0.25	U	U		1	0.25	0.25	U	U		1	0.25
METALS	Sodium	ug/L							75400				500	250	239000				1000	500
METALS	Thallium	ug/L							0.05	U	U		0.2	0.05	0.05	U	U		0.2	0.05
METALS	Vanadium	ug/L							5	U	U		10	5	10	U	U		20	10
METALS	Zinc	ug/L							5	U	U		20	5	5	U	U		20	5
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.551	J	J	15	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.125	U	U		1	0.125	0.15	U	U		1	0.15	0.15	U	U		1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25

Appendix B
LHAAP-35A (58) - Intermediate Wells

		Location Code	35AWW01						35AWW01						35AWW05					
		Sample No	35AWW01-020608						35AWW01-111908						35AWW05-112108					
		Sample Date	6-Feb-08						19-Nov-08						21-Nov-08					
		Sample Purpose	REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		5	1	1	U	U		5	1	1	U	U		5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		10	2	2	U	U		10	2	2	U	U		10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Acetone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	0.125	0.26	J	J	15	1	0.125	0.125	U	U		1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Methylene chloride	ug/L	0.25	U	U		5	0.25	0.25	U	U		5	0.25	0.25	U	U		5	0.25

Appendix B
LHAAP-35A (58) - Intermediate Wells

		Location Code	35AWW01						35AWW01						35AWW05					
		Sample No	35AWW01-020608						35AWW01-111908						35AWW05-112108					
		Sample Date	6-Feb-08						19-Nov-08						21-Nov-08					
		Sample Purpose	REG						REG						REG					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Toluene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Trichloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25	0.25	U	U		1	0.25

Notes:

15	Quantitation
Deg C	degrees Celsius
DF	dilution factor
FD	field duplicate
J	The analyte was positively identified; the reported value is the estimated concentration.
MDL	method detection limit
mV	millivolts
NTU	nepheletic turbidity units
PH UNITS	standard pH units to measure acidity
Qual	laboratory data qualifier
RC	reason code
REG	regular sample
U	Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
ug/L	micrograms per liter
uS/cm	microseconds per centimeter
VQ	validation data qualifier

Appendix B
LHAAP-35A (58) - Deep Wells

		Location Code	35AWW02						35AWW02					
		Sample No	35AWW02-112608						35AWW02-112608-FD					
		Sample Date	26-Nov-08						26-Nov-08					
		Sample Purpose	REG						FD					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
FIELD TESTS	Dissolved Oxygen	ug/L	810				300							
FIELD TESTS	Oxygen Reduction Potential	mV	-141.2				0.02							
FIELD TESTS	pH	PH UNITS	9.1				0							
FIELD TESTS	Specific Conductivity	uS/cm	1.112				0							
FIELD TESTS	Temperature	Deg C	18.25				0							
FIELD TESTS	Turbidity	NTU	0				10							
METALS	Aluminum	ug/L	950				100	50	1010				100	50
METALS	Antimony	ug/L	2.53				1	0.25	0.25	U	U		1	0.25
METALS	Arsenic	ug/L	58.3				1	0.25	6.32				1	0.25
METALS	Barium	ug/L	228				3	0.5	178				3	0.5
METALS	Beryllium	ug/L	0.5	U	U		2	0.5	0.5	U	U		2	0.5
METALS	Cadmium	ug/L	0.432	J	J	15	0.5	0.125	0.186	J	J	15	0.5	0.125
METALS	Calcium	ug/L	65400				200	100	63600				200	100
METALS	Chromium	ug/L	38.9				2	0.5	36.3				2	0.5
METALS	Cobalt	ug/L	3.8	J	J	15	5	2.5	3.55	J	J	15	5	2.5
METALS	Copper	ug/L	14.9				2	0.5	12.9				2	0.5
METALS	Iron	ug/L	3510				100	25	3380				100	25
METALS	Lead	ug/L	10.2				0.5	0.25	1.04				0.5	0.25
METALS	Magnesium	ug/L	2890				500	250	2910				500	250
METALS	Manganese	ug/L	165				2	0.5	159				2	0.5
METALS	Mercury	ug/L	0.1	U	U		0.2	0.1	0.143	J	J	15	0.2	0.1
METALS	Nickel	ug/L	280				40	10	260				40	10
METALS	Potassium	ug/L	3730				1000	250	3800				1000	250
METALS	Selenium	ug/L	10.9				1	0.5	8.51				1	0.5
METALS	Silver	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
METALS	Sodium	ug/L	199000				1000	500	205000				1000	500
METALS	Thallium	ug/L	0.144	J	J	15	0.2	0.05	0.0775	J	J	15	0.2	0.05
METALS	Vanadium	ug/L	5	U	U		10	5	5	U	U		10	5
METALS	Zinc	ug/L	33				20	5	33.9				20	5
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U		1	0.15	0.15	U	U		1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		5	1	1	U	U		5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		10	2	2	U	U		10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Acetone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5

Appendix B
LHAAP-35A (58) - Deep Wells

		Location Code	35AWW02						35AWW02					
		Sample No	35AWW02-112608						35AWW02-112608-FD					
		Sample Date	26-Nov-08						26-Nov-08					
		Sample Purpose	REG						FD					
Test Group	Parameter	Units	Result	Qual	VQ	RC	DF	MDL	Result	Qual	VQ	RC	DF	MDL
VOLATILES	Benzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Methylene chloride	ug/L	0.25	U	U		5	0.25	0.25	U	U		5	0.25
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	0.2	0.2	U	U		1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	0.125	0.125	U	U		1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Toluene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	0.5	0.5	U	U		1	0.5
VOLATILES	Trichloroethene	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		10	2.5	2.5	U	U		10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	0.25	0.25	U	U		1	0.25

Notes:

15	Quantitation
Deg C	degrees Celsius
DF	dilution factor
FD	field duplicate
J	The analyte was positively identified; the reported value is the estimated concentration.
MDL	method detection limit
mV	millivolts
NTU	nepheletic turbidity units
PH UNITS	standard pH units to measure acidity
Qual	laboratory data qualifier
RC	reason code
REG	regular sample
U	Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
ug/L	micrograms per liter
uS/cm	microseconds per centimeter
VQ	validation data qualifier

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L0709261

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

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This report was reviewed on September 26, 2007.

Stephanie Mossburg

STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on September 26, 2007.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 456 pages.

Protecting Our Environmental Future

KEMRON REPORT L0709261
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L0709261

CHAIN OF CUSTODY: The chain of custody numbers were 10225 and 10749

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperatures were 3 and 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact. The metals bottle associated with ID 15-091007 was received with a pH of 6. The pH was adjusted by the lab.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 14-SEP-07
Stephanie Mossburg

Laboratory Data Package Cover Page

00079527

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

SHERI L. PFALZGRAF	Sheri L. Pfalzgraf	Chemist II	September 20, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG250364
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	September 20, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?		✓			1
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NB(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	Exp.(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG250364
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	September 20, 2007

EXCEPTIONS REPORT
ER1 - Due to high levels of nontarget analytes, client samples 02, 04, 06, 08, 10, 12, 14, 16, 18, and 20 were initially analyzed at dilutions. Samples 04 and 14 required further dilution analyses in order to obtain results for manganese and nickel within the linear range.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079532

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MAREN M. BEERY	Maren Beery	Metals Supervisor	September 17, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG250098
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 17, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		ER1
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				ER2
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ESC(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG250098
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 17, 2007

EXCEPTIONS REPORT

ER#1 -Due to results that exceeded the linear range of the instrument, client samples 03 (reference sample to the MS/MSD), 05, 09, 13, 15, 17, the MS, the MSD, and 19 were reported from dilution analyses for sodium, client samples 09, 13, 17, and 19 were reported from dilution analyses for calcium, client sample 09 was reported from a dilution for zinc, and client sample 13 was reported from a dilution for magnesium. ER2 - Due to results that were noncompliant on the negative side, client samples 09, 13, 17, and 19 were reported from dilution analyses for aluminum, and client sample 11 was reported from a dilution for vanadium.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079537

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

SHERI L. PFALZGRAF	Sheri L. Pfalzgraf	Chemist II	September 26, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG250137
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	September 26, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NB(2)	EPC(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ES(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG250137
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	September 26, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079542

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

SHERI L. PFALZGRAF	Sheri L. Pfalzgraf	Chemist II	September 26, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG250107
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	September 26, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NB(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ESC(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG250107
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	September 26, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079547

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	September 18, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG250297
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 18, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NB(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NB(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG250297
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 18, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079552

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	September 18, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	TDS
Prep Batch Number(s):	WG250079
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 18, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NB(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	Exp.(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	TDS
Prep Batch Number(s):	WG250079
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 18, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079557

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	September 18, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	TSS
Prep Batch Number(s):	WG250078
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 18, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NB(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ED(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	TSS
Prep Batch Number(s):	WG250078
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 18, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079562

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MAREN M. BEERY	Maren Beery	Metals Supervisor	September 19, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG250200
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 19, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		ER1
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				ER2
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				ER3
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	Exp(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG250200
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 19, 2007

EXCEPTIONS REPORT
ER#1 - Due to results that exceeded the linear range of the instrument, client samples 04 (reference sample to the MS/MSD), 06, 10, 14, 16, 18, 20, the MS, and the MSD were reported from dilution analyses for sodium, client samples 10, 14, 18, and 20 were reported from dilution analyses for calcium, and client sample 14 was reported from a dilution for magnesium.
ER2 - Due to results that were noncompliant on the negative side, client samples 02, 04 (reference sample to the MS/MSD), 06, 10, 12, 16, 18, 20, the MS, and the MSD were reported from dilution analyses for vanadium, client samples 10, 14, 18, and 20 were reported from dilution analyses for aluminum. ER3 - Due to a result that was noncompliant on the negative side in the reference sample to the post spike, the post spike was reported from a dilution for vanadium.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079567

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

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MAREN M. BEERY	Maren Beery	Metals Supervisor	September 18, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG250135
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 18, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				ER1
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NB(2)	Error(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				ER2
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG250135
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 18, 2007

EXCEPTIONS REPORT
ER#1 - Due to high levels of nontarget analytes, samples 01, 03, 05, 07, 09, 11, 13, 15, 17, and 19 were analyzed at dilutions. Sample fractions 03 and 13 required further dilution analyses in order to obtain results for manganese and nickel within the linear range.
ER2 - Manganese and nickel for sample fraction 05 were reported from 100-fold dilution analysis. Dilution was necessary for consistency in order to obtain results for manganese and nickel within the linear range for the post digestion spike of sample 05.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00079572

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

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MAREN M. BEERY	Maren Beery	Metals Supervisor	September 18, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG250231
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 18, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				ER1
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709261
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG250231
Reviewer Name:	MAREN M. BEERY
LRC Date:	September 18, 2007

EXCEPTIONS REPORT
ER#1 - The ICV analyzed initially on 18-SEP-2007 at 10:47 yielded a noncompliant result for mercury. The ICV was immediately repoured and reanalyzed at 10:51 prior to sample analysis and yielded a compliant result.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Metals Data

2.1.1 Metals I C P Data

2.1.1.1 Summary Data

LABORATORY REPORT

L0709261

09/26/07 14:09

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP-46

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
46WW02-090707	L0709261-01	6010B	1	13-SEP-07
46WW02-090707	L0709261-02	6010B	1	13-SEP-07
46WW02-090707	L0709261-02	6010B	5	13-SEP-07
46WW04-090707	L0709261-03	6010B	1	13-SEP-07
46WW04-090707	L0709261-03	6010B	20	13-SEP-07
46WW04-090707	L0709261-04	6010B	1	13-SEP-07
46WW04-090707	L0709261-04	6010B	20	13-SEP-07
LHSMW11-090707	L0709261-05	6010B	1	13-SEP-07
LHSMW11-090707	L0709261-05	6010B	20	13-SEP-07
LHSMW11-090707	L0709261-06	6010B	1	13-SEP-07
LHSMW11-090707	L0709261-06	6010B	20	13-SEP-07
LHSMW14-090707	L0709261-07	6010B	1	13-SEP-07
LHSMW14-090707	L0709261-08	6010B	1	13-SEP-07
LHSMW15-090707	L0709261-09	6010B	1	13-SEP-07
LHSMW15-090707	L0709261-09	6010B	2	13-SEP-07
LHSMW15-090707	L0709261-09	6010B	20	13-SEP-07
LHSMW15-090707	L0709261-10	6010B	1	13-SEP-07
LHSMW15-090707	L0709261-10	6010B	2	13-SEP-07
LHSMW15-090707	L0709261-10	6010B	20	13-SEP-07
LHSMW19-090707	L0709261-11	6010B	1	13-SEP-07
LHSMW19-090707	L0709261-11	6010B	5	13-SEP-07
LHSMW19-090707	L0709261-12	6010B	1	13-SEP-07
LHSMW19-090707	L0709261-12	6010B	20	13-SEP-07
LHSMW22-090707	L0709261-13	6010B	1	13-SEP-07
LHSMW22-090707	L0709261-13	6010B	2	13-SEP-07
LHSMW22-090707	L0709261-13	6010B	20	13-SEP-07
LHSMW22-090707	L0709261-14	6010B	1	13-SEP-07
LHSMW22-090707	L0709261-14	6010B	2	13-SEP-07
LHSMW22-090707	L0709261-14	6010B	20	13-SEP-07

LABORATORY REPORT

L0709261

09/26/07 14:09

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
LHSMW23-090707	L0709261-15	6010B	1	13-SEP-07
LHSMW23-090707	L0709261-15	6010B	20	13-SEP-07
LHSMW23-090707	L0709261-16	6010B	1	13-SEP-07
LHSMW23-090707	L0709261-16	6010B	20	13-SEP-07
LHSMW24-090707	L0709261-17	6010B	1	13-SEP-07
LHSMW24-090707	L0709261-17	6010B	2	13-SEP-07
LHSMW24-090707	L0709261-17	6010B	20	13-SEP-07
LHSMW24-090707	L0709261-18	6010B	1	13-SEP-07
LHSMW24-090707	L0709261-18	6010B	2	13-SEP-07
LHSMW24-090707	L0709261-18	6010B	20	13-SEP-07
LHSMW24-090707	L0709261-18	6010B	50	13-SEP-07
LHSMW24-090707-FD	L0709261-19	6010B	1	13-SEP-07
LHSMW24-090707-FD	L0709261-19	6010B	2	13-SEP-07
LHSMW24-090707-FD	L0709261-19	6010B	20	13-SEP-07
LHSMW24-090707-FD	L0709261-20	6010B	1	13-SEP-07
LHSMW24-090707-FD	L0709261-20	6010B	2	13-SEP-07
LHSMW24-090707-FD	L0709261-20	6010B	20	13-SEP-07
LHSMW24-090707-FD	L0709261-20	6010B	50	13-SEP-07

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079582

Sample Number: **L0709261-01**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/07/2007 08:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 15:51**
File ID: **P2.091407.155157**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	7429-90-5	0.233		0.100	0.0500
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Calcium, Total	7440-70-2	20.3		0.200	0.100
Cobalt, Total	7440-48-4	0.0165		0.00500	0.00250
Iron, Total	7439-89-6	1.65		0.100	0.0250
Potassium, Total	7440-09-7	2.33		1.00	0.250
Magnesium, Total	7439-95-4	17.0		0.500	0.250
Sodium, Total	7440-23-5	46.8		0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.0879		0.0200	0.00500

U Not detected at or above adjusted sample detection limit

Sample Number: **L0709261-02**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/07/2007 08:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 15:07**
File ID: **P2.091807.150720**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.100	0.0500
Beryllium, Dissolved	7440-41-7		U	0.00200	0.000500
Calcium, Dissolved	7440-70-2	22.3		0.200	0.100
Cobalt, Dissolved	7440-48-4	0.0152		0.00500	0.00250
Iron, Dissolved	7439-89-6	0.749		0.100	0.0250
Potassium, Dissolved	7440-09-7	2.57		1.00	0.250
Magnesium, Dissolved	7439-95-4	16.4		0.500	0.250
Sodium, Dissolved	7440-23-5	57.7		0.500	0.250
Zinc, Dissolved	7440-66-6	0.0443		0.0200	0.00500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-02**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/07/2007 08:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **5**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 13:41**
File ID: **P2.091907.134135**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Vanadium, Dissolved	7440-62-2		U	0.0500	0.0250

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079585

Sample Number: **L0709261-03**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/07/2007 10:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 15:35**
File ID: **P2.091407.153531**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	7429-90-5		U	0.100	0.0500
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Calcium, Total	7440-70-2	328		0.200	0.100
Cobalt, Total	7440-48-4	0.0499		0.00500	0.00250
Iron, Total	7439-89-6	9.82		0.100	0.0250
Potassium, Total	7440-09-7	3.04		1.00	0.250
Magnesium, Total	7439-95-4	165		0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.00652	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079586

Sample Number: **L0709261-03**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/07/2007 10:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 12:43**
File ID: **P2.091707.124336**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Total	**7440-23-5**	**492**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079587

Sample Number: **L0709261-04**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/07/2007 10:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 14:35**
File ID: **P2.091807.143515**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.100	0.0500
Beryllium, Dissolved	7440-41-7		U	0.00200	0.000500
Calcium, Dissolved	7440-70-2	357		0.200	0.100
Cobalt, Dissolved	7440-48-4	0.0556		0.00500	0.00250
Iron, Dissolved	7439-89-6	3.35		0.100	0.0250
Potassium, Dissolved	7440-09-7	3.73		1.00	0.250
Magnesium, Dissolved	7439-95-4	169		0.500	0.250
Zinc, Dissolved	7440-66-6		U	0.0200	0.00500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-04**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/07/2007 10:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 13:09**
File ID: **P2.091907.130911**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Dissolved	7440-23-5	433		10.0	5.00
Vanadium, Dissolved	7440-62-2		U	0.200	0.100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079589

Sample Number: **L0709261-05**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/07/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 15:58**
File ID: **P2.091407.155818**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	7429-90-5	0.508		0.100	0.0500
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Calcium, Total	7440-70-2	269		0.200	0.100
Cobalt, Total	7440-48-4	0.0227		0.00500	0.00250
Iron, Total	7439-89-6	7.88		0.100	0.0250
Potassium, Total	7440-09-7	1.27		1.00	0.250
Magnesium, Total	7439-95-4	119		0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.00897	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-05**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/07/2007 12:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 13:02**
File ID: **P2.091707.130230**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Total	**7440-23-5**	**597**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079591

Sample Number: **L0709261-06**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/07/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 14:54**
File ID: **P2.091807.145435**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.100	0.0500
Beryllium, Dissolved	7440-41-7		U	0.00200	0.000500
Calcium, Dissolved	7440-70-2	277		0.200	0.100
Cobalt, Dissolved	7440-48-4	0.0205		0.00500	0.00250
Iron, Dissolved	7439-89-6		U	0.100	0.0250
Potassium, Dissolved	7440-09-7	1.56		1.00	0.250
Magnesium, Dissolved	7439-95-4	113		0.500	0.250
Zinc, Dissolved	7440-66-6		U	0.0200	0.00500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-06**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/07/2007 12:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 13:28**
File ID: **P2.091907.132816**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Dissolved	**7440-23-5**	**655**		**10.0**	**5.00**
Vanadium, Dissolved	**7440-62-2**		**U**	**0.200**	**0.100**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079593

Sample Number: **L0709261-07**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/10/2007 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 17:26**
File ID: **P2.091407.172623**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	7429-90-5	1.36		0.100	0.0500
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Calcium, Total	7440-70-2	2.55		0.200	0.100
Cobalt, Total	7440-48-4		U	0.00500	0.00250
Iron, Total	7439-89-6	1.61		0.100	0.0250
Potassium, Total	7440-09-7	0.754	J	1.00	0.250
Magnesium, Total	7439-95-4	1.81		0.500	0.250
Sodium, Total	7440-23-5	12.1		0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.00714	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-08**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/10/2007 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 15:00**
File ID: **P2.091807.150059**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.100	0.0500
Beryllium, Dissolved	7440-41-7		U	0.00200	0.000500
Calcium, Dissolved	7440-70-2	3.64		0.200	0.100
Cobalt, Dissolved	7440-48-4		U	0.00500	0.00250
Iron, Dissolved	7439-89-6	0.0493	J	0.100	0.0250
Potassium, Dissolved	7440-09-7	0.928	J	1.00	0.250
Magnesium, Dissolved	7439-95-4	1.80		0.500	0.250
Sodium, Dissolved	7440-23-5	22.5		0.500	0.250
Vanadium, Dissolved	7440-62-2		U	0.0100	0.00500
Zinc, Dissolved	7440-66-6		U	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079595

Sample Number: **L0709261-09**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/10/2007 15:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 17:32**
File ID: **P2.091407.173237**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Total	**7440-41-7**		**U**	**0.00200**	**0.000500**
Cobalt, Total	**7440-48-4**		**U**	**0.00500**	**0.00250**
Iron, Total	**7439-89-6**	**4.31**		**0.100**	**0.0250**
Potassium, Total	**7440-09-7**	**5.70**		**1.00**	**0.250**
Magnesium, Total	**7439-95-4**	**273**		**0.500**	**0.250**
Vanadium, Total	**7440-62-2**		**U**	**0.0100**	**0.00500**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-09**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/10/2007 15:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 13:22**
File ID: **P2.091707.132217**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	**7429-90-5**		**U**	**0.200**	**0.100**
Calcium, Total	**7440-70-2**	**523**		**0.400**	**0.200**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-09**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/10/2007 15:45**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 13:28**
File ID: **P2.091707.132841**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Total	**7440-23-5**	**2850**		**10.0**	**5.00**
Zinc, Total	**7440-66-6**	**300**		**0.400**	**0.100**

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-10**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/10/2007 15:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 15:38**
File ID: **P2.091807.153849**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Dissolved	7440-41-7		U	0.00200	0.000500
Cobalt, Dissolved	7440-48-4		U	0.00500	0.00250
Iron, Dissolved	7439-89-6		U	0.100	0.0250
Potassium, Dissolved	7440-09-7	4.14		1.00	0.250
Magnesium, Dissolved	7439-95-4	262		0.500	0.250
Zinc, Dissolved	7440-66-6	0.00807	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-10**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/10/2007 15:45**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:07**
File ID: **P2.091907.140755**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	**7429-90-5**		**U**	**0.200**	**0.100**
Calcium, Dissolved	**7440-70-2**	**500**		**0.400**	**0.200**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-10**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/10/2007 15:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:01**
File ID: **P2.091907.140121**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Dissolved	**7440-23-5**	**1020**		**10.0**	**5.00**
Vanadium, Dissolved	**7440-62-2**		**U**	**0.200**	**0.100**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079601

Sample Number: **L0709261-11**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 08:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 17:51**
File ID: **P2.091407.175133**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	7429-90-5	0.251		0.100	0.0500
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Calcium, Total	7440-70-2	64.7		0.200	0.100
Cobalt, Total	7440-48-4		U	0.00500	0.00250
Iron, Total	7439-89-6	0.529		0.100	0.0250
Potassium, Total	7440-09-7	2.77		1.00	0.250
Magnesium, Total	7439-95-4	44.8		0.500	0.250
Sodium, Total	7440-23-5	163		0.500	0.250
Zinc, Total	7440-66-6	0.0136	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079602

Sample Number: **L0709261-11**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 08:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **5**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 13:15**
File ID: **P2.091707.131554**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Vanadium, Total	**7440-62-2**		**U**	**0.0500**	**0.0250**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-12**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 08:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 15:45**
File ID: **P2.091807.154511**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.100	0.0500
Beryllium, Dissolved	7440-41-7		U	0.00200	0.000500
Calcium, Dissolved	7440-70-2	68.4		0.200	0.100
Cobalt, Dissolved	7440-48-4		U	0.00500	0.00250
Iron, Dissolved	7439-89-6		U	0.100	0.0250
Potassium, Dissolved	7440-09-7	2.57		1.00	0.250
Magnesium, Dissolved	7439-95-4	39.8		0.500	0.250
Sodium, Dissolved	7440-23-5	172		0.500	0.250
Zinc, Dissolved	7440-66-6		U	0.0200	0.00500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-12**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 08:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 13:54**
File ID: **P2.091907.135453**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Vanadium, Dissolved	7440-62-2		U	0.200	0.100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 09:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 17:57**
File ID: **P2.091407.175757**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Cobalt, Total	7440-48-4	0.0830		0.00500	0.00250
Iron, Total	7439-89-6	2.91		0.100	0.0250
Potassium, Total	7440-09-7	3.26		1.00	0.250
Vanadium, Total	7440-62-2	0.00924	J	0.0100	0.00500
Zinc, Total	7440-66-6	0.0488		0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 13:35**
File ID: **P2.091707.133512**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	562		0.400	0.200
Magnesium, Total	7439-95-4	451		1.00	0.500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 13:41**
File ID: **P2.091707.134143**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Total	**7440-23-5**	**911**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-14**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 09:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 15:51**
File ID: **P2.091807.155130**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Dissolved	**7440-41-7**		**U**	**0.00200**	**0.000500**
Cobalt, Dissolved	**7440-48-4**	**0.0929**		**0.00500**	**0.00250**
Iron, Dissolved	**7439-89-6**	**2.65**		**0.100**	**0.0250**
Potassium, Dissolved	**7440-09-7**	**3.24**		**1.00**	**0.250**
Vanadium, Dissolved	**7440-62-2**		**U**	**0.0100**	**0.00500**
Zinc, Dissolved	**7440-66-6**	**0.0332**		**0.0200**	**0.00500**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-14**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:52**
File ID: **P2.091907.145224**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Calcium, Dissolved	7440-70-2	555		0.400	0.200
Magnesium, Dissolved	7439-95-4	466		1.00	0.500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-14**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:58**
File ID: **P2.091907.145842**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Dissolved	**7440-23-5**	**945**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079611

Sample Number: **L0709261-15**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 18:04**
File ID: **P2.091407.180426**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	7429-90-5		U	0.100	0.0500
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Calcium, Total	7440-70-2	330		0.200	0.100
Cobalt, Total	7440-48-4	0.00437	J	0.00500	0.00250
Iron, Total	7439-89-6	5.59		0.100	0.0250
Potassium, Total	7440-09-7	3.07		1.00	0.250
Magnesium, Total	7439-95-4	237		0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.0143	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-15**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 13:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 13:08**
File ID: **P2.091707.130841**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Total	**7440-23-5**	**460**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079613

Sample Number: **L0709261-16**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 15:57**
File ID: **P2.091807.155759**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.100	0.0500
Beryllium, Dissolved	7440-41-7		U	0.00200	0.000500
Calcium, Dissolved	7440-70-2	345		0.200	0.100
Cobalt, Dissolved	7440-48-4	0.00411	J	0.00500	0.00250
Iron, Dissolved	7439-89-6	0.147		0.100	0.0250
Potassium, Dissolved	7440-09-7	3.23		1.00	0.250
Magnesium, Dissolved	7439-95-4	220		0.500	0.250
Zinc, Dissolved	7440-66-6		U	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-16**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 13:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 13:35**
File ID: **P2.091907.133500**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Dissolved	**7440-23-5**	**505**		**10.0**	**5.00**
Vanadium, Dissolved	**7440-62-2**		**U**	**0.200**	**0.100**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-17**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 18:10**
File ID: **P2.091407.181047**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Cobalt, Total	7440-48-4		U	0.00500	0.00250
Iron, Total	7439-89-6	0.449		0.100	0.0250
Potassium, Total	7440-09-7	2.21		1.00	0.250
Magnesium, Total	7439-95-4	393		0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.00619	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-17**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 14:01**
File ID: **P2.091707.140104**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	**7429-90-5**		**U**	**0.200**	**0.100**
Calcium, Total	**7440-70-2**	**610**		**0.400**	**0.200**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079617

Sample Number: **L0709261-17**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 14:07**
File ID: **P2.091707.140724**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Total	**7440-23-5**	**1160**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079618

Sample Number: **L0709261-18**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 16:04**
File ID: **P2.091807.160424**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Dissolved	**7440-41-7**		**U**	**0.00200**	**0.000500**
Cobalt, Dissolved	**7440-48-4**		**U**	**0.00500**	**0.00250**
Iron, Dissolved	**7439-89-6**		**U**	**0.100**	**0.0250**
Potassium, Dissolved	**7440-09-7**	**2.43**		**1.00**	**0.250**
Magnesium, Dissolved	**7439-95-4**	**370**		**0.500**	**0.250**
Zinc, Dissolved	**7440-66-6**		**U**	**0.0200**	**0.00500**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-18**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:27**
File ID: **P2.091907.142700**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Calcium, Dissolved	7440-70-2	612		0.400	0.200

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-18**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:33**
File ID: **P2.091907.143324**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Dissolved	**7440-23-5**	**1150**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079621

Sample Number: **L0709261-18**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL03**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **50**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/20/2007 08:22**
Run Date: **09/20/2007 10:06**
File ID: **P2.092007.100630**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Vanadium, Dissolved	7440-62-2		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079622

Sample Number: **L0709261-19**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/14/2007 09:22**
Run Date: **09/14/2007 18:17**
File ID: **P2.091407.181706**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Total	7440-41-7		U	0.00200	0.000500
Cobalt, Total	7440-48-4		U	0.00500	0.00250
Iron, Total	7439-89-6	0.413		0.100	0.0250
Potassium, Total	7440-09-7	2.25		1.00	0.250
Magnesium, Total	7439-95-4	391		0.500	0.250
Vanadium, Total	7440-62-2		U	0.0100	0.00500
Zinc, Total	7440-66-6	0.00579	J	0.0200	0.00500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079623

Sample Number: **L0709261-19**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 14:13**
File ID: **P2.091707.141345**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Total	**7429-90-5**		**U**	**0.200**	**0.100**
Calcium, Total	**7440-70-2**	**581**		**0.400**	**0.200**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079624

Sample Number: **L0709261-19**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250152**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/14/2007 06:55**
Cal Date: **09/17/2007 08:39**
Run Date: **09/17/2007 14:20**
File ID: **P2.091707.142009**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Total	**7440-23-5**	**1450**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079625

Sample Number: **L0709261-20**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/18/2007 08:50**
Run Date: **09/18/2007 16:10**
File ID: **P2.091807.161044**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Beryllium, Dissolved	**7440-41-7**		**U**	**0.00200**	**0.000500**
Cobalt, Dissolved	**7440-48-4**		**U**	**0.00500**	**0.00250**
Iron, Dissolved	**7439-89-6**		**U**	**0.100**	**0.0250**
Potassium, Dissolved	**7440-09-7**	**2.42**		**1.00**	**0.250**
Magnesium, Dissolved	**7439-95-4**	**367**		**0.500**	**0.250**
Zinc, Dissolved	**7440-66-6**		**U**	**0.0200**	**0.00500**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-20**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **2**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:39**
File ID: **P2.091907.143940**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Calcium, Dissolved	7440-70-2	605		0.400	0.200

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079627

Sample Number: **L0709261-20**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KRV**
Dilution: **20**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/19/2007 08:57**
Run Date: **09/19/2007 14:46**
File ID: **P2.091907.144601**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Sodium, Dissolved	**7440-23-5**	**1150**		**10.0**	**5.00**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079628

Sample Number: **L0709261-20**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250289**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL03**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **50**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **09/17/2007 06:25**
Cal Date: **09/20/2007 08:22**
Run Date: **09/20/2007 10:12**
File ID: **P2.092007.101249**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Vanadium, Dissolved	7440-62-2		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

KEMRON ENVIRONMENTAL SERVICES

Metals Digest Log

Analyst(s): PSW
Date: 9/14/07
LCS: 5ml 510 21660
MS/MSD: 5ml 510 21660
Witness: P
HNO_3 Lot #: CUO 12526
1:1HNO_3: NA
HCl Lot #: CUO 12527
H_2O_2 Lot #: NA
Earliest Sample Due Date: 9/17
Digest Tube Lot #: CUO 12521
Hotblock #: 2
Hotblock Temp - Start: 95.1 @ 0855
Hotblock Temp - End: 94.9 @ 1055

Box: 15
Digestion Work Group: WG250098

General Digestion
ME401 Revision # 12 - Method 3005A-Water
ME403 Revision # _____ - Method 3050B-Soil

Furnace Digestion
ME402 Revision # _____ - Method 3020A-Water
ME403 Revision # _____ - Method 3050B-Soil

AS/SE Digestion
ME410 Revision # _____ - Method 7060/7740-Water

Relinquished By: PSW
Digest Received By: [illegible] Date: 9/14/07

	KEMRON #	Initial WT/Vol	Final Volume	Comments	Due Date
1	PBW	50ml	50ml	-02	
2	LCSW			-03	
3	09-251-01			Level 4	9/21
4	-02				
5	-03				
6	-04				
7	-05				
8	-06				
9	-07				
10	-08				
11	09-253-01				9/17
12	09-261-01				9/24
13	-03			-01	
14	-03MS			-04	
15	-03MSD			-05	
16	-05				
17	-07				
18	-09				
19	-11				
20	-13				
21	-15				
22	-17				
23	-19				
24					
25					
26	PSW	9/14/07			
27					
28					

Comments: _____

Primary Review: [signature] 9/14/07

Secondary Review: [signature] 9/14/07

KEMRON ENVIRONMENTAL SERVICES

Metals Digest Log

Analyst(s): RM
Date: 9/17/07
LCS: 5ml STD 21660
MS/MSD: 5ml STD 21660
Witness: RM
HNO_3 Lot #: CAN 12526
1:1HNO_3: NA
HCl Lot #: CAN 12527
H_2O_2 Lot #: NA
Earliest Sample Due Date: 9/24
Digest Tube Lot #: CAN 12400
Hotblock #: 2
Hotblock Temp - Start: 94.9°C 0625
Hotblock Temp - End: 95.1°C 1025

Box: C4
Digestion Work Group: WG 250200

General Digestion
ME401 Revision # 12 - Method 3005A-Water
ME403 Revision # _____ - Method 3050B-Soil

Furnace Digestion
ME402 Revision # _____ - Method 3020A-Water
ME403 Revision # _____ - Method 3050B-Soil

AS/SE Digestion
ME410 Revision # _____ - Method 7060/7740-Water

Relinquished By: RM
Digest Received By: JMH Date: 9/17/07

	KEMRON #	Initial WT/Vol	Final Volume	Comments	Due Date
1	MBW	50ml	50ml	LAB FILT 9/14 -02	
2	LCSW			-03	
3	09-261-02				9/24
4	-04			-01	
5	-04 MS			-04	
6	-04 MSD			-05	
7	-06				
8	-08				
9	-10				
10	-12				
11	-14				
12	-16				
13	-18				
14	-20				
15					
16					
17					
18					
19					
20					
21					
22				RM 9/17/07	
23					
24					
25					
26					
27					
28					

Comments: _____

Primary Review: [signature] 9/17/07 Secondary Review: [signature] 9/17/07

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091407H2.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20825

Calibration Std: STD21870 ICV/CCV Std: STD21884 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250019, 250020, 250152, 250163

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.091407.085705	WG250147-01	Calibration Point		1		09/14/07 08:57
2	P2.091407.090314	WG250147-02	Calibration Point		1		09/14/07 09:03
3	P2.091407.090928	WG250147-03	Calibration Point		1		09/14/07 09:09
4	P2.091407.091546	WG250147-04	Calibration Point		1		09/14/07 09:15
5	P2.091407.092200	WG250147-05	Calibration Point		1		09/14/07 09:22
6	P2.091407.092729	WG250147-06	Initial Calibration Verification		1		09/14/07 09:27
7	P2.091407.093346	WG250147-07	Initial Calib Blank		1		09/14/07 09:33
8	P2.091407.094001	WG250147-08	Interference Check		1		09/14/07 09:40
9	P2.091407.094522	WG250147-09	Interference Check		1		09/14/07 09:45
10	P2.091407.095043	WG250147-10	CCV		1		09/14/07 09:50
11	P2.091407.095700	WG250147-11	CCB		1		09/14/07 09:57
12	P2.091407.100223	WG249978-02	Method/Prep Blank	50/50	1		09/14/07 10:02
13	P2.091407.100837	WG249978-03	Laboratory Control S	50/50	1		09/14/07 10:08
14	P2.091407.101504	WG249978-01	Reference Sample		1	L0709165-10	09/14/07 10:15
15	P2.091407.102023	WG249978-04	Matrix Spike	50/50	1	L0709165-11	09/14/07 10:20
16	P2.091407.102547	WG249978-05	Matrix Spike Duplica	50/50	1	L0709165-12	09/14/07 10:25
17	P2.091407.103116	L0709165-09	ATK-EB090907	50/50	1		09/14/07 10:31
18	P2.091407.103738	L0709168-02	C-004	50/50	1		09/14/07 10:37
19	P2.091407.104401	L0709201-02	MW-01-02	50/50	1		09/14/07 10:44
20	P2.091407.105027	WG250019-01	Post Digestion Spike		1	L0709201-02	09/14/07 10:50
21	P2.091407.105649	WG250019-02	Serial Dilution		5	L0709201-02	09/14/07 10:56
22	P2.091407.110312	WG250147-12	CCV		1		09/14/07 11:03
23	P2.091407.110930	WG250147-13	CCB		1		09/14/07 11:09
24	P2.091407.111544	L0709165-13	ATK-25F-GW02-0907	50/50	1		09/14/07 11:15
25	P2.091407.112105	L0709165-14	ATK-25F-GW02P-0907	50/50	1		09/14/07 11:21
26	P2.091407.112623	L0709165-15	ATK-25F-GW03-0907	50/50	1		09/14/07 11:26
27	P2.091407.113248	L0709201-04	MW-01-03	50/50	1		09/14/07 11:32
28	P2.091407.113912	L0709201-06	MW-03-12	50/50	1		09/14/07 11:39
29	P2.091407.114537	L0709201-08	MW-01-07	50/50	1		09/14/07 11:45
30	P2.091407.115156	L0709201-10	DUPLICATE	50/50	1		09/14/07 11:51
31	P2.091407.115820	WG250147-14	CCV		1		09/14/07 11:58
32	P2.091407.120439	WG250147-15	CCB		1		09/14/07 12:04
33	P2.091407.121056	WG249980-02	Method/Prep Blank	50/50	1		09/14/07 12:10
34	P2.091407.121715	WG249980-03	Laboratory Control S	50/50	1		09/14/07 12:17
35	P2.091407.122340	WG249980-01	Reference Sample		1	L0709182-01	09/14/07 12:23
36	P2.091407.122904	WG249980-04	Matrix Spike	50/50	1		09/14/07 12:29
37	P2.091407.123428	WG249980-05	Matrix Spike Duplica	50/50	1		09/14/07 12:34

Approved: September 17, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091407H2.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20825

Calibration Std: STD21870 ICV/CCV Std: STD21884 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250019, 250020, 250152, 250163

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.091407.123953	L0709182-02	PMW85-04-EBT-4	50/50	1	WG249903-07	09/14/07 12:39
39	P2.091407.124522	L0709182-03	PMW85-05-EBT-4	50/50	1		09/14/07 12:45
40	P2.091407.125136	L0709201-01	MW-01-02	50/50	1		09/14/07 12:51
41	P2.091407.125759	WG250020-01	Post Digestion Spike		1	L0709201-01	09/14/07 12:57
42	P2.091407.130424	WG250020-02	Serial Dilution		5	L0709201-01	09/14/07 13:04
43	P2.091407.131047	WG250147-16	CCV		1		09/14/07 13:10
44	P2.091407.131704	WG250147-17	CCB		1		09/14/07 13:17
45	P2.091407.132328	L0709182-04	DUP5-EBT-4	50/50	1		09/14/07 13:23
46	P2.091407.132846	L0709182-05	IW101-08A-EBT-4	50/50	1		09/14/07 13:28
47	P2.091407.133416	L0709182-06	IW101-08B-EBT-4	50/50	1		09/14/07 13:34
48	P2.091407.133953	L0709182-07	IW101-08C-EBT-4	50/50	1		09/14/07 13:39
49	P2.091407.134528	L0709182-09	DUP3-EBT-4	50/50	1		09/14/07 13:45
50	P2.091407.135102	L0709182-10	IW101-01A-EBT-4	50/50	1		09/14/07 13:51
51	P2.091407.135632	L0709182-11	IW101-01B-EBT-4	50/50	1		09/14/07 13:56
52	P2.091407.140150	L0709201-03	MW-01-03	50/50	1	WG250025-01	09/14/07 14:01
53	P2.091407.140816	L0709201-05	MW-03-12	50/50	1		09/14/07 14:08
54	P2.091407.141448	L0709201-07	MW-01-07	50/50	1		09/14/07 14:14
55	P2.091407.142111	WG250147-18	CCV		1		09/14/07 14:21
56	P2.091407.142735	WG250147-19	CCB		1		09/14/07 14:27
57	P2.091407.143402	L0709201-09	DUPLICATE	50/50	1		09/14/07 14:34
58	P2.091407.144030	L0709212-01	ST105-GW-0523-01	50/50	1		09/14/07 14:40
59	P2.091407.144654	L0709212-02	ST105-GW-0521A-01	50/50	1		09/14/07 14:46
60	P2.091407.145319	L0709212-03	ST105-GW-0521B-01	50/50	1		09/14/07 14:53
61	P2.091407.145937	L0709212-04	ST105-GW-0521C-01	50/50	1		09/14/07 14:59
62	P2.091407.150600	L0709212-05	ST105-GW-0519-01	50/50	1	WG250125-07	09/14/07 15:06
63	P2.091407.151225	WG250147-20	CCV		1		09/14/07 15:12
64	P2.091407.151842	WG250147-21	CCB		1		09/14/07 15:18
65	P2.091407.152240	WG250098-02	Method/Prep Blank	50/50	1		09/14/07 15:22
66	P2.091407.152859	WG250098-03	Laboratory Control S	50/50	1		09/14/07 15:28
67	P2.091407.153531	WG250098-01	Reference Sample		1	L0709261-03	09/14/07 15:35
68	P2.091407.154054	WG250098-04	Matrix Spike	50/50	1		09/14/07 15:40
69	P2.091407.154624	WG250098-05	Matrix Spike Duplica	50/50	1		09/14/07 15:46
70	P2.091407.155157	L0709261-01	46WW02-090707	50/50	1		09/14/07 15:51
71	P2.091407.155818	L0709261-05	LHSMW11-090707	50/50	1		09/14/07 15:58
72	P2.091407.160345	L0709253-01	SE-3005P	50/50	1	WG250049-01	09/14/07 16:03
73	P2.091407.161007	WG250152-01	Post Digestion Spike		1	L0709253-01	09/14/07 16:10
74	P2.091407.161629	WG250152-02	Serial Dilution		5	L0709253-01	09/14/07 16:16

Page: 2

Approved: September 17, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091407H2.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20825

Calibration Std: STD21870 ICV/CCV Std: STD21884 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250019, 250020, 250152, 250163

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.091407.162251	WG250147-22	CCV		1		09/14/07 16:22
76	P2.091407.162909	WG250147-23	CCB		1		09/14/07 16:29
77	P2.091407.163527	L0709251-01	MW-01-08	50/50	1	WG250135-01	09/14/07 16:35
78	P2.091407.164149	L0709251-02	MW-01-08	50/50	1		09/14/07 16:41
79	P2.091407.164805	L0709251-03	MW-03-09	50/50	1	WG250205-04	09/14/07 16:48
80	P2.091407.165435	L0709251-04	MW-03-09	50/50	1		09/14/07 16:54
81	P2.091407.170103	L0709251-05	EQUIP BLANK	50/50	1		09/14/07 17:01
82	P2.091407.170724	L0709251-06	EQUIP BLANK	50/50	1		09/14/07 17:07
83	P2.091407.171337	L0709251-07	MW-03-11	50/50	1		09/14/07 17:13
84	P2.091407.171958	L0709251-08	MW-03-11	50/50	1		09/14/07 17:19
85	P2.091407.172623	L0709261-07	LHSMW14-090707	50/50	1	WG250078-04	09/14/07 17:26
86	P2.091407.173237	L0709261-09	LHSMW15-090707	50/50	1		09/14/07 17:32
87	P2.091407.173858	WG250147-24	CCV		1		09/14/07 17:38
88	P2.091407.174517	WG250147-25	CCB		1		09/14/07 17:45
89	P2.091407.175133	L0709261-11	LHSMW19-090707	50/50	1		09/14/07 17:51
90	P2.091407.175757	L0709261-13	LHSMW22-090707	50/50	1		09/14/07 17:57
91	P2.091407.180426	L0709261-15	LHSMW23-090707	50/50	1		09/14/07 18:04
92	P2.091407.181047	L0709261-17	LHSMW24-090707	50/50	1		09/14/07 18:10
93	P2.091407.181706	L0709261-19	LHSMW24-090707-FD	50/50	1		09/14/07 18:17
94	P2.091407.182328	L0709248-01	COLD MILL TANK DIKE	5/50	1		09/14/07 18:23
95	P2.091407.182946	WG250147-26	CCV		1		09/14/07 18:29
96	P2.091407.183607	WG250147-27	CCB		1		09/14/07 18:36
97	P2.091407.184228	WG250132-02	Method/Prep Blank	50/50	1		09/14/07 18:42
98	P2.091407.184848	WG250132-03	Laboratory Control S	50/50	1		09/14/07 18:48
99	P2.091407.185511	WG250058-01	Fluid Blank		1		09/14/07 18:55
100	P2.091407.190135	WG250132-01	Reference Sample		1	L0709230-01	09/14/07 19:01
101	P2.091407.190800	WG250132-04	Matrix Spike	5/50	1		09/14/07 19:08
102	P2.091407.191547	WG250132-05	Matrix Spike Duplica	5/50	1		09/14/07 19:15
103	P2.091407.192209	L0709265-02	BARTON \#B	5/50	1		09/14/07 19:22
104	P2.091407.192833	L0709265-01	BARTON \#A	5/50	1		09/14/07 19:28
105	P2.091407.193451	WG250163-01	Post Digestion Spike		1	L0709265-01	09/14/07 19:34
106	P2.091407.194113	WG250163-02	Serial Dilution		5	L0709265-01	09/14/07 19:41
107	P2.091407.194744	WG250147-28	CCV		1		09/14/07 19:47
108	P2.091407.195405	WG250147-29	CCB		1		09/14/07 19:54

Approved: September 17, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091707HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20847

Calibration Std: STD21409 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250116, 250166, 250152, 250020, 250159

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.091707.081431	WG250264-01	Calibration Point		1		09/17/07 08:14
2	P2.091707.082043	WG250264-02	Calibration Point		1		09/17/07 08:20
3	P2.091707.082659	WG250264-03	Calibration Point		1		09/17/07 08:26
4	P2.091707.083311	WG250264-04	Calibration Point		1		09/17/07 08:33
5	P2.091707.083939	WG250264-05	Calibration Point		1		09/17/07 08:39
6	P2.091707.084510	WG250264-06	Initial Calibration Verification		1		09/17/07 08:45
7	P2.091707.085130	WG250264-07	Initial Calib Blank		1		09/17/07 08:51
8	P2.091707.085757	WG250264-08	Interference Check		1		09/17/07 08:57
9	P2.091707.090356	WG250264-09	Interference Check		1		09/17/07 09:03
10	P2.091707.090918	WG250264-10	CCV		1		09/17/07 09:09
11	P2.091707.091612	WG250264-11	CCB		1		09/17/07 09:16
12	P2.091707.093506	WG250027-02	Method/Prep Blank	50/50	1		09/17/07 09:35
13	P2.091707.094124	WG250027-03	Laboratory Control S	50/50	1		09/17/07 09:41
14	P2.091707.094754	WG249913-01	Fluid Blank		1		09/17/07 09:47
15	P2.091707.095419	WG250027-01	Reference Sample		1	L0709145-01	09/17/07 09:54
16	P2.091707.100101	WG250027-04	Matrix Spike	5/50	1		09/17/07 10:01
17	P2.091707.100736	WG250027-05	Matrix Spike Duplica	5/50	1		09/17/07 10:07
18	P2.091707.101407	L0709144-01	S0709131-01A/CT070030	5/50	1	WG249996-04	09/17/07 10:14
19	P2.091707.102059	L0709145-02	S0709132-02A/GM071516	5/50	1		09/17/07 10:20
20	P2.091707.102721	WG250116-01	Post Digestion Spike		1	L0709145-02	09/17/07 10:27
21	P2.091707.103342	WG250116-02	Serial Dilution		5	L0709145-02	09/17/07 10:33
22	P2.091707.104002	WG250264-12	CCV		1		09/17/07 10:40
23	P2.091707.104621	WG250264-13	CCB		1		09/17/07 10:46
24	P2.091707.105237	L0709155-02	015B	5/50	10		09/17/07 10:52
25	P2.091707.105856	L0709155-03	064TC	5/50	10		09/17/07 10:58
26	P2.091707.110513	L0709155-01	141TP	5/50	1		09/17/07 11:05
27	P2.091707.111138	L0709155-05	275D	5/50	1		09/17/07 11:11
28	P2.091707.111759	WG250264-14	CCV		1		09/17/07 11:17
29	P2.091707.112417	WG250264-15	CCB		1		09/17/07 11:24
30	P2.091707.113033	WG250143-01	Method/Prep Blank	.25/50	1		09/17/07 11:30
31	P2.091707.113653	WG250143-02	Laboratory Control S	.25/50	1		09/17/07 11:36
32	P2.091707.114317	WG250143-03	Laboratory Control S	.25/50	1		09/17/07 11:43
33	P2.091707.114938	L0709007-01	S0709133-01A/GM070087	.28/50	1	WG249803-03	09/17/07 11:49
34	P2.091707.115558	L0709179-02	GT070008	.26/50	1		09/17/07 11:55
35	P2.091707.120212	L0709221-01	HW6092	.26/50	1		09/17/07 12:02
36	P2.091707.120829	L0709007-02	S0709133-02A/GM070088	.27/50	1		09/17/07 12:08
37	P2.091707.121448	WG250166-01	Post Digestion Spike		1	L0709007-02	09/17/07 12:14

Page: 1

Approved: September 18, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091707HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20847

Calibration Std: STD21409 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250116, 250166, 250152, 250020, 250159

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.091707.122013	WG250166-02	Serial Dilution		5	L0709007-02	09/17/07 12:20
39	P2.091707.122636	WG250264-16	CCV		1		09/17/07 12:26
40	P2.091707.123253	WG250264-17	CCB		1		09/17/07 12:32
41	P2.091707.124336	WG250098-01	Reference Sample		20	L0709261-03	09/17/07 12:43
42	P2.091707.124952	WG250098-04	Matrix Spike	50/50	20		09/17/07 12:49
43	P2.091707.125609	WG250098-05	Matrix Spike Duplica	50/50	20		09/17/07 12:56
44	P2.091707.130230	L0709261-05	LHSMW11-090707	50/50	20		09/17/07 13:02
45	P2.091707.130841	L0709261-15	LHSMW23-090707	50/50	20		09/17/07 13:08
46	P2.091707.131554	L0709261-11	LHSMW19-090707	50/50	5		09/17/07 13:15
47	P2.091707.132217	L0709261-09	LHSMW15-090707	50/50	2		09/17/07 13:22
48	P2.091707.132841	L0709261-09	LHSMW15-090707	50/50	20		09/17/07 13:28
49	P2.091707.133512	L0709261-13	LHSMW22-090707	50/50	2		09/17/07 13:35
50	P2.091707.134143	L0709261-13	LHSMW22-090707	50/50	20		09/17/07 13:41
51	P2.091707.134816	WG250264-18	CCV		1		09/17/07 13:48
52	P2.091707.135442	WG250264-19	CCB		1		09/17/07 13:54
53	P2.091707.140104	L0709261-17	LHSMW24-090707	50/50	2		09/17/07 14:01
54	P2.091707.140724	L0709261-17	LHSMW24-090707	50/50	20		09/17/07 14:07
55	P2.091707.141345	L0709261-19	LHSMW24-090707-FD	50/50	2		09/17/07 14:13
56	P2.091707.142009	L0709261-19	LHSMW24-090707-FD	50/50	20		09/17/07 14:20
57	P2.091707.142626	L0709251-01	MW-01-08		5		09/17/07 14:26
58	P2.091707.143256	L0709251-03	MW-03-09		5		09/17/07 14:32
59	P2.091707.143928	L0709251-07	MW-03-11	50/50	5		09/17/07 14:39
60	P2.091707.144557	L0709251-01	MW-01-08	50/50	10		09/17/07 14:45
61	P2.091707.145214	L0709251-03	MW-03-09	50/50	10		09/17/07 14:52
62	P2.091707.145834	WG250264-20	CCV		1		09/17/07 14:58
63	P2.091707.150454	WG250264-21	CCB		1		09/17/07 15:04
64	P2.091707.151142	L0709182-02	PMW85-04-EBT-4	50/50	2		09/17/07 15:11
65	P2.091707.151709	L0709201-01	MW-01-02	50/50	5		09/17/07 15:17
66	P2.091707.152333	WG250020-01	Post Digestion Spike		5	L0709201-01	09/17/07 15:23
67	P2.091707.152959	L0709201-03	MW-01-03	50/50	5		09/17/07 15:29
68	P2.091707.153615	L0709201-05	MW-03-12	50/50	5		09/17/07 15:36
69	P2.091707.154239	L0709201-07	MW-01-07	50/50	5		09/17/07 15:42
70	P2.091707.154855	L0709201-09	DUPLICATE	50/50	5		09/17/07 15:48
71	P2.091707.155514	WG250264-22	CCV		1		09/17/07 15:55
72	P2.091707.160134	WG250264-23	CCB		1		09/17/07 16:01
73	P2.091707.161147	WG250264-24	CCV		1		09/17/07 16:11
74	P2.091707.161809	WG250264-25	CCB		1		09/17/07 16:18

Approved: September 18, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091707HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20847

Calibration Std: STD21409 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250116, 250166, 250152, 250020, 250159

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.091707.162427	WG250106-02	Method/Prep Blank	50/50	1		09/17/07 16:24
76	P2.091707.163047	WG250106-03	Laboratory Control S	50/50	1		09/17/07 16:30
77	P2.091707.163712	WG250106-01	Reference Sample		1	L0709224-02	09/17/07 16:37
78	P2.091707.164330	WG250106-04	Matrix Spike	50/50	1		09/17/07 16:43
79	P2.091707.165001	WG250106-05	Matrix Spike Duplica	50/50	1		09/17/07 16:50
80	P2.091707.165624	L0709259-01	001/COMP.		1		09/17/07 16:56
81	P2.091707.170243	L0709224-03	E-3WG-MW001(091107)	50/50	1		09/17/07 17:02
82	P2.091707.170910	L0709277-01	NMEFF001/Z07115	50/50	1		09/17/07 17:09
83	P2.091707.171540	WG250159-01	Post Digestion Spike		1	L0709277-01	09/17/07 17:15
84	P2.091707.172207	WG250159-02	Serial Dilution		5	L0709277-01	09/17/07 17:22
85	P2.091707.172831	WG250264-26	CCV		1		09/17/07 17:28
86	P2.091707.173547	WG250264-27	CCB		1		09/17/07 17:35
87	P2.091707.174202	L0709224-05	E-3WG-MW002(091107)	50/50	1		09/17/07 17:42
88	P2.091707.174825	L0709224-06	E-3WG-MW002(091107)	50/50	1		09/17/07 17:48
89	P2.091707.175451	L0709224-08	E-3WG-MW003(091107)	50/50	1		09/17/07 17:54
90	P2.091707.180009	L0709224-09	E-3WG-MW003(091107)	50/50	1		09/17/07 18:00
91	P2.091707.180536	L0709224-11	E-70-MW002(091107)	50/50	1		09/17/07 18:05
92	P2.091707.181158	L0709224-12	E-70-MW002(091107)	50/50	1		09/17/07 18:11
93	P2.091707.181816	L0709224-14	E-70-MW003(091107)	50/50	1		09/17/07 18:18
94	P2.091707.182338	L0709224-15	E-70-MW003(091107)	50/50	1		09/17/07 18:23
95	P2.091707.182903	L0709224-17	E-70-MW004(091107)	50/50	1		09/17/07 18:29
96	P2.091707.183518	L0709224-18	E-70-MW004(091107)	50/50	1		09/17/07 18:35
97	P2.091707.184140	WG250264-28	CCV		1		09/17/07 18:41
98	P2.091707.184759	WG250264-29	CCB		1		09/17/07 18:47
99	P2.091707.185415	L0709224-20	FB002(091107)	50/50	1		09/17/07 18:54
100	P2.091707.190035	L0709224-22	E-18-MW001(091107)	50/50	1		09/17/07 19:00
101	P2.091707.190700	L0709224-23	E-18-MW001(091107)	50/50	1		09/17/07 19:07
102	P2.091707.191318	L0709224-25	E-MW011(091107)	50/50	1		09/17/07 19:13
103	P2.091707.191946	L0709224-26	E-MW011(091107)	50/50	1		09/17/07 19:19
104	P2.091707.192611	L0709224-28	EB1(091107)	50/50	1		09/17/07 19:26
105	P2.091707.193225	WG250264-30	CCV		1		09/17/07 19:32
106	P2.091707.193853	WG250264-31	CCB		1		09/17/07 19:38

Page: 3

Approved: September 18, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091807HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20865

Calibration Std: STD21409 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250159, 250285, 250289, 250291

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.091807.082455	WG250358-01	Calibration Point		1		09/18/07 08:24
2	P2.091807.083114	WG250358-02	Calibration Point		1		09/18/07 08:31
3	P2.091807.083752	WG250358-03	Calibration Point		1		09/18/07 08:37
4	P2.091807.084404	WG250358-04	Calibration Point		1		09/18/07 08:44
5	P2.091807.085031	WG250358-05	Calibration Point		1		09/18/07 08:50
6	P2.091807.085608	WG250358-06	Initial Calibration Verification		1		09/18/07 08:56
7	P2.091807.090231	WG250358-07	Initial Calib Blank		1		09/18/07 09:02
8	P2.091807.090845	WG250358-08	Interference Check		1		09/18/07 09:08
9	P2.091807.091413	WG250358-09	Interference Check		1		09/18/07 09:14
10	P2.091807.091939	WG250358-10	CCV		1		09/18/07 09:19
11	P2.091807.092556	WG250358-11	CCB		1		09/18/07 09:25
12	P2.091807.095857	WG250106-02	Method/Prep Blank	50/50	1		09/18/07 09:58
13	P2.091807.100512	WG250106-03	Laboratory Control S	50/50	1		09/18/07 10:05
14	P2.091807.101142	WG250106-01	Reference Sample		1	L0709224-02	09/18/07 10:11
15	P2.091807.101801	WG250106-04	Matrix Spike	50/50	1		09/18/07 10:18
16	P2.091807.102421	WG250106-05	Matrix Spike Duplica	50/50	1		09/18/07 10:24
17	P2.091807.103046	L0709259-01	001/COMP.	50/50	1		09/18/07 10:30
18	P2.091807.103803	WG250159-03	Post Digestion Spike		1	L0709259-01	09/18/07 10:38
19	P2.091807.104426	WG250159-04	Serial Dilution		5	L0709259-01	09/18/07 10:44
20	P2.091807.105048	WG250358-12	CCV		1		09/18/07 10:50
21	P2.091807.105707	WG250358-13	CCB		1		09/18/07 10:57
22	P2.091807.110327	WG250210-02	Method/Prep Blank	50/50	1		09/18/07 11:03
23	P2.091807.110942	WG250210-03	Laboratory Control S	50/50	1		09/18/07 11:09
24	P2.091807.111619	WG250210-01	Reference Sample		1	L0709333-01	09/18/07 11:16
25	P2.091807.112237	WG250210-04	Matrix Spike	50/50	1		09/18/07 11:22
26	P2.091807.112855	WG250210-05	Matrix Spike Duplica	50/50	1		09/18/07 11:28
27	P2.091807.113522	L0709293-13	W0089-ER	50/50	1		09/18/07 11:35
28	P2.091807.114136	L0709293-14	W0090-ER	50/50	1		09/18/07 11:41
29	P2.091807.114753	L0709333-02	ST105-GW-0507-99	50/50	1		09/18/07 11:47
30	P2.091807.115414	WG250285-01	Post Digestion Spike		1	L0709333-02	09/18/07 11:54
31	P2.091807.120033	WG250285-02	Serial Dilution		5	L0709333-02	09/18/07 12:00
32	P2.091807.120715	WG250358-14	CCV		1		09/18/07 12:07
33	P2.091807.121330	WG250358-15	CCB		1		09/18/07 12:13
34	P2.091807.121942	L0709333-03	ST105-GW-0505-01	50/50	1	WG250206-04	09/18/07 12:19
35	P2.091807.122603	L0709267-01	ST105-GW-1009-01	50/50	1		09/18/07 12:26
36	P2.091807.123225	L0709267-02	ST105-GW-1007-01	50/50	1		09/18/07 12:32
37	P2.091807.123744	L0709267-03	ST105-GW-1006-01	50/50	1	WG250079-04	09/18/07 12:37

Page: 1

Approved: September 19, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091807HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20865

Calibration Std: STD21409 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250159, 250285, 250289, 250291

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.091807.124405	L0709267-04	ST105-GW-1008-01	50/50	1		09/18/07 12:44
39	P2.091807.125027	L0709272-02	W-18	50/50	1		09/18/07 12:50
40	P2.091807.125645	L0709272-03	W-30WTR	50/50	1		09/18/07 12:56
41	P2.091807.130307	L0709295-19	W0085-ER	50/50	1		09/18/07 13:03
42	P2.091807.130940	L0709295-20	W0086-ER	50/50	1		09/18/07 13:09
43	P2.091807.131603	L0709295-21	W0088-ER	50/50	1		09/18/07 13:16
44	P2.091807.132221	WG250358-16	CCV		1		09/18/07 13:22
45	P2.091807.132837	WG250358-17	CCB		1		09/18/07 13:28
46	P2.091807.133449	L0709321-01	FT023-MW12	50/50	1		09/18/07 13:34
47	P2.091807.134110	L0709321-02	FT023-MW14R	50/50	1		09/18/07 13:41
48	P2.091807.134726	L0709321-03	FT023-MW10R	50/50	1		09/18/07 13:47
49	P2.091807.135244	L0709321-04	FT023-AFMW1R-2	50/50	1		09/18/07 13:52
50	P2.091807.135907	L0709321-09	FT023-T11-2	50/50	1		09/18/07 13:59
51	P2.091807.140436	L0709321-10	FT023-MWQ1R	50/50	1		09/18/07 14:04
52	P2.091807.140954	WG250358-18	CCV		1		09/18/07 14:09
53	P2.091807.141615	WG250358-19	CCB		1		09/18/07 14:16
54	P2.091807.142228	WG250200-02	Method/Prep Blank	50/50	1		09/18/07 14:22
55	P2.091807.142845	WG250200-03	Laboratory Control S	50/50	1		09/18/07 14:28
56	P2.091807.143515	WG250200-01	Reference Sample		1	L0709261-04	09/18/07 14:35
57	P2.091807.144146	WG250200-04	Matrix Spike	50/50	1		09/18/07 14:41
58	P2.091807.144811	WG250200-05	Matrix Spike Duplica	50/50	1		09/18/07 14:48
59	P2.091807.145435	L0709261-06	LHSMW11-090707	50/50	1		09/18/07 14:54
60	P2.091807.150059	L0709261-08	LHSMW14-090707	50/50	1		09/18/07 15:00
61	P2.091807.150720	L0709261-02	46WW02-090707	50/50	1		09/18/07 15:07
62	P2.091807.151338	WG250289-01	Post Digestion Spike		1	L0709261-02	09/18/07 15:13
63	P2.091807.152000	WG250289-02	Serial Dilution		5	L0709261-02	09/18/07 15:20
64	P2.091807.152617	WG250358-20	CCV		1		09/18/07 15:26
65	P2.091807.153234	WG250358-21	CCB		1		09/18/07 15:32
66	P2.091807.153849	L0709261-10	LHSMW15-090707	50/50	1		09/18/07 15:38
67	P2.091807.154511	L0709261-12	LHSMW19-090707	50/50	1		09/18/07 15:45
68	P2.091807.155130	L0709261-14	LHSMW22-090707	50/50	1		09/18/07 15:51
69	P2.091807.155759	L0709261-16	LHSMW23-090707	50/50	1		09/18/07 15:57
70	P2.091807.160424	L0709261-18	LHSMW24-090707	50/50	1		09/18/07 16:04
71	P2.091807.161044	L0709261-20	LHSMW24-090707-FD	50/50	1		09/18/07 16:10
72	P2.091807.161702	WG250358-22	CCV		1		09/18/07 16:17
73	P2.091807.162320	WG250358-23	CCB		1		09/18/07 16:23
74	P2.091807.163057	WG250212-02	Method/Prep Blank	50/50	1		09/18/07 16:30

Page: 2

Approved: September 19, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091807HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20865

Calibration Std: STD21409 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250159, 250285, 250289, 250291

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.091807.163708	WG250212-03	Laboratory Control S	50/50	1		09/18/07 16:37
76	P2.091807.164329	WG250212-01	Reference Sample		1	L0709318-01	09/18/07 16:43
77	P2.091807.164946	WG250212-04	Matrix Spike	50/50	1		09/18/07 16:49
78	P2.091807.165604	WG250212-05	Matrix Spike Duplica	50/50	1		09/18/07 16:56
79	P2.091807.170224	L0709273-02	E-80-MW001(092107)	50/50	1		09/18/07 17:02
80	P2.091807.170745	L0709278-04	RANNEY WELL/Z07	50/50	1		09/18/07 17:07
81	P2.091807.171400	L0709278-03	OHIO RIVER/Z07	50/50	1		09/18/07 17:14
82	P2.091807.172019	WG250291-01	Post Digestion Spike		1	L0709278-03	09/18/07 17:20
83	P2.091807.172637	WG250291-02	Serial Dilution		5	L0709278-03	09/18/07 17:26
84	P2.091807.173254	WG250358-24	CCV		1		09/18/07 17:32
85	P2.091807.173909	WG250358-25	CCB		1		09/18/07 17:39
86	P2.091807.174522	L0709273-03	E-80-MW001(092107)	50/50	1		09/18/07 17:45
87	P2.091807.175042	L0709273-05	E-80-MW002(091207)	50/50	1		09/18/07 17:50
88	P2.091807.175600	L0709273-06	E-80-MW002(091207)	50/50	1		09/18/07 17:56
89	P2.091807.180121	L0709273-08	E-80-MW003(091207)	50/50	1		09/18/07 18:01
90	P2.091807.180736	L0709273-09	E-80-MW003(091207)	50/50	1		09/18/07 18:07
91	P2.091807.181354	L0709273-11	E-82-MW001(091207)	50/50	1		09/18/07 18:13
92	P2.091807.181910	L0709273-12	E-82-MW001(091207)	50/50	1		09/18/07 18:19
93	P2.091807.182528	L0709273-14	E-82-MW002(091207)	50/50	1		09/18/07 18:25
94	P2.091807.183145	L0709273-15	E-82-MW002(091207)	50/50	1		09/18/07 18:31
95	P2.091807.183759	L0709273-17	E-82-MW003(091207)	50/50	1		09/18/07 18:37
96	P2.091807.184316	WG250358-26	CCV		1		09/18/07 18:43
97	P2.091807.184934	WG250358-27	CCB		1		09/18/07 18:49
98	P2.091807.185546	L0709273-18	E-82-MW003(091207)	50/50	1		09/18/07 18:55
99	P2.091807.190206	L0709273-20	FB003(091207)	50/50	1		09/18/07 19:02
100	P2.091807.190821	L0709273-22	E-95-MW003(091207)	50/50	1		09/18/07 19:08
101	P2.091807.191438	L0709273-23	E-95-MW003(091207)	50/50	1		09/18/07 19:14
102	P2.091807.192057	L0709273-25	E-MW012H(091207)	50/50	1		09/18/07 19:20
103	P2.091807.192717	L0709273-26	E-MW012H(091207)	50/50	1		09/18/07 19:27
104	P2.091807.193333	WG250358-28	CCV		1		09/18/07 19:33
105	P2.091807.193950	WG250358-29	CCB		1		09/18/07 19:39

Approved: September 19, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091907H.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20886

Calibration Std: STD21870 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250427, 248097, 250285, 250289, 250381, 250497

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.091907.083227	WG250490-01	Calibration Point		1		09/19/07 08:32
2	P2.091907.083840	WG250490-02	Calibration Point		1		09/19/07 08:38
3	P2.091907.084455	WG250490-03	Calibration Point		1		09/19/07 08:44
4	P2.091907.085111	WG250490-04	Calibration Point		1		09/19/07 08:51
5	P2.091907.085750	WG250490-05	Calibration Point		1		09/19/07 08:57
6	P2.091907.090320	WG250490-06	Initial Calibration Verification		1		09/19/07 09:03
7	P2.091907.091006	WG250490-07	Initial Calib Blank		1		09/19/07 09:10
8	P2.091907.091659	WG250490-08	Interference Check		1		09/19/07 09:16
9	P2.091907.092222	WG250490-09	Interference Check		1		09/19/07 09:22
10	P2.091907.092757	WG250490-10	CCV		1		09/19/07 09:27
11	P2.091907.093424	WG250490-11	CCB		1		09/19/07 09:34
12	P2.091907.093853	WG250363-02	Method/Prep Blank	50/50	1		09/19/07 09:38
13	P2.091907.094538	WG250363-03	Laboratory Control S	50/50	1		09/19/07 09:45
14	P2.091907.095230	WG250278-01	Fluid Blank		1		09/19/07 09:52
15	P2.091907.095858	WG250363-01	Reference Sample		1	L0709276-01	09/19/07 09:58
16	P2.091907.100521	WG250363-04	Matrix Spike	5/50	1		09/19/07 10:05
17	P2.091907.101144	WG250363-05	Matrix Spike Duplica	5/50	1		09/19/07 10:11
18	P2.091907.101810	L0709288-02	GT TT 0058	5/50	1		09/19/07 10:18
19	P2.091907.102428	L0709288-01	GT TT 0058	5/50	1	WG250402-01	09/19/07 10:24
20	P2.091907.103050	WG250427-01	Post Digestion Spike		1	L0709288-01	09/19/07 10:30
21	P2.091907.103713	WG250427-02	Serial Dilution		5	L0709288-01	09/19/07 10:37
22	P2.091907.104336	WG250490-12	CCV		1		09/19/07 10:43
23	P2.091907.104953	WG250490-13	CCB		1		09/19/07 10:49
24	P2.091907.105608	L0709330-01	REDCRAIDW01	5/50	1	WG250348-01	09/19/07 10:56
25	P2.091907.110230	L0709330-02	REDCRAIDW02	5/50	1		09/19/07 11:02
26	P2.091907.110847	L0709344-01	GT070048	5/50	1		09/19/07 11:08
27	P2.091907.111511	WG250490-14	CCV		1		09/19/07 11:15
28	P2.091907.112128	WG250490-15	CCB		1		09/19/07 11:21
29	P2.091907.112742	L0709232-03	CS070032	5/50	10		09/19/07 11:27
30	P2.091907.113402	L0709232-04	CS070033	5/50	1		09/19/07 11:34
31	P2.091907.114026	L0709287-01	GM070089	5/50	1		09/19/07 11:40
32	P2.091907.114643	L0709287-02	GM070090	5/50	1	WG250146-01	09/19/07 11:46
33	P2.091907.115258	L0709287-03	GM070091	5/50	5		09/19/07 11:52
34	P2.091907.115916	L0709287-04	GM070092	5/50	1		09/19/07 11:59
35	P2.091907.120529	L0708401-21	EB-081407	50/50	1		09/19/07 12:05
36	P2.091907.121149	WG250490-16	CCV		1		09/19/07 12:11
37	P2.091907.121808	WG250490-17	CCB		1		09/19/07 12:18

Page: 1

Approved: September 20, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091907H.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20886

Calibration Std: STD21870 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250427, 248097, 250285, 250289, 250381, 250497

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.091907.122423	WG250210-01	Reference Sample		5	L0709333-01	09/19/07 12:24
39	P2.091907.123041	WG250210-04	Matrix Spike	50/50	5		09/19/07 12:30
40	P2.091907.123659	WG250210-05	Matrix Spike Duplica	50/50	5		09/19/07 12:36
41	P2.091907.124312	L0709333-02	ST105-GW-0507-99	50/50	5		09/19/07 12:43
42	P2.091907.124929	WG250285-01	Post Digestion Spike		5	L0709333-02	09/19/07 12:49
43	P2.091907.125551	WG250490-18	CCV		1		09/19/07 12:55
44	P2.091907.130257	WG250490-19	CCB		1		09/19/07 13:02
45	P2.091907.130911	WG250200-01	Reference Sample		20	L0709261-04	09/19/07 13:09
46	P2.091907.131533	WG250200-04	Matrix Spike	50/50	20		09/19/07 13:15
47	P2.091907.132147	WG250200-05	Matrix Spike Duplica	50/50	20		09/19/07 13:21
48	P2.091907.132816	L0709261-06	LHSMW11-090707	50/50	20		09/19/07 13:28
49	P2.091907.133500	L0709261-16	LHSMW23-090707	50/50	20		09/19/07 13:35
50	P2.091907.134135	L0709261-02	46WW02-090707	50/50	5		09/19/07 13:41
51	P2.091907.134831	WG250289-01	Post Digestion Spike		5	L0709261-02	09/19/07 13:48
52	P2.091907.135453	L0709261-12	LHSMW19-090707	50/50	20		09/19/07 13:54
53	P2.091907.140121	L0709261-10	LHSMW15-090707	50/50	20		09/19/07 14:01
54	P2.091907.140755	L0709261-10	LHSMW15-090707	50/50	2		09/19/07 14:07
55	P2.091907.141421	WG250490-20	CCV		1		09/19/07 14:14
56	P2.091907.142045	WG250490-21	CCB		1		09/19/07 14:20
57	P2.091907.142700	L0709261-18	LHSMW24-090707	50/50	2		09/19/07 14:27
58	P2.091907.143324	L0709261-18	LHSMW24-090707	50/50	20		09/19/07 14:33
59	P2.091907.143940	L0709261-20	LHSMW24-090707-FD	50/50	2		09/19/07 14:39
60	P2.091907.144601	L0709261-20	LHSMW24-090707-FD	50/50	20		09/19/07 14:46
61	P2.091907.145224	L0709261-14	LHSMW22-090707	50/50	2		09/19/07 14:52
62	P2.091907.145842	L0709261-14	LHSMW22-090707	50/50	20		09/19/07 14:58
63	P2.091907.150505	WG250490-22	CCV		1		09/19/07 15:05
64	P2.091907.151123	WG250490-23	CCB		1		09/19/07 15:11
65	P2.091907.151955	WG250442-02	Method/Prep Blank	50/50	1		09/19/07 15:19
66	P2.091907.152609	WG250442-03	Laboratory Control S	50/50	1		09/19/07 15:26
67	P2.091907.153245	WG250442-01	Reference Sample		1	L0709394-03	09/19/07 15:32
68	P2.091907.153905	WG250442-04	Matrix Spike	50/50	1		09/19/07 15:39
69	P2.091907.154437	WG250442-05	Matrix Spike Duplica	50/50	1		09/19/07 15:44
70	P2.091907.155012	L0709394-01	V-700	50/50	1		09/19/07 15:50
71	P2.091907.155637	L0709394-02	V-404		1		09/19/07 15:56
72	P2.091907.160304	L0709375-03	LTA16-CS-EB	50/50	1	WG250508-01	09/19/07 16:03
73	P2.091907.160926	WG250497-01	Post Digestion Spike		1	L0709375-03	09/19/07 16:09
74	P2.091907.161548	WG250497-02	Serial Dilution		5	L0709375-03	09/19/07 16:15

Page: 2

Approved: September 20, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091907H.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20886

Calibration Std: STD21870 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250427, 248097, 250285, 250289, 250381, 250497

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.091907.162209	WG250490-24	CCV		1		09/19/07 16:22
76	P2.091907.162829	WG250490-25	CCB		1		09/19/07 16:28
77	P2.091907.163444	L0709394-04	TT ROSS 135	50/50	1		09/19/07 16:34
78	P2.091907.164106	L0709394-05	1R1760HP	50/50	1		09/19/07 16:41
79	P2.091907.164728	L0709362-03	SB-01	50/50	1		09/19/07 16:47
80	P2.091907.165254	L0709362-04	SB-01	50/50	1		09/19/07 16:52
81	P2.091907.165819	L0709389-06	W0093-ER	50/50	1		09/19/07 16:58
82	P2.091907.170440	L0709389-07	W0094-ER	50/50	1		09/19/07 17:04
83	P2.091907.171056	L0709389-08	W0095-ER	50/50	1		09/19/07 17:10
84	P2.091907.171716	L0709389-09	W0106-ER	50/50	1		09/19/07 17:17
85	P2.091907.172338	L0709389-10	W0107-ER	50/50	1		09/19/07 17:23
86	P2.091907.172953	L0709389-11	W0108-ER	50/50	1		09/19/07 17:29
87	P2.091907.173613	WG250490-26	CCV		1		09/19/07 17:36
88	P2.091907.174235	WG250490-27	CCB		1		09/19/07 17:42
89	P2.091907.174854	L0709391-09	W0111-ER	50/50	1		09/19/07 17:48
90	P2.091907.175514	L0709391-10	W0112-ER	50/50	1		09/19/07 17:55
91	P2.091907.180136	L0709391-36	W0109-ER	50/50	1		09/19/07 18:01
92	P2.091907.180751	L0709391-37	W0110-ER	50/50	1		09/19/07 18:07
93	P2.091907.181411	WG250490-28	CCV		1		09/19/07 18:14
94	P2.091907.182031	WG250490-29	CCB		1		09/19/07 18:20
95	P2.091907.182647	WG250345-02	Method/Prep Blank	50/50	1		09/19/07 18:26
96	P2.091907.183307	WG250345-03	Laboratory Control S	50/50	1		09/19/07 18:33
97	P2.091907.183933	WG250345-01	Reference Sample		1	L0709334-09	09/19/07 18:39
98	P2.091907.184559	WG250345-04	Matrix Spike	50/50	1		09/19/07 18:45
99	P2.091907.185226	WG250345-05	Matrix Spike Duplica	50/50	1		09/19/07 18:52
100	P2.091907.185853	L0709313-11	W0098-ER	50/50	1		09/19/07 18:58
101	P2.091907.190514	L0709315-17	W0096-ER	50/50	1		09/19/07 19:05
102	P2.091907.191130	L0709313-10	W0097-ER	50/50	1		09/19/07 19:11
103	P2.091907.191751	WG250381-01	Post Digestion Spike		1	L0709313-10	09/19/07 19:17
104	P2.091907.192417	WG250381-02	Serial Dilution		5	L0709313-10	09/19/07 19:24
105	P2.091907.193038	WG250490-30	CCV		1		09/19/07 19:30
106	P2.091907.193657	WG250490-31	CCB		1		09/19/07 19:36
107	P2.091907.194311	L0709334-01	MW-03-06	50/50	1	WG250387-03	09/19/07 19:43
108	P2.091907.194936	L0709334-02	MW-03-06	50/50	1		09/19/07 19:49
109	P2.091907.195601	L0709334-03	MW-03-05	50/50	1		09/19/07 19:56
110	P2.091907.200228	L0709334-04	MW-03-05	50/50	1		09/19/07 20:02
111	P2.091907.200849	L0709334-05	MW-03-04	50/50	1		09/19/07 20:08

Page: 3

Approved: September 20, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 091907H.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20886

Calibration Std: STD21870 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250427, 248097, 250285, 250289, 250381, 250497

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
112	P2.091907.201518	L0709334-06	MW-03-04	50/50	1		09/19/07 20:15
113	P2.091907.202148	L0709334-07	MW-01-10	50/50	1	WG250276-04	09/19/07 20:21
114	P2.091907.202809	L0709334-08	MW-01-10	50/50	1		09/19/07 20:28
115	P2.091907.203435	L0709334-10	MW-01-01	50/50	1		09/19/07 20:34
116	P2.091907.204105	L0709337-07	W0087-ER	50/50	1		09/19/07 20:41
117	P2.091907.204721	WG250490-32	CCV		1		09/19/07 20:47
118	P2.091907.205345	WG250490-33	CCB		1		09/19/07 20:53
119	P2.091907.210008	L0709337-16	W0092-ER	50/50	1		09/19/07 21:00
120	P2.091907.210624	L0709339-11	W0091-ER	50/50	1		09/19/07 21:06
121	P2.091907.211245	L0709348-03	AV-NCB-EB-1-091407	50/50	1		09/19/07 21:12
122	P2.091907.211907	WG250490-34	CCV		1		09/19/07 21:19
123	P2.091907.212526	WG250490-35	CCB		1		09/19/07 21:25

Approved: September 20, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 092007HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20904

Calibration Std: STD21870 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250497, 250289, 250381, 250573, 250576

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.092007.075615	WG250563-01	Calibration Point		1		09/20/07 07:56
2	P2.092007.080234	WG250563-02	Calibration Point		1		09/20/07 08:02
3	P2.092007.080855	WG250563-03	Calibration Point		1		09/20/07 08:08
4	P2.092007.081531	WG250563-04	Calibration Point		1		09/20/07 08:15
5	P2.092007.082209	WG250563-05	Calibration Point		1		09/20/07 08:22
6	P2.092007.082742	WG250563-06	Initial Calibration Verification		1		09/20/07 08:27
7	P2.092007.083406	WG250563-07	Initial Calib Blank		1		09/20/07 08:34
8	P2.092007.084047	WG250563-08	Interference Check		1		09/20/07 08:40
9	P2.092007.084625	WG250563-09	Interference Check		1		09/20/07 08:46
10	P2.092007.085150	WG250563-10	CCV		1		09/20/07 08:51
11	P2.092007.085820	WG250563-11	CCB		1		09/20/07 08:58
12	P2.092007.094126	WG250442-01	Reference Sample		5	L0709394-03	09/20/07 09:41
13	P2.092007.094742	WG250442-04	Matrix Spike	50/50	5		09/20/07 09:47
14	P2.092007.095359	WG250442-05	Matrix Spike Duplica	50/50	5		09/20/07 09:53
15	P2.092007.100018	L0709394-02	V-404	50/50	5		09/20/07 10:00
16	P2.092007.100630	L0709261-18	LHSMW24-090707	50/50	50		09/20/07 10:06
17	P2.092007.101249	L0709261-20	LHSMW24-090707-FD	50/50	50		09/20/07 10:12
18	P2.092007.101914	WG250563-12	CCV		1		09/20/07 10:19
19	P2.092007.102546	WG250563-13	CCB		1		09/20/07 10:25
20	P2.092007.103217	WG250345-02	Method/Prep Blank	50/50	1		09/20/07 10:32
21	P2.092007.103849	WG250345-03	Laboratory Control S	50/50	1		09/20/07 10:38
22	P2.092007.104526	WG250345-01	Reference Sample		1	L0709334-09	09/20/07 10:45
23	P2.092007.105148	WG250345-04	Matrix Spike	50/50	1		09/20/07 10:51
24	P2.092007.105830	WG250345-05	Matrix Spike Duplica	50/50	1		09/20/07 10:58
25	P2.092007.110503	L0709348-03	AV-NCB-EB-1-091407	50/50	1		09/20/07 11:05
26	P2.092007.111123	L0709313-10	W0097-ER	50/50	1		09/20/07 11:11
27	P2.092007.111747	WG250381-01	Post Digestion Spike		1	L0709313-10	09/20/07 11:17
28	P2.092007.112412	WG250381-02	Serial Dilution		5	L0709313-10	09/20/07 11:24
29	P2.092007.113047	WG250563-14	CCV		1		09/20/07 11:30
30	P2.092007.113704	WG250563-15	CCB		1		09/20/07 11:37
31	P2.092007.114321	L0709334-02	MW-03-06	50/50	1		09/20/07 11:43
32	P2.092007.114937	L0709334-04	MW-03-05	50/50	1		09/20/07 11:49
33	P2.092007.115556	L0709334-06	MW-03-04	50/50	1		09/20/07 11:55
34	P2.092007.120222	L0709334-08	MW-01-10	50/50	1		09/20/07 12:02
35	P2.092007.120840	L0709334-10	MW-01-01	50/50	1		09/20/07 12:08
36	P2.092007.121504	WG250345-01	Reference Sample		20	L0709334-09	09/20/07 12:15
37	P2.092007.122125	WG250345-04	Matrix Spike	50/50	20		09/20/07 12:21

Page: 1

Approved: September 21, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 092007HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20904

Calibration Std: STD21870 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250497, 250289, 250381, 250573, 250576

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.092007.122747	WG250345-05	Matrix Spike Duplica	50/50	20		09/20/07 12:27
39	P2.092007.123403	WG250563-16	CCV		1		09/20/07 12:34
40	P2.092007.124021	WG250563-17	CCB		1		09/20/07 12:40
41	P2.092007.124636	WG250345-01	Reference Sample		5	L0709334-09	09/20/07 12:46
42	P2.092007.125302	WG250345-04	Matrix Spike	50/50	5		09/20/07 12:53
43	P2.092007.125936	WG250345-05	Matrix Spike Duplica	50/50	5		09/20/07 12:59
44	P2.092007.130552	L0709334-01	MW-03-06	50/50	5		09/20/07 13:05
45	P2.092007.131216	L0709334-03	MW-03-05	50/50	5		09/20/07 13:12
46	P2.092007.131839	L0709334-05	MW-03-04	50/50	5		09/20/07 13:18
47	P2.092007.132454	L0709334-07	MW-01-10	50/50	20		09/20/07 13:24
48	P2.092007.133117	WG250563-18	CCV		1		09/20/07 13:31
49	P2.092007.133736	WG250563-19	CCB		1		09/20/07 13:37
50	P2.092007.135304	WG250545-02	Method/Prep Blank	50/50	1		09/20/07 13:53
51	P2.092007.135918	WG250545-03	Laboratory Control S	50/50	1		09/20/07 13:59
52	P2.092007.140542	WG250545-01	Reference Sample		1	L0709431-02	09/20/07 14:05
53	P2.092007.141155	WG250545-04	Matrix Spike	50/50	1		09/20/07 14:11
54	P2.092007.141814	WG250545-05	Matrix Spike Duplica	50/50	1		09/20/07 14:18
55	P2.092007.142432	L0709419-01	OUTFALL 002/COMP	50/50	1	WG250533-03	09/20/07 14:24
56	P2.092007.143056	L0709418-06	OUTFALL 800/COMP	50/50	1		09/20/07 14:30
57	P2.092007.143719	L0709418-04	OUTFALL 003/COMP	50/50	1	WG250511-05	09/20/07 14:37
58	P2.092007.144344	WG250573-01	Post Digestion Spike		1	L0709418-04	09/20/07 14:43
59	P2.092007.145003	WG250573-02	Serial Dilution		5	L0709418-04	09/20/07 14:50
60	P2.092007.145628	WG250563-20	CCV		1		09/20/07 14:56
61	P2.092007.150249	WG250563-21	CCB		1		09/20/07 15:02
62	P2.092007.150907	L0709403-01	C-004/COMP	50/50	1		09/20/07 15:09
63	P2.092007.151532	L0709404-01	C-004	50/50	1		09/20/07 15:15
64	P2.092007.152151	L0709410-02	FINAL EFFLUENT (COMP)	50/50	1		09/20/07 15:21
65	P2.092007.152818	L0709415-01	72 FLUME	5/50	1		09/20/07 15:28
66	P2.092007.153439	L0709415-02	AFC EFFLUENT	5/50	1	WG250511-04	09/20/07 15:34
67	P2.092007.154105	L0709415-03	AFC BLEED	5/50	1		09/20/07 15:41
68	P2.092007.154726	L0709431-04	OUTFALL 002/COMP	50/50	1	WG250634-04	09/20/07 15:47
69	P2.092007.155351	L0709431-05	OUTFALL 102/COMP	50/50	1		09/20/07 15:53
70	P2.092007.160017	L0709434-01	OUTFALL 104	50/50	1		09/20/07 16:00
71	P2.092007.160636	WG250563-22	CCV		1		09/20/07 16:06
72	P2.092007.161255	WG250563-23	CCB		1		09/20/07 16:12
73	P2.092007.161916	WG250546-03	Method/Prep Blank	50/50	1		09/20/07 16:19
74	P2.092007.162537	WG250546-04	Laboratory Control S	50/50	1		09/20/07 16:25

Page: 2

Approved: September 21, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 092007HR.CSV
Analyst1: KRV Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 6
Maintenance Log ID: 20904

Calibration Std: STD21870 ICV/CCV Std: STD21638 Post Spike: STD21659
ICSA: STD21758 ICSAB: STD21616

Workgroups: 250497, 250289, 250381, 250573, 250576

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.092007.163159	WG250396-01	Fluid Blank		1		09/20/07 16:31
76	P2.092007.163820	WG250546-02	Reference Sample		1	L0709412-02	09/20/07 16:38
77	P2.092007.164440	WG250546-07	Matrix Spike	50/50	1	L0709412-03	09/20/07 16:44
78	P2.092007.165103	WG250546-08	Matrix Spike Duplica	50/50	1	L0709412-04	09/20/07 16:51
79	P2.092007.165726	L0709412-06	CN0352	50/50	1		09/20/07 16:57
80	P2.092007.170347	L0709412-05	CN0340	50/50	1		09/20/07 17:03
81	P2.092007.171003	WG250576-01	Post Digestion Spike		1	L0709412-05	09/20/07 17:10
82	P2.092007.171626	WG250576-02	Serial Dilution		5	L0709412-05	09/20/07 17:16
83	P2.092007.172253	WG250563-24	CCV		1		09/20/07 17:22
84	P2.092007.172912	WG250563-25	CCB		1		09/20/07 17:29
85	P2.092007.173531	L0709412-07	CN0361	50/50	1		09/20/07 17:35
86	P2.092007.174152	WG250546-01	Reference Sample		1	L0709373-12	09/20/07 17:41
87	P2.092007.174812	WG250546-05	Matrix Spike	50/50	1	L0709373-14	09/20/07 17:48
88	P2.092007.175435	WG250546-06	Matrix Spike Duplica	50/50	1	L0709373-16	09/20/07 17:54
89	P2.092007.180059	L0709373-02	TW-89	50/50	1		09/20/07 18:00
90	P2.092007.180619	L0709348-02	AV-NCB-PE-AC1-32-C1-0	50/50	1	WG250502-01	09/20/07 18:06
91	P2.092007.181243	L0709348-04	AV-NCB-AS-AC1-2-09140	50/50	1		09/20/07 18:12
92	P2.092007.181909	L0709348-05	AV-NCB-PE-MUL-32-C1-0	50/50	1		09/20/07 18:19
93	P2.092007.182528	L0709348-06	AV-NCB-AS-MUL-1--0914	50/50	1	WG250359-01	09/20/07 18:25
94	P2.092007.183157	L0709348-07	AV-NCB-AS-STO-G-55-09	50/50	1		09/20/07 18:31
95	P2.092007.183822	WG250563-26	CCV		1		09/20/07 18:38
96	P2.092007.184444	WG250563-27	CCB		1		09/20/07 18:44
97	P2.092007.185102	L0709373-04	TW-50	50/50	1		09/20/07 18:51
98	P2.092007.185634	L0709373-06	TW-49	50/50	1		09/20/07 18:56
99	P2.092007.190251	L0709373-08	TW-56D	50/50	1		09/20/07 19:02
100	P2.092007.190916	L0709373-10	BLIND DUP	50/50	1		09/20/07 19:09
101	P2.092007.191539	WG250563-28	CCV		1		09/20/07 19:15
102	P2.092007.192201	WG250563-29	CCB		1		09/20/07 19:22

Approved: September 21, 2007

Maren Berry

KEMRON Environmental Services
Data Checklist

Date: 14-SEP-2007
Analyst: KRV
Analyst: NA
Method: 6010
Instrument: PE-ICP2
Curve Workgroup: WG250147
Runlog ID: 18211
Analytical Workgroups: 250019, 250020, 250152, 250163

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	261
Level 4	165,182,201,212,251,265
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KRV
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
14-SEP-2007
Katie Vickers

Secondary Reviewer:
17-SEP-2007
Maren Beery

Generated: SEP-17-2007 11:49:45

KEMRON Environmental Services
Data Checklist

Date: 17-SEP-2007
Analyst: KRV
Analyst: NA
Method: 6010
Instrument: PE-ICP2
Curve Workgroup: WG250264
Runlog ID: 18240
Analytical Workgroups: 250116, 250166, 250152, 250020, 250159

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	261
Level 4	182,201,224,251
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KRV
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
17-SEP-2007
Katie Vickers

Secondary Reviewer:
18-SEP-2007
Maren Beery

Generated: SEP-18-2007 18:43:10

KEMRON Environmental Services
Data Checklist

Date: 18-SEP-2007
Analyst: KRV
Analyst: NA
Method: 6010
Instrument: PE-ICP2
Curve Workgroup: WG250358
Runlog ID: 18269
Analytical Workgroups: 250159,250285,250289,250291

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	261
Level 4	267,273,293,295,321,333
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KRV
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
18-SEP-2007
Katie Vickers

Secondary Reviewer:
19-SEP-2007
Maren Beery

Generated: SEP-19-2007 15:21:08

KEMRON Environmental Services
Data Checklist

Date: 19-SEP-2007
Analyst: KRV
Analyst: NA
Method: 6010
Instrument: PE-ICP2
Curve Workgroup: WG250490
Runlog ID: 18292
Analytical Workgroups: 250427,248097,250285,250289,250381,250497

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	261
Level 4	276,293,295,313,315,330,334,337,339,348,375
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KRV
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
19-SEP-2007
Katie Vickers

Secondary Reviewer:
20-SEP-2007
Maren Beery

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KEMRON Environmental Services
Data Checklist

Date: 20-SEP-2007
Analyst: KRV
Analyst: NA
Method: 6010
Instrument: PE-ICP2
Curve Workgroup: WG250563
Runlog ID: 18312
Analytical Workgroups: 250497,250289,250381,250573,250576

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	261
Level 4	334,348,373,412
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KRV
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
20-SEP-2007
Katie Vickers

Secondary Reviewer:
21-SEP-2007
Maren Beery

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KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010B AAB#: WG250289
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW11-090707	09/07/07	09/13/07	09/17/07	180	9.75	09/19/07	180	2.29	
LHSMW15-090707	09/10/07	09/13/07	09/17/07	180	6.61	09/18/07	180	1.38	
LHSMW19-090707	09/11/07	09/13/07	09/17/07	180	5.92	09/19/07	180	2.31	
LHSMW15-090707	09/10/07	09/13/07	09/17/07	180	6.61	09/19/07	180	2.32	
46WW04-090707	09/07/07	09/13/07	09/17/07	180	9.84	09/19/07	180	2.28	
LHSMW22-090707	09/11/07	09/13/07	09/17/07	180	5.86	09/19/07	180	2.35	
LHSMW24-090707-FD	09/11/07	09/13/07	09/17/07	180	5.62	09/20/07	180	3.16	
LHSMW24-090707	09/11/07	09/13/07	09/17/07	180	5.62	09/20/07	180	3.15	
LHSMW23-090707	09/11/07	09/13/07	09/17/07	180	5.70	09/18/07	180	1.40	
LHSMW15-090707	09/10/07	09/13/07	09/17/07	180	6.61	09/19/07	180	2.32	
LHSMW14-090707	09/10/07	09/13/07	09/17/07	180	6.70	09/18/07	180	1.36	
LHSMW24-090707-FD	09/11/07	09/13/07	09/17/07	180	5.62	09/18/07	180	1.41	
LHSMW22-090707	09/11/07	09/13/07	09/17/07	180	5.86	09/18/07	180	1.39	
LHSMW22-090707	09/11/07	09/13/07	09/17/07	180	5.86	09/19/07	180	2.36	
46WW04-090707	09/07/07	09/13/07	09/17/07	180	9.84	09/18/07	180	1.34	
LHSMW24-090707	09/11/07	09/13/07	09/17/07	180	5.62	09/18/07	180	1.40	
LHSMW24-090707	09/11/07	09/13/07	09/17/07	180	5.62	09/19/07	180	2.33	
LHSMW24-090707-FD	09/11/07	09/13/07	09/17/07	180	5.62	09/19/07	180	2.35	
46WW02-090707	09/07/07	09/13/07	09/17/07	180	9.91	09/18/07	180	1.36	
LHSMW19-090707	09/11/07	09/13/07	09/17/07	180	5.92	09/18/07	180	1.39	
LHSMW23-090707	09/11/07	09/13/07	09/17/07	180	5.70	09/19/07	180	2.30	
LHSMW11-090707	09/07/07	09/13/07	09/17/07	180	9.75	09/18/07	180	1.35	
46WW02-090707	09/07/07	09/13/07	09/17/07	180	9.91	09/19/07	180	2.30	
LHSMW24-090707-FD	09/11/07	09/13/07	09/17/07	180	5.62	09/19/07	180	2.34	
LHSMW24-090707	09/11/07	09/13/07	09/17/07	180	5.62	09/19/07	180	2.34	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 876087
Report generated 09/20/2007 11:26

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010B AAB#: WG250152
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
46WW02-090707	09/07/07	09/13/07	09/14/07	180	6.93	09/14/07	180	0.373	
LHSMW22-090707	09/11/07	09/13/07	09/14/07	180	2.88	09/14/07	180	0.460	
LHSMW23-090707	09/11/07	09/13/07	09/14/07	180	2.72	09/14/07	180	0.465	
LHSMW24-090707	09/11/07	09/13/07	09/14/07	180	2.64	09/17/07	180	3.30	
LHSMW24-090707-FD	09/11/07	09/13/07	09/14/07	180	2.64	09/17/07	180	3.30	
LHSMW24-090707-FD	09/11/07	09/13/07	09/14/07	180	2.64	09/17/07	180	3.31	
LHSMW15-090707	09/10/07	09/13/07	09/14/07	180	3.63	09/14/07	180	0.443	
LHSMW24-090707	09/11/07	09/13/07	09/14/07	180	2.64	09/14/07	180	0.469	
LHSMW19-090707	09/11/07	09/13/07	09/14/07	180	2.94	09/17/07	180	3.26	
46WW04-090707	09/07/07	09/13/07	09/14/07	180	6.86	09/17/07	180	3.24	
LHSMW22-090707	09/11/07	09/13/07	09/14/07	180	2.88	09/17/07	180	3.28	
LHSMW23-090707	09/11/07	09/13/07	09/14/07	180	2.72	09/17/07	180	3.26	
LHSMW22-090707	09/11/07	09/13/07	09/14/07	180	2.88	09/17/07	180	3.28	
LHSMW15-090707	09/10/07	09/13/07	09/14/07	180	3.63	09/17/07	180	3.27	
46WW04-090707	09/07/07	09/13/07	09/14/07	180	6.86	09/14/07	180	0.361	
LHSMW11-090707	09/07/07	09/13/07	09/14/07	180	6.77	09/14/07	180	0.377	
LHSMW14-090707	09/10/07	09/13/07	09/14/07	180	3.73	09/14/07	180	0.438	
LHSMW19-090707	09/11/07	09/13/07	09/14/07	180	2.94	09/14/07	180	0.456	
LHSMW11-090707	09/07/07	09/13/07	09/14/07	180	6.77	09/17/07	180	3.26	
LHSMW24-090707	09/11/07	09/13/07	09/14/07	180	2.64	09/17/07	180	3.30	
LHSMW24-090707-FD	09/11/07	09/13/07	09/14/07	180	2.64	09/14/07	180	0.474	
LHSMW15-090707	09/10/07	09/13/07	09/14/07	180	3.63	09/17/07	180	3.27	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 876087
Report generated 09/20/2007 11:26

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250152
Blank File ID: P2.091407.152240
Blank Sample ID: WG250098-02
Prep Date: 09/14/07 06:55
Instrument ID: PE-ICP2
Analyzed Date: 09/14/07 15:22
Method: 6010B
Analyst: KHR

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250098-03	P2.091407.152859	09/14/07 15:28	01
46WW04-090707	L0709261-03	P2.091407.153531	09/14/07 15:35	01
46WW02-090707	L0709261-01	P2.091407.155157	09/14/07 15:51	01
LHSMW11-090707	L0709261-05	P2.091407.155818	09/14/07 15:58	01
LHSMW14-090707	L0709261-07	P2.091407.172623	09/14/07 17:26	01
LHSMW15-090707	L0709261-09	P2.091407.173237	09/14/07 17:32	01
LHSMW19-090707	L0709261-11	P2.091407.175133	09/14/07 17:51	01
LHSMW22-090707	L0709261-13	P2.091407.175757	09/14/07 17:57	01
LHSMW23-090707	L0709261-15	P2.091407.180426	09/14/07 18:04	01
LHSMW24-090707	L0709261-17	P2.091407.181047	09/14/07 18:10	01
LHSMW24-090707-FD	L0709261-19	P2.091407.181706	09/14/07 18:17	01
46WW04-090707	L0709261-03	P2.091707.124336	09/17/07 12:43	DL01
LHSMW11-090707	L0709261-05	P2.091707.130230	09/17/07 13:02	DL01
LHSMW23-090707	L0709261-15	P2.091707.130841	09/17/07 13:08	DL01
LHSMW19-090707	L0709261-11	P2.091707.131554	09/17/07 13:15	DL01
LHSMW15-090707	L0709261-09	P2.091707.132217	09/17/07 13:22	DL01
LHSMW15-090707	L0709261-09	P2.091707.132841	09/17/07 13:28	DL02
LHSMW22-090707	L0709261-13	P2.091707.133512	09/17/07 13:35	DL01
LHSMW22-090707	L0709261-13	P2.091707.134143	09/17/07 13:41	DL02
LHSMW24-090707	L0709261-17	P2.091707.140104	09/17/07 14:01	DL01
LHSMW24-090707	L0709261-17	P2.091707.140724	09/17/07 14:07	DL02
LHSMW24-090707-FD	L0709261-19	P2.091707.141345	09/17/07 14:13	DL01
LHSMW24-090707-FD	L0709261-19	P2.091707.142009	09/17/07 14:20	DL02

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250289
Blank File ID: P2.091807.142228
Blank Sample ID: WG250200-02
Prep Date: 09/17/07 06:25
Instrument ID: PE-ICP2
Analyzed Date: 09/18/07 14:22
Method: 6010B
Analyst: KHR

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250200-03	P2.091807.142845	09/18/07 14:28	01
46WW04-090707	L0709261-04	P2.091807.143515	09/18/07 14:35	01
LHSMW11-090707	L0709261-06	P2.091807.145435	09/18/07 14:54	01
LHSMW14-090707	L0709261-08	P2.091807.150059	09/18/07 15:00	01
46WW02-090707	L0709261-02	P2.091807.150720	09/18/07 15:07	01
LHSMW15-090707	L0709261-10	P2.091807.153849	09/18/07 15:38	01
LHSMW19-090707	L0709261-12	P2.091807.154511	09/18/07 15:45	01
LHSMW22-090707	L0709261-14	P2.091807.155130	09/18/07 15:51	01
LHSMW23-090707	L0709261-16	P2.091807.155759	09/18/07 15:57	01
LHSMW24-090707	L0709261-18	P2.091807.160424	09/18/07 16:04	01
LHSMW24-090707-FD	L0709261-20	P2.091807.161044	09/18/07 16:10	01
46WW04-090707	L0709261-04	P2.091907.130911	09/19/07 13:09	DL01
LHSMW11-090707	L0709261-06	P2.091907.132816	09/19/07 13:28	DL01
LHSMW23-090707	L0709261-16	P2.091907.133500	09/19/07 13:35	DL01
46WW02-090707	L0709261-02	P2.091907.134135	09/19/07 13:41	DL01
LHSMW19-090707	L0709261-12	P2.091907.135453	09/19/07 13:54	DL01
LHSMW15-090707	L0709261-10	P2.091907.140121	09/19/07 14:01	DL01
LHSMW15-090707	L0709261-10	P2.091907.140755	09/19/07 14:07	DL02
LHSMW24-090707	L0709261-18	P2.091907.142700	09/19/07 14:27	DL01
LHSMW24-090707	L0709261-18	P2.091907.143324	09/19/07 14:33	DL02
LHSMW24-090707-FD	L0709261-20	P2.091907.143940	09/19/07 14:39	DL01
LHSMW24-090707-FD	L0709261-20	P2.091907.144601	09/19/07 14:46	DL02
LHSMW22-090707	L0709261-14	P2.091907.145224	09/19/07 14:52	DL01
LHSMW22-090707	L0709261-14	P2.091907.145842	09/19/07 14:58	DL02
LHSMW24-090707	L0709261-18	P2.092007.100630	09/20/07 10:06	DL03
LHSMW24-090707-FD	L0709261-20	P2.092007.101249	09/20/07 10:12	DL03

METHOD BLANK REPORT

Login Number: L0709261 Prep Date: 09/14/07 06:55 Sample ID: WG250098-02
Instrument ID: PE-ICP2 Run Date: 09/14/07 15:22 Prep Method: 3005A
File ID: P2.091407.152240 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG250152 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: PE-ICP-14-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Aluminum, Total	0.0500	0.100	0.0500	1	U
Beryllium, Total	0.000500	0.00200	0.000500	1	U
Calcium, Total	0.100	0.200	0.100	1	U
Cobalt, Total	0.00250	0.00500	0.00250	1	U
Iron, Total	0.0250	0.100	0.0250	1	U
Potassium, Total	0.250	1.00	0.250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Sodium, Total	0.250	0.500	0.250	1	U
Vanadium, Total	0.00500	0.0100	0.00500	1	U
Zinc, Total	0.00500	0.0200	0.00500	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 876089
Report generated 09/19/2007 09:22

METHOD BLANK REPORT

Login Number: L0709261 Prep Date: 09/17/07 06:25 Sample ID: WG250200-02
Instrument ID: PE-ICP2 Run Date: 09/18/07 14:22 Prep Method: 3005A
File ID: P2.091807.142228 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG250289 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: PE-ICP-18-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Aluminum, Dissolved	0.0500	0.100	0.0500	1	U
Beryllium, Dissolved	0.000500	0.00200	0.000500	1	U
Calcium, Dissolved	0.100	0.200	0.100	1	U
Cobalt, Dissolved	0.00250	0.00500	0.00250	1	U
Iron, Dissolved	0.0250	0.100	0.0250	1	U
Potassium, Dissolved	0.250	1.00	0.250	1	U
Magnesium, Dissolved	0.250	0.500	0.250	1	U
Sodium, Dissolved	0.250	0.500	0.250	1	U
Vanadium, Dissolved	0.00500	0.0100	0.00500	1	U
Zinc, Dissolved	0.00500	0.0200	0.00500	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 876089
Report generated 09/19/2007 09:22

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250098-03
Instrument ID: PE-ICP2 Run Time: 15:28 Prep Method: 3005A
File ID: P2.091407.152859 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG250152 Matrix: Water Units: mg/L
QC Key: STD Lot#: MI0058-81 Cal ID: PE-ICP-14-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	5.00	5.40	108	85 - 115	
Beryllium, Total	0.0250	0.0258	103	85 - 115	
Calcium, Total	5.00	5.24	105	85 - 115	
Cobalt, Total	0.100	0.103	103	85 - 115	
Iron, Total	2.00	2.23	112	85 - 115	
Potassium, Total	25.0	27.3	109	85 - 115	
Magnesium, Total	5.00	5.47	109	85 - 115	
Sodium, Total	25.0	27.7	111	85 - 115	
Vanadium, Total	0.500	0.517	103	85 - 115	
Zinc, Total	0.500	0.522	104	85 - 115	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 876090
Report generated 09/19/2007 09:22

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250200-03
Instrument ID: PE-ICP2 Run Time: 14:28 Prep Method: 3005A
File ID: P2.091807.142845 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG250289 Matrix: Water Units: mg/L
QC Key: STD Lot#: MI0058-81 Cal ID: PE-ICP-18-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Dissolved	5.00	5.16	103	85 - 115	
Beryllium, Dissolved	0.0250	0.0262	105	85 - 115	
Calcium, Dissolved	5.00	5.34	107	85 - 115	
Cobalt, Dissolved	0.100	0.104	104	85 - 115	
Iron, Dissolved	2.00	2.00	100	85 - 115	
Potassium, Dissolved	25.0	24.9	99.7	85 - 115	
Magnesium, Dissolved	5.00	4.97	99.4	85 - 115	
Sodium, Dissolved	25.0	25.2	101	85 - 115	
Vanadium, Dissolved	0.500	0.523	105	85 - 115	
Zinc, Dissolved	0.500	0.528	106	85 - 115	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 876090
Report generated 09/19/2007 09:22

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00079663

Loginnum:L0709261 Cal ID: PE-ICP2- Worknum:WG250152
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG250098-01 File ID:P2.091407.153531 Dil:1 Matrix:WATER
Sample ID:WG250098-04 MS File ID:P2.091407.154054 Dil:1 Units:mg/L
Sample ID:WG250098-05 MSD File ID:P2.091407.154624 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	ND	5.00	4.85	97.0	5.00	4.84	96.8	0.176	80 - 120	20	
Beryllium, Total	ND	0.0250	0.0247	98.6	0.0250	0.0244	97.8	0.872	80 - 120	20	
Calcium, Total	328	5.00	349	420	5.00	340	249	2.47	80 - 120	20	*
Cobalt, Total	0.0499	0.100	0.148	97.9	0.100	0.147	97.5	0.293	80 - 120	20	
Iron, Total	9.82	2.00	12.4	130	2.00	12.6	137	1.08	80 - 120	20	*
Magnesium, Total	165	5.00	177	243	5.00	179	265	0.613	80 - 120	20	*
Potassium, Total	3.04	25.0	30.2	109	25.0	30.2	109	0.150	80 - 120	20	
Vanadium, Total	ND	0.500	0.510	102	0.500	0.507	101	0.673	80 - 120	20	
Zinc, Total	0.00652	0.500	0.485	95.6	0.500	0.486	95.8	0.172	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 876091
Report generated 09/20/2007 09:25

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00079664

Loginnum:L0709261 Cal ID:PE-ICP2- Worknum:WG250152
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG250098-01 File ID:P2.091707.124336 Dil:20 Matrix:WATER
Sample ID:WG250098-04 MS File ID:P2.091707.124952 Dil:20 Units:mg/L
Sample ID:WG250098-05 MSD File ID:P2.091707.125609 Dil:20

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Sodium, Total	492	25.0	531	154	25.0	501	34.1	5.82	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 876091
Report generated 09/20/2007 09:25

Loginnum:L0709261 Cal ID: PE-ICP2- Worknum:WG250289
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG250200-01 File ID:P2.091907.130911 Dil:20 Matrix:WATER
Sample ID:WG250200-04 MS File ID:P2.091907.131533 Dil:20 Units:mg/L
Sample ID:WG250200-05 MSD File ID:P2.091907.132147 Dil:20

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Sodium, Dissolved	433	25.0	463	121	25.0	466	135	0.736	80 - 120	20	*
Vanadium, Dissolved	ND	0.500	0.424	84.9	0.500	0.382	76.5	10.4	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 876091
Report generated 09/20/2007 09:25

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00079666

Loginnum:L0709261 Cal ID:PE-ICP2- Worknum:WG250289
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG250200-01 File ID:P2.091807.143515 Dil:1 Matrix:WATER
Sample ID:WG250200-04 MS File ID:P2.091807.144146 Dil:1 Units:mg/L
Sample ID:WG250200-05 MSD File ID:P2.091807.144811 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Dissolved	ND	5.00	4.94	98.9	5.00	4.96	99.2	0.329	80 - 120	20	
Beryllium, Dissolved	ND	0.0250	0.0250	100	0.0250	0.0246	98.5	1.69	80 - 120	20	
Calcium, Dissolved	357	5.00	363	130	5.00	356	-24.6	2.15	80 - 120	20	*
Cobalt, Dissolved	0.0556	0.100	0.154	98.1	0.100	0.151	95.4	1.78	80 - 120	20	
Iron, Dissolved	3.35	2.00	5.35	100	2.00	5.22	93.9	2.39	80 - 120	20	
Magnesium, Dissolved	169	5.00	177	164	5.00	172	68.7	2.73	80 - 120	20	*
Potassium, Dissolved	3.73	25.0	30.5	107	25.0	30.7	108	0.601	80 - 120	20	
Zinc, Dissolved	ND	0.500	0.485	97.0	0.500	0.478	95.6	1.43	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 876091
Report generated 09/20/2007 09:25

KEMRON ENVIRONMENTAL SERVICES
SERIAL DILUTION REPORT

Sample Login ID:L0709261 Worknum:WG250152
Instrument ID:PE-ICP2 Method:6010B
Sample ID:L0709253-01 File ID:P2.091407.160345 Dil:1 Units:mg/L
Serial Dilution ID:WG250152-02 File ID:P2.091407.161629 Dil:5

Analyte	Sample	C	Serial Dilution	C	% Difference	Q
Aluminum	0	U	ND	U		
Beryllium	0	U	0	U		
Calcium	9.89		10.2	X	3.13	
Cobalt	0	U	ND	U		
Iron	1.89		1.91	X	1.06	
Magnesium	7.95	X	8.11	X	2.01	
Potassium	2.19	X	2.42	F	10.5	E
Sodium	4.22	X	4.68	X	10.9	E
Vanadium	ND	U	0	U		
Zinc	0.0104	F	0.0497	F	378	E

U = Result is below MDL
F = Result is between MDL and RL
X = Result is greater than RL and less than 50 times the MDL
E = %D exceeds control limit of 10% and initial
sample result is greater than or equal to 50 times the MDL

KEMRON FORMS - Modified 02/14/2006
Version 1.3 PDF File ID: 876085
Report generated 09/19/2007 09:22

KEMRON ENVIRONMENTAL SERVICES
SERIAL DILUTION REPORT

Sample Login ID: L0709261 Worknum: WG250289
Instrument ID: PE-ICP2 Method: 6010B
Sample ID: L0709261-02 File ID: P2.091807.150720 Dil: 1 Units: mg/L
Serial Dilution ID: WG250289-02 File ID: P2.091807.152000 Dil: 5

Analyte	Sample	C	Serial Dilution	C	% Difference	Q
Aluminum	0	U	ND	U		
Beryllium	0	U	ND	U		
Calcium	22.3		21.6	X	3.14	
Cobalt	0.0152	X	0	U	100	E
Iron	0.749	X	0.714	X	4.67	
Magnesium	16.4		16.5	X	0.610	
Potassium	2.57	X	2.80	F	8.95	
Sodium	57.7		56.9	X	1.39	
Vanadium	ND	U	ND	U		
Zinc	0.0443	X	0.0263	F	40.6	E

U = Result is below MDL
F = Result is between MDL and RL
X = Result is greater than RL and less than 50 times the MDL
E = %D exceeds control limit of 10% and initial
sample result is greater than or equal to 50 times the MDL

KEMRON FORMS - Modified 02/14/2006
Version 1.3 PDF File ID: 876085
Report generated 09/19/2007 09:22

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250289
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG250289-01 **File ID:** P2.091907.134831 **Dil:** 5 **Units:** mg/L
Sample ID: L0709261-02 **File ID:** P2.091907.134135 **Dil:** 5 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	5.10		0	U	5	101.9	75 - 125	
BERYLLIUM	0.0255		0	U	.025	101.8	75 - 125	
CALCIUM	9.65		4.37		5	105.7	75 - 125	
COBALT	0.106		0.00307	F	.1	103.1	75 - 125	
IRON	2.23		0.150		2	103.8	75 - 125	
MAGNESIUM	8.52		3.47		5	100.9	75 - 125	
POTASSIUM	25.8		0.594	F	25	100.9	75 - 125	
SODIUM	37.1		12.0		25	100.6	75 - 125	
VANADIUM	0.512		0	U	.5	102.5	75 - 125	
ZINC	0.532		0.00993	F	.5	104.4	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 876086
Report generated 09/20/2007 09:25

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250289
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG250289-01 **File ID:** P2.091807.151338 **Dil:** 1 **Units:** mg/L
Sample ID: L0709261-02 **File ID:** P2.091807.150720 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	5.07		0	U	5	101.5	75 - 125	
BERYLLIUM	0.0256		0	U	.025	102.2	75 - 125	
CALCIUM	25.3		22.3		5	105.1	75 - 125	
COBALT	0.117		0.0152	F	.1	103.3	75 - 125	
IRON	2.68		0.749		2	100.3	75 - 125	
MAGNESIUM	19.5		16.4		5	95.0	75 - 125	
POTASSIUM	27.1		2.57		25	99.2	75 - 125	
SODIUM	76.7		57.7		25	99.1	75 - 125	
VANADIUM	0.508		0	U	.5	101.5	75 - 125	
ZINC	0.557		0.0443		.5	103.5	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 876086
Report generated 09/20/2007 09:25

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250152
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG250152-01 **File ID:** P2.091407.161007 **Dil:** 1 **Units:** mg/L
Sample ID: L0709253-01 **File ID:** P2.091407.160345 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	5.10		0	U	5	102.0	75 - 125	
BERYLLIUM	0.0256		0	U	.025	102.4	75 - 125	
CALCIUM	14.4		9.89		5	109.6	75 - 125	
COBALT	0.103		0	U	.1	103.1	75 - 125	
IRON	3.86		1.89		2	107.8	75 - 125	
MAGNESIUM	12.4		7.95		5	105.8	75 - 125	
POTASSIUM	27.5		2.19		25	102.2	75 - 125	
SODIUM	29.6		4.22		25	103.4	75 - 125	
VANADIUM	0.510		0	U	.5	101.9	75 - 125	
ZINC	0.520		0.0104	F	.5	102.2	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 876086
Report generated 09/20/2007 09:25

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

Login Number: L0709261 Workgroup (AAB#): WG250152

Analytical Method: 6010B Instrument ID: PE-ICP2

ICAL Worknum: WG250147 Initial Calibration Date: 14-SEP-2007 09:22

Analyte	WG250147-01		WG250147-02		WG250147-03		WG250147-04		WG250147-05			
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	R	Q
Aluminum	0	210.4020305	.1	662.922591	.2	1491.469717	5	77250.08815	10	153761.2532	0.999997	
Beryllium	0	-1061.44229	.0005	303.9833527	.001	643.8002819	.025	32352.69672	.05	65028.00869	0.999997	
Calcium	0	-78.1878137	.1	14.4534169	.2	31.81313229	5	1802.962573	10	3666.448869	0.999970	
Cobalt	0	-69.5484710	.002	84.57101231	.004	171.4098471	.1	8661.064722	.2	17197.42839	0.999994	
Iron	0	.187091156	.04	26.27802857	.08	53.58172165	2	2592.1743	4	5154.58186	0.999996	
Magnesium	0	16.33006281	.1	70.81716112	.2	137.8735276	5	6572.841847	10	13059.20291	0.999995	
Potassium	0	-757.103288	.5	1409.794379	1	2925.353287	25	152524.4367	50	309571.2171	1.00000	
Sodium	0	1197.356229	.5	4606.307775	1	9107.018448	25	439985.0364	50	875122.1201	1.00000	
Vanadium	0	5111.849852	.01	1547.630624	.02	2776.233082	.5	132668.8227	1	268608.5848	0.999981	
Zinc	0	-14.0594813	.01	260.4174924	.02	510.8025826	.5	23930.97369	1	48144.00913	0.999995	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 03/08/2007
Version 1.5 PDF File ID: 876094
Report generated 09/21/2007 13:05

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

Login Number: L0709261 Workgroup (AAB#): WG250152

Analytical Method: 6010B Instrument ID: PE-ICP2

ICAL Worknum: WG250264 Initial Calibration Date: 17-SEP-2007 08:39

Analyte	WG250264-01		WG250264-02		WG250264-03		WG250264-04		WG250264-05			
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	R	Q
Aluminum	0	-133.263759	.1	774.2415426	.2	1454.150874	5	70324.39657	10	137856.3365	0.999953	
Beryllium	0	-1126.72457	.0005	296.2805671	.001	618.5053966	.025	32468.41513	.05	65064.96776	1.00000	
Calcium	0	-88.058934	.1	10.28186353	.2	26.0914832	5	1789.489613	10	3633.916394	0.999976	
Cobalt	0	-91.8176471	.002	87.23968975	.004	174.5179982	.1	8623.129597	.2	17167.43338	0.999998	
Iron	0	-.828998981	.04	29.40809282	.08	57.15798321	2	2775.178954	4	5489.129538	0.999986	
Magnesium	0	23.16430687	.1	67.41422185	.2	139.1184297	5	7033.210865	10	13935.71222	0.999989	
Potassium	0	-655.267740	.5	1387.312933	1	2903.859203	25	141411.4934	50	282532.1116	1.00000	
Sodium	0	1208.556721	.5	4480.016191	1	8722.896795	25	429617.2556	50	849360.892	1.00000	
Vanadium	0	5184.336504	.01	1520.929739	.02	2827.212466	.5	132259.603	1	264908.5227	0.999999	
Zinc	0	27.62636408	.01	309.9805549	.02	585.3206018	.5	24746.76575	1	49349.20742	0.999998	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 03/08/2007
Version 1.5 PDF File ID: 876094
Report generated 09/21/2007 13:05

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

Login Number: L0709261 Workgroup (AAB#): WG250289

Analytical Method: 6010B Instrument ID: PE-ICP2

ICAL Worknum: WG250358 Initial Calibration Date: 18-SEP-2007 08:50

Analyte	WG250358-01		WG250358-02		WG250358-03		WG250358-04		WG250358-05			
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	R	Q
Aluminum	0	-153.994412	.1	761.3629109	.2	1515.907079	5	75087.34944	10	145274.8445	0.999868	
Beryllium	0	-1091.69509	.0005	335.5006887	.001	661.0693264	.025	33210.59562	.05	63779.16028	0.999800	
Calcium	0	-82.5775167	.1	8.579297245	.2	28.89882769	5	1826.056385	10	3604.108858	0.999972	
Cobalt	0	-91.6988775	.002	89.8540969	.004	175.7080482	.1	8859.330903	.2	16970.16572	0.999774	
Iron	0	.7699404169	.04	27.76718013	.08	55.38239515	2	2762.468592	4	5428.985086	0.999964	
Magnesium	0	20.9748411	.1	75.66235928	.2	143.3389637	5	7064.169288	10	13806.07224	0.999937	
Potassium	0	-604.961029	.5	1371.750974	1	2879.50455	25	149156.7758	50	295508.9293	1.00000	
Sodium	0	1197.945283	.5	4677.956172	1	9302.936016	25	447862.0367	50	872712.1183	1.00000	
Vanadium	0	5178.893958	.01	1467.717809	.02	2766.938959	.5	135109.4779	1	259893.806	0.999818	
Zinc	0	3.517417264	.01	311.6995418	.02	671.7854559	.5	25665.37705	1	49035.70844	0.999756	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 03/08/2007
Version 1.5 PDF File ID: 876094
Report generated 09/21/2007 13:05

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

Login Number: L0709261 Workgroup (AAB#): WG250289

Analytical Method: 6010B Instrument ID: PE-ICP2

ICAL Worknum: WG250490 Initial Calibration Date: 19-SEP-2007 08:57

Analyte	WG250490-01		WG250490-02		WG250490-03		WG250490-04		WG250490-05			
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	R	Q
Aluminum	0	-111.070263	.1	841.1908268	.2	1598.259631	5	77396.34446	10	152896.9029	0.999983	
Beryllium	0	-1097.51743	.0005	328.0017575	.001	658.3181276	.025	33152.12147	.05	65954.72496	0.999997	
Calcium	0	-91.0496153	.1	31.77071936	.2	39.89981665	5	1813.172053	10	3726.033354	0.999900	
Cobalt	0	-89.0862699	.002	90.52437809	.004	170.5334502	.1	8789.600814	.2	17525.92266	0.999999	
Iron	0	-1.69358475	.04	29.14059907	.08	55.14528038	2	2664.585269	4	5267.637563	0.999985	
Magnesium	0	28.58458058	.1	66.87651609	.2	142.7524036	5	6782.158608	10	13413.942	0.999986	
Potassium	0	-665.5764	.5	1542.237759	1	3033.254034	25	153159.361	50	308667.796	1.00000	
Sodium	0	1217.884544	.5	4773.229638	1	9476.649641	25	457657.9054	50	909081.7657	1.00000	
Vanadium	0	5209.27969	.01	1349.080343	.02	2765.00527	.5	134709.1464	1	268650.2493	0.999999	
Zinc	0	8.391843463	.01	283.0794209	.02	576.9474039	.5	25521.6199	1	50492.14107	0.999987	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 03/08/2007
Version 1.5 PDF File ID: 876094
Report generated 09/21/2007 13:05

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

Login Number: L0709261 Workgroup (AAB#): WG250289

Analytical Method: 6010B Instrument ID: PE-ICP2

ICAL Worknum: WG250563 Initial Calibration Date: 20-SEP-2007 08:22

Analyte	WG250563-01		WG250563-02		WG250563-03		WG250563-04		WG250563-05			
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	R	Q
Aluminum	0	-126.568342	.1	802.0678542	.2	1684.737938	5	80158.36067	10	156312.9754	0.999924	
Beryllium	0	-1115.44139	.0005	382.0546714	.001	739.8781489	.025	32634.32709	.05	65035.28446	0.999998	
Calcium	0	-89.8760017	.1	11.71282165	.2	39.68477017	5	1786.011122	10	3607.141534	0.999987	
Cobalt	0	-87.6029536	.002	94.49395323	.004	181.3927689	.1	8745.598132	.2	17353.32109	0.999993	
Iron	0	3.068410366	.04	25.7998188	.08	52.37421391	2	2719.689018	4	5297.171554	0.999915	
Magnesium	0	28.26871715	.1	67.50723098	.2	135.94396	5	6955.289731	10	13517.02215	0.999900	
Potassium	0	-648.858951	.5	1632.266304	1	3170.064128	25	157352.7938	50	312793.1028	1.00000	
Sodium	0	1460.881482	.5	4912.518088	1	9859.831425	25	470702.0586	50	917304.6093	1.00000	
Vanadium	0	5195.637137	.01	1382.734993	.02	2808.010954	.5	133219.3827	1	266112.9387	1.00000	
Zinc	0	15.48110068	.01	306.9775198	.02	561.7448415	.5	25075.92761	1	49778.79915	0.999994	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 03/08/2007
Version 1.5 PDF File ID: 876094
Report generated 09/21/2007 13:05

KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079677

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-07

Instrument ID: PE-ICP2 Run Time: 09:10 Method: 6010B

File ID: P2.091907.091006 Analyst: KRV Units: mg/L

Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-.0229	1	U
Beryllium	0.000500	0.00200	-.0000231	1	U
Calcium	0.100	0.200	.0444	1	U
Cobalt	0.00250	0.00500	-.0000886	1	U
Iron	0.0250	0.100	-.00877	1	U
Potassium	0.250	1.00	.0598	1	U
Magnesium	0.250	0.500	-.025	1	U
Sodium	0.250	0.500	.00315	1	U
Vanadium	0.00500	0.0100	-.000522	1	U
Zinc	0.00500	0.0200	-.00243	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 10/02/2006
Version 1.5 PDF File ID: 876096
Report generated 09/20/2007 11:26

KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079678

Login Number: L0709261 Run Date: 09/20/2007 Sample ID: WG250563-07

Instrument ID: PE-ICP2 Run Time: 08:34 Method: 6010B

File ID: P2.092007.083406 Analyst: KHR Units: mg/L

Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 20-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-.0355	1	U
Beryllium	0.000500	0.00200	-.0000237	1	U
Calcium	0.100	0.200	.0105	1	U
Cobalt	0.00250	0.00500	-.000248	1	U
Iron	0.0250	0.100	-.0144	1	U
Potassium	0.250	1.00	.0504	1	U
Magnesium	0.250	0.500	-.0484	1	U
Sodium	0.250	0.500	.00525	1	U
Vanadium	0.00500	0.0100	-.000754	1	U
Zinc	0.00500	0.0200	-.00258	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 10/02/2006
Version 1.5 PDF File ID: 876096
Report generated 09/20/2007 11:26

KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079679

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-07

Instrument ID: PE-ICP2 Run Time: 09:02 Method: 6010B

File ID: P2.091807.090231 Analyst: KHR Units: mg/L

Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-.048	1	U
Beryllium	0.000500	0.00200	-.000294	1	U
Calcium	0.100	0.200	-.0455	1	U
Cobalt	0.00250	0.00500	-.00112	1	U
Iron	0.0250	0.100	-.0122	1	U
Potassium	0.250	1.00	.0886	1	U
Magnesium	0.250	0.500	-.0277	1	U
Sodium	0.250	0.500	.0137	1	U
Vanadium	0.00500	0.0100	-.00446	1	U
Zinc	0.00500	0.0200	-.00896	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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INITIAL CALIBRATION BLANK (ICB)

00079680

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-07

Instrument ID: PE-ICP2 Run Time: 09:33 Method: 6010B

File ID: P2.091407.093346 Analyst: KHR Units: mg/L

Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-.0173	1	U
Beryllium	0.000500	0.00200	.000029	1	U
Calcium	0.100	0.200	.0378	1	U
Cobalt	0.00250	0.00500	-.000137	1	U
Iron	0.0250	0.100	-.00545	1	U
Potassium	0.250	1.00	.0402	1	U
Magnesium	0.250	0.500	-.0077	1	U
Sodium	0.250	0.500	.0196	1	U
Vanadium	0.00500	0.0100	.00141	1	U
Zinc	0.00500	0.0200	.000302	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079681

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-07
Instrument ID: PE-ICP2 Run Time: 08:51 Method: 6010B
File ID: P2.091707.085130 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-.0256	1	U
Beryllium	0.000500	0.00200	.00000803	1	U
Calcium	0.100	0.200	.0595	1	U
Cobalt	0.00250	0.00500	-.0000636	1	U
Iron	0.0250	0.100	-.00466	1	U
Potassium	0.250	1.00	.0957	1	U
Magnesium	0.250	0.500	-.00418	1	U
Sodium	0.250	0.500	.0172	1	U
Vanadium	0.00500	0.0100	.0012	1	U
Zinc	0.00500	0.0200	-.00259	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079682

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-11
Instrument ID: PE-ICP2 Run Time: 09:57 Method: 6010B
File ID: P2.091407.095700 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0122	1	U
Beryllium	0.000500	0.00200	0.0000210	1	U
Calcium	0.100	0.200	-0.0167	1	U
Cobalt	0.00250	0.00500	-0.000285	1	U
Iron	0.0250	0.100	-0.00371	1	U
Potassium	0.250	1.00	0.0454	1	U
Magnesium	0.250	0.500	-0.00622	1	U
Sodium	0.250	0.500	-0.00512	1	U
Vanadium	0.00500	0.0100	0.00106	1	U
Zinc	0.00500	0.0200	0.000466	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079683

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-21
Instrument ID: PE-ICP2 Run Time: 15:18 Method: 6010B
File ID: P2.091407.151842 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.00867	1	U
Beryllium	0.000500	0.00200	-0.0000423	1	U
Calcium	0.100	0.200	0.0134	1	U
Cobalt	0.00250	0.00500	-0.000387	1	U
Iron	0.0250	0.100	-0.00350	1	U
Potassium	0.250	1.00	0.0244	1	U
Magnesium	0.250	0.500	-0.00275	1	U
Sodium	0.250	0.500	0.0374	1	U
Vanadium	0.00500	0.0100	0.00208	1	U
Zinc	0.00500	0.0200	0.000368	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079684

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-23
Instrument ID: PE-ICP2 Run Time: 16:29 Method: 6010B
File ID: P2.091407.162909 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0122	1	U
Beryllium	0.000500	0.00200	0.00000698	1	U
Calcium	0.100	0.200	-0.00619	1	U
Cobalt	0.00250	0.00500	-0.000306	1	U
Iron	0.0250	0.100	-0.00334	1	U
Potassium	0.250	1.00	0.0719	1	U
Magnesium	0.250	0.500	-0.00761	1	U
Sodium	0.250	0.500	0.0883	1	U
Vanadium	0.00500	0.0100	0.000361	1	U
Zinc	0.00500	0.0200	0.000167	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079685

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-25
Instrument ID: PE-ICP2 Run Time: 17:45 Method: 6010B
File ID: P2.091407.174517 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.00902	1	U
Beryllium	0.000500	0.00200	-0.00000912	1	U
Calcium	0.100	0.200	0.00698	1	U
Cobalt	0.00250	0.00500	-0.000354	1	U
Iron	0.0250	0.100	-0.000448	1	U
Potassium	0.250	1.00	0.184	1	U
Magnesium	0.250	0.500	-0.0129	1	U
Sodium	0.250	0.500	0.399	1	F
Vanadium	0.00500	0.0100	0.00119	1	U
Zinc	0.00500	0.0200	0.00897	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Report generated 09/20/2007 11:26

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00079686

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-27
Instrument ID: PE-ICP2 Run Time: 18:36 Method: 6010B
File ID: P2.091407.183607 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0103	1	U
Beryllium	0.000500	0.00200	-0.0000457	1	U
Calcium	0.100	0.200	-0.0367	1	U
Cobalt	0.00250	0.00500	-0.000560	1	U
Iron	0.0250	0.100	-0.00398	1	U
Potassium	0.250	1.00	0.104	1	U
Magnesium	0.250	0.500	-0.00813	1	U
Sodium	0.250	0.500	0.258	1	F
Vanadium	0.00500	0.0100	0.00236	1	U
Zinc	0.00500	0.0200	0.00205	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079687

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Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-11
Instrument ID: PE-ICP2 Run Time: 09:16 Method: 6010B
File ID: P2.091707.091612 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0242	1	U
Beryllium	0.000500	0.00200	-0.0000165	1	U
Calcium	0.100	0.200	0.00514	1	U
Cobalt	0.00250	0.00500	-0.000326	1	U
Iron	0.0250	0.100	-0.00323	1	U
Potassium	0.250	1.00	0.0697	1	U
Magnesium	0.250	0.500	-0.00421	1	U
Sodium	0.250	0.500	-0.000778	1	U
Vanadium	0.00500	0.0100	0.00102	1	U
Zinc	0.00500	0.0200	-0.00254	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079688

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-17
Instrument ID: PE-ICP2 Run Time: 12:32 Method: 6010B
File ID: P2.091707.123253 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0319	1	U
Beryllium	0.000500	0.00200	0.000114	1	U
Calcium	0.100	0.200	0.0608	1	U
Cobalt	0.00250	0.00500	-0.0000106	1	U
Iron	0.0250	0.100	-0.00850	1	U
Potassium	0.250	1.00	0.0645	1	U
Magnesium	0.250	0.500	-0.00370	1	U
Sodium	0.250	0.500	0.0135	1	U
Vanadium	0.00500	0.0100	0.000247	1	U
Zinc	0.00500	0.0200	-0.00231	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079689

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-19
Instrument ID: PE-ICP2 Run Time: 13:54 Method: 6010B
File ID: P2.091707.135442 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0238	1	U
Beryllium	0.000500	0.00200	0.0000534	1	U
Calcium	0.100	0.200	0.0554	1	U
Cobalt	0.00250	0.00500	0.0000460	1	U
Iron	0.0250	0.100	-0.00734	1	U
Potassium	0.250	1.00	0.0983	1	U
Magnesium	0.250	0.500	-0.0111	1	U
Sodium	0.250	0.500	0.113	1	U
Vanadium	0.00500	0.0100	0.00128	1	U
Zinc	0.00500	0.0200	-0.000463	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

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00079690

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-21
Instrument ID: PE-ICP2 Run Time: 15:04 Method: 6010B
File ID: P2.091707.150454 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0245	1	U
Beryllium	0.000500	0.00200	0.0000376	1	U
Calcium	0.100	0.200	0.0473	1	U
Cobalt	0.00250	0.00500	-0.000131	1	U
Iron	0.0250	0.100	-0.00878	1	U
Potassium	0.250	1.00	0.0665	1	U
Magnesium	0.250	0.500	-0.00699	1	U
Sodium	0.250	0.500	0.0410	1	U
Vanadium	0.00500	0.0100	0.00147	1	U
Zinc	0.00500	0.0200	-0.00227	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

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00079691

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-11
Instrument ID: PE-ICP2 Run Time: 09:25 Method: 6010B
File ID: P2.091807.092556 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0503	1	F
Beryllium	0.000500	0.00200	-0.000278	1	U
Calcium	0.100	0.200	-0.0368	1	U
Cobalt	0.00250	0.00500	-0.00117	1	U
Iron	0.0250	0.100	-0.00820	1	U
Potassium	0.250	1.00	0.0608	1	U
Magnesium	0.250	0.500	-0.0357	1	U
Sodium	0.250	0.500	-0.00266	1	U
Vanadium	0.00500	0.0100	-0.00492	1	U
Zinc	0.00500	0.0200	-0.00896	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

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00079692

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-19
Instrument ID: PE-ICP2 Run Time: 14:16 Method: 6010B
File ID: P2.091807.141615 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0419	1	U
Beryllium	0.000500	0.00200	-0.000266	1	U
Calcium	0.100	0.200	-0.0511	1	U
Cobalt	0.00250	0.00500	-0.00113	1	U
Iron	0.0250	0.100	-0.00990	1	U
Potassium	0.250	1.00	0.0648	1	U
Magnesium	0.250	0.500	-0.0212	1	U
Sodium	0.250	0.500	0.0250	1	U
Vanadium	0.00500	0.0100	-0.00486	1	U
Zinc	0.00500	0.0200	-0.00933	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

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00079693

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-21
Instrument ID: PE-ICP2 Run Time: 15:32 Method: 6010B
File ID: P2.091807.153234 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0457	1	U
Beryllium	0.000500	0.00200	-0.000293	1	U
Calcium	0.100	0.200	-0.00165	1	U
Cobalt	0.00250	0.00500	-0.00135	1	U
Iron	0.0250	0.100	-0.00800	1	U
Potassium	0.250	1.00	0.128	1	U
Magnesium	0.250	0.500	-0.0337	1	U
Sodium	0.250	0.500	0.0827	1	U
Vanadium	0.00500	0.0100	-0.00618	1	F
Zinc	0.00500	0.0200	-0.00923	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

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00079694

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-23
Instrument ID: PE-ICP2 Run Time: 16:23 Method: 6010B
File ID: P2.091807.162320 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0498	1	U
Beryllium	0.000500	0.00200	-0.000248	1	U
Calcium	0.100	0.200	0.00578	1	U
Cobalt	0.00250	0.00500	-0.00106	1	U
Iron	0.0250	0.100	-0.0100	1	U
Potassium	0.250	1.00	0.154	1	U
Magnesium	0.250	0.500	-0.0355	1	U
Sodium	0.250	0.500	0.300	1	F
Vanadium	0.00500	0.0100	-0.00608	1	F
Zinc	0.00500	0.0200	-0.00930	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

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00079695

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-11
Instrument ID: PE-ICP2 Run Time: 09:34 Method: 6010B
File ID: P2.091907.093424 Analyst: KRV Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0191	1	U
Beryllium	0.000500	0.00200	-0.0000310	1	U
Calcium	0.100	0.200	0.0294	1	U
Cobalt	0.00250	0.00500	-0.000129	1	U
Iron	0.0250	0.100	-0.000893	1	U
Potassium	0.250	1.00	0.0522	1	U
Magnesium	0.250	0.500	-0.0220	1	U
Sodium	0.250	0.500	-0.00284	1	U
Vanadium	0.00500	0.0100	-0.0000513	1	U
Zinc	0.00500	0.0200	-0.00233	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
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00079696

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-19
Instrument ID: PE-ICP2 Run Time: 13:02 Method: 6010B
File ID: P2.091907.130257 Analyst: KRV Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0258	1	U
Beryllium	0.000500	0.00200	-0.0000143	1	U
Calcium	0.100	0.200	0.0228	1	U
Cobalt	0.00250	0.00500	-0.0000312	1	U
Iron	0.0250	0.100	-0.00211	1	U
Potassium	0.250	1.00	0.0516	1	U
Magnesium	0.250	0.500	-0.0232	1	U
Sodium	0.250	0.500	0.0353	1	U
Vanadium	0.00500	0.0100	0.000271	1	U
Zinc	0.00500	0.0200	-0.00253	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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00079697

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-21
Instrument ID: PE-ICP2 Run Time: 14:20 Method: 6010B
File ID: P2.091907.142045 Analyst: KRV Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0205	1	U
Beryllium	0.000500	0.00200	-0.0000563	1	U
Calcium	0.100	0.200	0.0861	1	U
Cobalt	0.00250	0.00500	-0.000215	1	U
Iron	0.0250	0.100	-0.00408	1	U
Potassium	0.250	1.00	0.0586	1	U
Magnesium	0.250	0.500	-0.0283	1	U
Sodium	0.250	0.500	0.105	1	U
Vanadium	0.00500	0.0100	-0.000626	1	U
Zinc	0.00500	0.0200	-0.00267	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079698

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-23
Instrument ID: PE-ICP2 Run Time: 15:11 Method: 6010B
File ID: P2.091907.151123 Analyst: KRV Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0181	1	U
Beryllium	0.000500	0.00200	-0.0000544	1	U
Calcium	0.100	0.200	0.0120	1	U
Cobalt	0.00250	0.00500	-0.0000746	1	U
Iron	0.0250	0.100	-0.00592	1	U
Potassium	0.250	1.00	0.109	1	U
Magnesium	0.250	0.500	-0.0216	1	U
Sodium	0.250	0.500	0.123	1	U
Vanadium	0.00500	0.0100	-0.0000445	1	U
Zinc	0.00500	0.0200	-0.00261	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079699

Login Number: L0709261 Run Date: 09/20/2007 Sample ID: WG250563-11
Instrument ID: PE-ICP2 Run Time: 08:58 Method: 6010B
File ID: P2.092007.085820 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 20-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0369	1	U
Beryllium	0.000500	0.00200	-0.0000143	1	U
Calcium	0.100	0.200	0.0269	1	U
Cobalt	0.00250	0.00500	-0.0000990	1	U
Iron	0.0250	0.100	-0.0148	1	U
Potassium	0.250	1.00	0.0206	1	U
Magnesium	0.250	0.500	-0.0402	1	U
Sodium	0.250	0.500	-0.0314	1	U
Vanadium	0.00500	0.0100	0.0000523	1	U
Zinc	0.00500	0.0200	-0.00261	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079700

Login Number: L0709261 Run Date: 09/20/2007 Sample ID: WG250563-13
Instrument ID: PE-ICP2 Run Time: 10:25 Method: 6010B
File ID: P2.092007.102546 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 20-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Aluminum	0.0500	0.100	-0.0359	1	U
Beryllium	0.000500	0.00200	0.0000257	1	U
Calcium	0.100	0.200	0.00421	1	U
Cobalt	0.00250	0.00500	-0.000113	1	U
Iron	0.0250	0.100	-0.0150	1	U
Potassium	0.250	1.00	0.0222	1	U
Magnesium	0.250	0.500	-0.0446	1	U
Sodium	0.250	0.500	0.00870	1	U
Vanadium	0.00500	0.0100	-0.00111	1	U
Zinc	0.00500	0.0200	-0.00283	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 876099
Report generated 09/20/2007 11:26

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079701

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-06
Instrument ID: PE-ICP2 Run Time: 09:27 Method: 6010B
File ID: P2.091407.092729 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	9.94	99.4	90 - 110	
Beryllium		.05	0.0487	97.5	90 - 110	
Calcium		10	10.2	102	90 - 110	
Cobalt		.2	0.197	98.6	90 - 110	
Iron		4	4.13	103	90 - 110	
Potassium		50	49.5	99.0	90 - 110	
Magnesium		10	10.1	101	90 - 110	
Sodium		50	49.1	98.2	90 - 110	
Vanadium		1	0.958	95.8	90 - 110	
Zinc		1	0.998	99.8	90 - 110	

* Exceeds LIMITS Limit

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Version 1.5 PDF File ID: 876095
Report generated 09/20/2007 11:26

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079702

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-06
Instrument ID: PE-ICP2 Run Time: 08:45 Method: 6010B
File ID: P2.091707.084510 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.0	100	90 - 110	
Beryllium		.05	0.0499	99.7	90 - 110	
Calcium		10	10.4	104	90 - 110	
Cobalt		.2	0.200	99.9	90 - 110	
Iron		4	4.00	99.9	90 - 110	
Potassium		50	49.5	98.9	90 - 110	
Magnesium		10	9.79	97.9	90 - 110	
Sodium		50	49.2	98.4	90 - 110	
Vanadium		1	0.981	98.1	90 - 110	
Zinc		1	1.02	102	90 - 110	

* Exceeds LIMITS Limit

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Version 1.5 PDF File ID: 876095
Report generated 09/20/2007 11:26

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079703

Login Number: L0709261 Run Date: 09/20/2007 Sample ID: WG250563-06
Instrument ID: PE-ICP2 Run Time: 08:27 Method: 6010B
File ID: P2.092007.082742 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 20-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.0	100	90 - 110	
Beryllium		.05	0.0490	97.9	90 - 110	
Calcium		10	10.3	103	90 - 110	
Cobalt		.2	0.199	99.7	90 - 110	
Iron		4	3.99	99.8	90 - 110	
Potassium		50	49.2	98.5	90 - 110	
Magnesium		10	9.83	98.3	90 - 110	
Sodium		50	48.6	97.2	90 - 110	
Vanadium		1	0.968	96.8	90 - 110	
Zinc		1	1.01	101	90 - 110	

* Exceeds LIMITS Limit

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Version 1.5 PDF File ID: 876095
Report generated 09/20/2007 11:26

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079704

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-06
Instrument ID: PE-ICP2 Run Time: 08:56 Method: 6010B
File ID: P2.091807.085608 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.0	100	90 - 110	
Beryllium		.05	0.0498	99.6	90 - 110	
Calcium		10	10.3	103	90 - 110	
Cobalt		.2	0.199	99.7	90 - 110	
Iron		4	4.09	102	90 - 110	
Potassium		50	49.0	98.1	90 - 110	
Magnesium		10	10.1	101	90 - 110	
Sodium		50	48.5	97.0	90 - 110	
Vanadium		1	0.976	97.6	90 - 110	
Zinc		1	1.01	101	90 - 110	

* Exceeds LIMITS Limit

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Version 1.5 PDF File ID: 876095
Report generated 09/20/2007 11:26

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079705

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-06
Instrument ID: PE-ICP2 Run Time: 09:03 Method: 6010B
File ID: P2.091907.090320 Analyst: KRV Units: mg/L
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.3	103	90 - 110	
Beryllium		.05	0.0501	100	90 - 110	
Calcium		10	10.4	104	90 - 110	
Cobalt		.2	0.203	101	90 - 110	
Iron		4	4.20	105	90 - 110	
Potassium		50	50.9	102	90 - 110	
Magnesium		10	10.3	103	90 - 110	
Sodium		50	50.5	101	90 - 110	
Vanadium		1	0.990	99.0	90 - 110	
Zinc		1	1.02	102	90 - 110	

* Exceeds LIMITS Limit

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Version 1.5 PDF File ID: 876095
Report generated 09/20/2007 11:26

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079706

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-10
Instrument ID: PE-ICP2 Run Time: 09:50 Method: 6010B
File ID: P2.091407.095043 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.88	mg/L	98.8	90 - 110		
Beryllium		0.0500	0.0491	mg/L	98.2	90 - 110		
Calcium		10.0	10.2	mg/L	102	90 - 110		
Cobalt		0.200	0.199	mg/L	99.3	90 - 110		
Iron		4.00	4.19	mg/L	105	90 - 110		
Potassium		50.0	49.2	mg/L	98.4	90 - 110		
Magnesium		10.0	10.3	mg/L	103	90 - 110		
Sodium		50.0	48.9	mg/L	97.8	90 - 110		
Vanadium		1.00	0.970	mg/L	97.0	90 - 110		
Zinc		1.00	1.01	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079707

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-20
Instrument ID: PE-ICP2 Run Time: 15:12 Method: 6010B
File ID: P2.091407.151225 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Beryllium		0.0500	0.0498	mg/L	99.6	90 - 110		
Calcium		10.0	10.3	mg/L	103	90 - 110		
Cobalt		0.200	0.199	mg/L	99.7	90 - 110		
Iron		4.00	4.22	mg/L	106	90 - 110		
Potassium		50.0	50.3	mg/L	101	90 - 110		
Magnesium		10.0	10.3	mg/L	103	90 - 110		
Sodium		50.0	50.7	mg/L	101	90 - 110		
Vanadium		1.00	0.982	mg/L	98.2	90 - 110		
Zinc		1.00	1.02	mg/L	102	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079708

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-22
Instrument ID: PE-ICP2 Run Time: 16:22 Method: 6010B
File ID: P2.091407.162251 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Beryllium		0.0500	0.0493	mg/L	98.6	90 - 110		
Calcium		10.0	10.2	mg/L	102	90 - 110		
Cobalt		0.200	0.200	mg/L	100	90 - 110		
Iron		4.00	4.35	mg/L	109	90 - 110		
Potassium		50.0	50.4	mg/L	101	90 - 110		
Magnesium		10.0	10.6	mg/L	106	90 - 110		
Sodium		50.0	50.9	mg/L	102	90 - 110		
Vanadium		1.00	0.972	mg/L	97.2	90 - 110		
Zinc		1.00	1.01	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079709

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-24
Instrument ID: PE-ICP2 Run Time: 17:38 Method: 6010B
File ID: P2.091407.173858 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Beryllium		0.0500	0.0492	mg/L	98.4	90 - 110		
Calcium		10.0	10.3	mg/L	103	90 - 110		
Cobalt		0.200	0.200	mg/L	99.9	90 - 110		
Iron		4.00	4.32	mg/L	108	90 - 110		
Potassium		50.0	50.6	mg/L	101	90 - 110		
Magnesium		10.0	10.5	mg/L	105	90 - 110		
Sodium		50.0	51.5	mg/L	103	90 - 110		
Vanadium		1.00	0.967	mg/L	96.7	90 - 110		
Zinc		1.00	1.03	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079710

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250147-26
Instrument ID: PE-ICP2 Run Time: 18:29 Method: 6010B
File ID: P2.091407.182946 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Beryllium		0.0500	0.0501	mg/L	100	90 - 110		
Calcium		10.0	10.4	mg/L	104	90 - 110		
Cobalt		0.200	0.203	mg/L	102	90 - 110		
Iron		4.00	4.31	mg/L	108	90 - 110		
Potassium		50.0	50.7	mg/L	101	90 - 110		
Magnesium		10.0	10.4	mg/L	104	90 - 110		
Sodium		50.0	51.6	mg/L	103	90 - 110		
Vanadium		1.00	0.994	mg/L	99.4	90 - 110		
Zinc		1.00	1.04	mg/L	104	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

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CONTINUING CALIBRATION VERIFICATION (CCV)

00079711

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-10
Instrument ID: PE-ICP2 Run Time: 09:09 Method: 6010B
File ID: P2.091707.090918 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Beryllium		0.0500	0.0502	mg/L	100	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Cobalt		0.200	0.202	mg/L	101	90 - 110		
Iron		4.00	4.04	mg/L	101	90 - 110		
Potassium		50.0	49.9	mg/L	99.8	90 - 110		
Magnesium		10.0	9.89	mg/L	98.9	90 - 110		
Sodium		50.0	49.4	mg/L	98.8	90 - 110		
Vanadium		1.00	0.990	mg/L	99.0	90 - 110		
Zinc		1.00	1.03	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079712

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-16
Instrument ID: PE-ICP2 Run Time: 12:26 Method: 6010B
File ID: P2.091707.122636 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Beryllium		0.0500	0.0502	mg/L	100	90 - 110		
Calcium		10.0	10.6	mg/L	106	90 - 110		
Cobalt		0.200	0.206	mg/L	103	90 - 110		
Iron		4.00	3.94	mg/L	98.6	90 - 110		
Potassium		50.0	50.5	mg/L	101	90 - 110		
Magnesium		10.0	9.66	mg/L	96.6	90 - 110		
Sodium		50.0	49.3	mg/L	98.5	90 - 110		
Vanadium		1.00	1.00	mg/L	100	90 - 110		
Zinc		1.00	1.04	mg/L	104	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079713

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-18
Instrument ID: PE-ICP2 Run Time: 13:48 Method: 6010B
File ID: P2.091707.134816 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.4	mg/L	104	90 - 110		
Beryllium		0.0500	0.0515	mg/L	103	90 - 110		
Calcium		10.0	10.8	mg/L	108	90 - 110		
Cobalt		0.200	0.211	mg/L	105	90 - 110		
Iron		4.00	4.00	mg/L	99.9	90 - 110		
Potassium		50.0	50.8	mg/L	102	90 - 110		
Magnesium		10.0	9.82	mg/L	98.2	90 - 110		
Sodium		50.0	49.5	mg/L	99.0	90 - 110		
Vanadium		1.00	1.01	mg/L	101	90 - 110		
Zinc		1.00	1.07	mg/L	107	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079714

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250264-20
Instrument ID: PE-ICP2 Run Time: 14:58 Method: 6010B
File ID: P2.091707.145834 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250152 Cal ID: PE-ICP - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.5	mg/L	105	90 - 110		
Beryllium		0.0500	0.0524	mg/L	105	90 - 110		
Calcium		10.0	10.8	mg/L	108	90 - 110		
Cobalt		0.200	0.209	mg/L	105	90 - 110		
Iron		4.00	3.96	mg/L	99.0	90 - 110		
Potassium		50.0	51.0	mg/L	102	90 - 110		
Magnesium		10.0	9.73	mg/L	97.3	90 - 110		
Sodium		50.0	49.7	mg/L	99.4	90 - 110		
Vanadium		1.00	1.02	mg/L	102	90 - 110		
Zinc		1.00	1.08	mg/L	108	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079715

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-10
Instrument ID: PE-ICP2 Run Time: 09:19 Method: 6010B
File ID: P2.091807.091939 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Beryllium		0.0500	0.0502	mg/L	100	90 - 110		
Calcium		10.0	10.4	mg/L	104	90 - 110		
Cobalt		0.200	0.203	mg/L	102	90 - 110		
Iron		4.00	4.19	mg/L	105	90 - 110		
Potassium		50.0	49.9	mg/L	99.7	90 - 110		
Magnesium		10.0	10.3	mg/L	103	90 - 110		
Sodium		50.0	49.4	mg/L	98.8	90 - 110		
Vanadium		1.00	0.984	mg/L	98.4	90 - 110		
Zinc		1.00	1.02	mg/L	102	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079716

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-18
Instrument ID: PE-ICP2 Run Time: 14:09 Method: 6010B
File ID: P2.091807.140954 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Beryllium		0.0500	0.0505	mg/L	101	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Cobalt		0.200	0.204	mg/L	102	90 - 110		
Iron		4.00	4.06	mg/L	102	90 - 110		
Potassium		50.0	49.9	mg/L	99.7	90 - 110		
Magnesium		10.0	9.96	mg/L	99.6	90 - 110		
Sodium		50.0	49.0	mg/L	98.0	90 - 110		
Vanadium		1.00	0.988	mg/L	98.8	90 - 110		
Zinc		1.00	1.03	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079717

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-20
Instrument ID: PE-ICP2 Run Time: 15:26 Method: 6010B
File ID: P2.091807.152617 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Beryllium		0.0500	0.0515	mg/L	103	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Cobalt		0.200	0.206	mg/L	103	90 - 110		
Iron		4.00	4.01	mg/L	100	90 - 110		
Potassium		50.0	50.1	mg/L	100	90 - 110		
Magnesium		10.0	9.84	mg/L	98.4	90 - 110		
Sodium		50.0	49.4	mg/L	98.7	90 - 110		
Vanadium		1.00	1.00	mg/L	100	90 - 110		
Zinc		1.00	1.05	mg/L	105	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079718

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250358-22
Instrument ID: PE-ICP2 Run Time: 16:17 Method: 6010B
File ID: P2.091807.161702 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 18-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Beryllium		0.0500	0.0520	mg/L	104	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Cobalt		0.200	0.206	mg/L	103	90 - 110		
Iron		4.00	4.09	mg/L	102	90 - 110		
Potassium		50.0	49.9	mg/L	99.8	90 - 110		
Magnesium		10.0	10.0	mg/L	100	90 - 110		
Sodium		50.0	49.6	mg/L	99.3	90 - 110		
Vanadium		1.00	1.01	mg/L	101	90 - 110		
Zinc		1.00	1.06	mg/L	106	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079719

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-10
Instrument ID: PE-ICP2 Run Time: 09:27 Method: 6010B
File ID: P2.091907.092757 Analyst: KRV QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Beryllium		0.0500	0.0508	mg/L	102	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Cobalt		0.200	0.204	mg/L	102	90 - 110		
Iron		4.00	4.18	mg/L	104	90 - 110		
Potassium		50.0	50.9	mg/L	102	90 - 110		
Magnesium		10.0	10.2	mg/L	102	90 - 110		
Sodium		50.0	50.3	mg/L	101	90 - 110		
Vanadium		1.00	1.00	mg/L	100	90 - 110		
Zinc		1.00	1.04	mg/L	104	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079720

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-18
Instrument ID: PE-ICP2 Run Time: 12:55 Method: 6010B
File ID: P2.091907.125551 Analyst: KRV QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Beryllium		0.0500	0.0503	mg/L	101	90 - 110		
Calcium		10.0	10.4	mg/L	104	90 - 110		
Cobalt		0.200	0.202	mg/L	101	90 - 110		
Iron		4.00	4.11	mg/L	103	90 - 110		
Potassium		50.0	50.9	mg/L	102	90 - 110		
Magnesium		10.0	10.1	mg/L	101	90 - 110		
Sodium		50.0	50.5	mg/L	101	90 - 110		
Vanadium		1.00	0.991	mg/L	99.1	90 - 110		
Zinc		1.00	1.03	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079721

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-20
Instrument ID: PE-ICP2 Run Time: 14:14 Method: 6010B
File ID: P2.091907.141421 Analyst: KRV QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Beryllium		0.0500	0.0515	mg/L	103	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Cobalt		0.200	0.207	mg/L	104	90 - 110		
Iron		4.00	4.07	mg/L	102	90 - 110		
Potassium		50.0	51.1	mg/L	102	90 - 110		
Magnesium		10.0	10.0	mg/L	100	90 - 110		
Sodium		50.0	50.5	mg/L	101	90 - 110		
Vanadium		1.00	1.01	mg/L	101	90 - 110		
Zinc		1.00	1.06	mg/L	106	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079722

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250490-22
Instrument ID: PE-ICP2 Run Time: 15:05 Method: 6010B
File ID: P2.091907.150505 Analyst: KRV QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 19-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.4	mg/L	104	90 - 110		
Beryllium		0.0500	0.0530	mg/L	106	90 - 110		
Calcium		10.0	10.7	mg/L	107	90 - 110		
Cobalt		0.200	0.210	mg/L	105	90 - 110		
Iron		4.00	4.12	mg/L	103	90 - 110		
Potassium		50.0	51.2	mg/L	102	90 - 110		
Magnesium		10.0	10.1	mg/L	101	90 - 110		
Sodium		50.0	50.7	mg/L	101	90 - 110		
Vanadium		1.00	1.04	mg/L	104	90 - 110		
Zinc		1.00	1.09	mg/L	109	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079723

Login Number: L0709261 Run Date: 09/20/2007 Sample ID: WG250563-10
Instrument ID: PE-ICP2 Run Time: 08:51 Method: 6010B
File ID: P2.092007.085150 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 20-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Beryllium		0.0500	0.0499	mg/L	99.7	90 - 110		
Calcium		10.0	10.3	mg/L	103	90 - 110		
Cobalt		0.200	0.199	mg/L	99.3	90 - 110		
Iron		4.00	4.11	mg/L	103	90 - 110		
Potassium		50.0	49.6	mg/L	99.2	90 - 110		
Magnesium		10.0	10.1	mg/L	101	90 - 110		
Sodium		50.0	49.1	mg/L	98.1	90 - 110		
Vanadium		1.00	0.982	mg/L	98.2	90 - 110		
Zinc		1.00	1.03	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079724

Login Number: L0709261 Run Date: 09/20/2007 Sample ID: WG250563-12
Instrument ID: PE-ICP2 Run Time: 10:19 Method: 6010B
File ID: P2.092007.101914 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG250289 Cal ID: PE-ICP - 20-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Beryllium		0.0500	0.0490	mg/L	97.9	90 - 110		
Calcium		10.0	10.1	mg/L	101	90 - 110		
Cobalt		0.200	0.195	mg/L	97.3	90 - 110		
Iron		4.00	3.95	mg/L	98.7	90 - 110		
Potassium		50.0	48.9	mg/L	97.8	90 - 110		
Magnesium		10.0	9.71	mg/L	97.1	90 - 110		
Sodium		50.0	48.5	mg/L	96.9	90 - 110		
Vanadium		1.00	0.959	mg/L	95.9	90 - 110		
Zinc		1.00	1.00	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876098
Report generated 09/24/2007 11:18

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250152
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG250147-08 **File ID:** P2.091407.094001 **Units:** mg/L
Sol. AB : WG250147-09 **File ID:** P2.091407.094522

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	247	98.8	250	242	96.8	
Beryllium	NS	-0.000320	NS	0.250	0.249	99.6	
Calcium	250	254	102	250	257	103	
Cobalt	NS	0.000180	NS	0.250	0.230	92.0	
Iron	100	100	100	100	99.7	99.7	
Magnesium	250	253	101	250	251	100	
Potassium	NS	-0.0795	NS	5.00	5.18	104	
Sodium	NS	0.0299	NS	5.00	5.19	104	
Vanadium	NS	0.00636	NS	0.250	0.255	102	
Zinc	NS	0.00691	NS	0.500	0.479	95.8	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250152
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG250264-08 **File ID:** P2.091707.085757 **Units:** mg/L
Sol. AB : WG250264-09 **File ID:** P2.091707.090356

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	249	99.6	250	243	97.2	
Beryllium	NS	0.000400	NS	0.250	0.251	100	
Calcium	250	267	107	250	261	104	
Cobalt	NS	0.000460	NS	0.250	0.234	93.6	
Iron	100	98.9	98.9	100	95.5	95.5	
Magnesium	250	250	100	250	241	96.4	
Potassium	NS	-0.0657	NS	5.00	5.10	102	
Sodium	NS	0.0331	NS	5.00	5.15	103	
Vanadium	NS	-0.00407	NS	0.250	0.247	98.8	
Zinc	NS	0.00461	NS	0.500	0.485	97.0	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250289
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG250358-08 **File ID:** P2.091807.090845 **Units:** mg/L
Sol. AB : WG250358-09 **File ID:** P2.091807.091413

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	251	100	250	241	96.4	
Beryllium	NS	0.000430	NS	0.250	0.256	102	
Calcium	250	272	109	250	264	106	
Cobalt	NS	-0.000640	NS	0.250	0.236	94.4	
Iron	100	98.9	98.9	100	97.4	97.4	
Magnesium	250	251	100	250	246	98.4	
Potassium	NS	-0.0488	NS	5.00	5.06	101	
Sodium	NS	0.0385	NS	5.00	5.04	101	
Vanadium	NS	-0.00596	NS	0.250	0.249	99.6	
Zinc	NS	-0.00226	NS	0.500	0.485	97.0	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250289
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG250490-08 **File ID:** P2.091907.091659 **Units:** mg/L
Sol. AB : WG250490-09 **File ID:** P2.091907.092222

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	249	99.6	250	245	98.0	
Beryllium	NS	0.000210	NS	0.250	0.251	100	
Calcium	250	262	105	250	258	103	
Cobalt	NS	0.0000900	NS	0.250	0.233	93.2	
Iron	100	99.1	99.1	100	97.5	97.5	
Magnesium	250	250	100	250	246	98.4	
Potassium	NS	-0.0648	NS	5.00	5.24	105	
Sodium	NS	0.0292	NS	5.00	5.21	104	
Vanadium	NS	-0.00155	NS	0.250	0.248	99.2	
Zinc	NS	0.00429	NS	0.500	0.483	96.6	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250289
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG250563-08 **File ID:** P2.092007.084047 **Units:** mg/L
Sol. AB : WG250563-09 **File ID:** P2.092007.084625

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	253	101	250	244	97.6	
Beryllium	NS	0.0000600	NS	0.250	0.250	100	
Calcium	250	266	106	250	264	106	
Cobalt	NS	0.000220	NS	0.250	0.234	93.6	
Iron	100	99.8	99.8	100	97.3	97.3	
Magnesium	250	254	102	250	246	98.4	
Potassium	NS	-0.0293	NS	5.00	5.13	103	
Sodium	NS	0.0182	NS	5.00	5.06	101	
Vanadium	NS	-0.000110	NS	0.250	0.253	101	
Zinc	NS	0.00429	NS	0.500	0.486	97.2	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L0709261 **Date:** 01/08/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	396.15	0	0	0.206	0	0
ANTIMONY	206.84	0	0	-0.740	0	0
ARSENIC	188.98	0	0.0237	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	-0.000453	1.00	0	0
CALCIUM	227.55	0	-0.370	0.0414	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-0.0647
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.143	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-0.185	0	-0.231	-0.0949	-0.230
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.0416	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0.504	0	0.200	0	-0.130
ZINC	206.20	0	0	0	0	0

Login Number: L0709261 **Date:** 01/08/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	396.15	0	0.274	0	0	0
ANTIMONY	206.84	0	0	0	0	19.8
ARSENIC	188.98	0	-0.0104	-0.0875	0	-3.78
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	-0.0105
BORON	249.68	0	0.0238	50.1	3.51	1.50
CADMIUM	228.80	0	0	0	-7.33	0
CALCIUM	227.55	0	0	0	174	-21.8
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0.436
COPPER	327.39	0	-0.0137	0	0.380	-0.0467
IRON	239.56	0	0.0227	0	1.91	0.331
LEAD	220.35	0	-0.0214	0	0.666	-0.100
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.638	0	0	0
MANGANESE	257.61	-1.04	-0.0173	-0.755	-0.0418	-0.110
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0.948	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.0228	0	-0.382	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	2.97	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	-0.0233	0	0	0.297
VANADIUM	290.88	0	0.00481	0	0	0
ZINC	206.20	0	0.00300	0	0	-6.39

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 876093
Report generated 09/20/2007 11:26

Login Number: L0709261 **Date:** 01/08/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	396.15	0	0.108	0	0	0
ANTIMONY	206.84	0	0	0	0	0
ARSENIC	188.98	0	-0.115	0	0	0.0133
BARIUM	233.53	0	0.0217	0	0	0
BERYLLIUM	234.86	0	0.171	0	0	0
BORON	249.68	0	-4.09	0	0	0
CADMIUM	228.80	0	-0.00172	0	0	0
CALCIUM	227.55	-2.44	-8.15	0	0	0.104
CHROMIUM	267.72	0	-0.0115	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	-0.0550	0	0	0
IRON	239.56	0	0	0	0	0.0276
LEAD	220.35	0.341	0.0593	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.174	0	0	0
MANGANESE	257.61	-0.0457	-0.0659	-0.0181	-0.794	0.0147
MOLYBDENUM	202.03	0	-0.0342	0	11.9	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0.831	0	0	0
SELENIUM	196.03	0	-0.444	0	0	0.00120
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0.0717	-0.0541	0	0	0.00521
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	-16.4	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0.0284
VANADIUM	290.88	0	-0.0723	0	0	-0.0542
ZINC	206.20	-0.309	0.00450	0	0	0

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 876093
Report generated 09/20/2007 11:26

Login Number: L0709261 **Date:** 01/08/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	51.0	0	0	0
ANTIMONY	206.84	0	-17.4	0	0	0
ARSENIC	188.98	0	3.15	0	0	0
BARIUM	233.53	0	-0.740	0	0	0
BERYLLIUM	234.86	-0.131	-0.545	0	-0.00974	0
BORON	249.68	0	-2.08	0	0	0
CADMIUM	228.80	0	0	0	-0.0660	0
CALCIUM	227.55	0	-25.0	0	-1100	0
CHROMIUM	267.72	0.554	-0.0135	0	0	0
COBALT	228.62	0	-0.668	0	0.129	0
COPPER	327.39	0	-0.519	0	-0.0905	-0.0630
IRON	239.56	-1.38	0	0	0	0
LEAD	220.35	0.232	-2.35	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.58	0	0	0.0252
MANGANESE	257.61	0	-0.0482	-0.00916	-0.0340	-0.0413
MOLYBDENUM	202.03	-0.209	0	0	0.134	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0.0278	0	0
SELENIUM	196.03	1.11	0.199	0	-0.202	0
SILICON	251.61	0	12.9	0	0	0
SILVER	328.07	0.130	0.0781	0	0	0
SODIUM	589.59	0	0	0.181	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-1.50	0.660	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.578	0	0	0
ZINC	206.20	0	0	0	-0.244	-0.330

Login Number: L0709261 **Date:** 01/08/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	SB	SE	SI	SN	SR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	-7.64	0
ARSENIC	188.98	0	0	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	0	2.79	0	0
CHROMIUM	267.72	0	-0.0706	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	-0.117	0	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-0.0924	0	0	0
MANGANESE	257.61	-0.0505	-0.0281	-0.185	-0.0445	-0.625
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	-0.288	-0.262	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	1.61
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	-0.420	0	0	0	0

Login Number: L0709261 **Date:** 01/08/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	TI	TL	V	ZN
ALUMINUM	396.15	0	0	0	0
ANTIMONY	206.84	0	0	-3.59	0
ARSENIC	188.98	0	0	0.0930	0
BARIUM	233.53	0	0	-2.27	0
BERYLLIUM	234.86	0	0	0	0
BORON	249.68	0	0	0	0
CADMIUM	228.80	0	0	0.0980	0
CALCIUM	227.55	0	0	11.3	0
CHROMIUM	267.72	0	0	-0.605	-0.0845
COBALT	228.62	2.07	0	0	0
COPPER	327.39	-1.79	0	-0.842	-0.0613
IRON	239.56	0	0	0	0
LEAD	220.35	-0.776	0	-0.153	0
LITHIUM	670.78	0	0	0	0
MAGNESIUM	279.08	0	0	-0.0280	0
MANGANESE	257.61	-0.227	-0.0414	-0.0601	-0.0553
MOLYBDENUM	202.03	0	0	-0.288	0
NICKEL	231.60	0	0.286	0	0
POTASSIUM	766.49	0	0	0	0
SELENIUM	196.03	0	0	0.593	0
SILICON	251.61	0	0	0	0
SILVER	328.07	0	0	-6.38	0
SODIUM	589.59	0	0	0	0
STRONTIUM	407.77	0	0	0	0
THALLIUM	190.80	-10.1	0	0	0
TIN	189.93	0	0	0	0
TITANIUM	334.94	0	0	0	0
VANADIUM	290.88	0	0	0	0
ZINC	206.20	0	0	-0.100	0

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 876093
Report generated 09/20/2007 11:26

Login Number: L0709261 **Date:** 09/11/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	450.0
Antimony	10.00	36.0
Arsenic	10.00	9.0
Barium	10.00	9.0
Beryllium	10.00	1.8
Boron	10.00	18.0
Cadmium	10.00	2.7
Calcium	10.00	450.0
Chromium	10.00	45.0
Cobalt	10.00	45.0
Copper	10.00	45.0
Iron	10.00	360.0
Lead	10.00	45.0
Lithium	10.00	1.8
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	90.0
Selenium	10.00	45.0
Silicon	10.00	9.0
Silver	10.00	9.0
Sodium	10.00	180.0
Strontium	10.00	2.7
Thallium	10.00	45.0
Tin	10.00	45.0
Titanium	10.00	9.0
Vanadium	10.00	45.0
Zinc	10.00	36.0

Comments:

2.1.2 Metals ICP-MS Data

2.1.2.1 Summary Data

LABORATORY REPORT

00079739

L0709261

09/26/07 14:09

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP-46

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
46WW02-090707	L0709261-01	6020	10	13-SEP-07
46WW02-090707	L0709261-02	6020	10	13-SEP-07
46WW04-090707	L0709261-03	6020	10	13-SEP-07
46WW04-090707	L0709261-03	6020	100	13-SEP-07
46WW04-090707	L0709261-04	6020	10	13-SEP-07
46WW04-090707	L0709261-04	6020	100	13-SEP-07
LHSMW11-090707	L0709261-05	6020	10	13-SEP-07
LHSMW11-090707	L0709261-05	6020	100	13-SEP-07
LHSMW11-090707	L0709261-06	6020	10	13-SEP-07
LHSMW14-090707	L0709261-07	6020	10	13-SEP-07
LHSMW14-090707	L0709261-08	6020	10	13-SEP-07
LHSMW15-090707	L0709261-09	6020	10	13-SEP-07
LHSMW15-090707	L0709261-10	6020	10	13-SEP-07
LHSMW19-090707	L0709261-11	6020	10	13-SEP-07
LHSMW19-090707	L0709261-12	6020	10	13-SEP-07
LHSMW22-090707	L0709261-13	6020	10	13-SEP-07
LHSMW22-090707	L0709261-13	6020	100	13-SEP-07
LHSMW22-090707	L0709261-14	6020	10	13-SEP-07
LHSMW22-090707	L0709261-14	6020	100	13-SEP-07
LHSMW23-090707	L0709261-15	6020	10	13-SEP-07
LHSMW23-090707	L0709261-16	6020	10	13-SEP-07
LHSMW24-090707	L0709261-17	6020	10	13-SEP-07
LHSMW24-090707	L0709261-18	6020	10	13-SEP-07
LHSMW24-090707-FD	L0709261-19	6020	10	13-SEP-07
LHSMW24-090707-FD	L0709261-20	6020	10	13-SEP-07
PRSB01 (9-10)	L0709261-21	6020	1	13-SEP-07
PRSB01 (14-15)	L0709261-22	6020	1	13-SEP-07
PRSB01 (19-20)	L0709261-23	6020	1	13-SEP-07

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079740

Sample Number: **L0709261-01**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/07/2007 08:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 12:11**
File ID: **EL.091707.121144**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2		U	0.0100	0.00250
Barium, Total	7440-39-3	0.0219	J	0.0300	0.00500
Cadmium, Total	7440-43-9	0.00193	J	0.00500	0.00125
Chromium, Total	7440-47-3	0.00887	J	0.0200	0.00500
Copper, Total	7440-50-8	0.00550	J	0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Manganese, Total	7439-96-5	0.178		0.0200	0.00500
Nickel, Total	7440-02-0	0.0616		0.0400	0.0100
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2		U	0.0100	0.00500
Thallium, Total	7440-28-0	0.00388		0.00200	0.000500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079741

Sample Number: **L0709261-02**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/07/2007 08:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 11:20**
File ID: **EL.091907.112027**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2		U	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0195	J	0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3		U	0.0200	0.00500
Copper, Dissolved	7440-50-8		U	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	0.148		0.0200	0.00500
Nickel, Dissolved	7440-02-0	0.0586		0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2		U	0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00348		0.00200	0.000500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079742

Sample Number: **L0709261-03**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/07/2007 10:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 12:18**
File ID: **EL.091707.121816**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2	0.00287	J	0.0100	0.00250
Barium, Total	7440-39-3	0.0296	J	0.0300	0.00500
Cadmium, Total	7440-43-9		U	0.00500	0.00125
Chromium, Total	7440-47-3	0.509		0.0200	0.00500
Copper, Total	7440-50-8	0.0137	J	0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2	0.00921	J	0.0100	0.00500
Thallium, Total	7440-28-0	0.00761		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079743

Sample Number: **L0709261-03**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/07/2007 10:10**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **100**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 14:36**
File ID: **EL.091707.143654**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Manganese, Total	**7439-96-5**	**3.44**		**0.200**	**0.0500**
Nickel, Total	**7440-02-0**	**3.04**		**0.400**	**0.100**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079744

Sample Number: **L0709261-04**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/07/2007 10:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 11:40**
File ID: **EL.091907.114000**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2		U	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0356		0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.0128	J	0.0200	0.00500
Copper, Dissolved	7440-50-8		U	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2	0.00561	J	0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00905		0.00200	0.000500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079745

Sample Number: **L0709261-04**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/07/2007 10:10**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **100**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 13:05**
File ID: **EL.091907.130515**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Manganese, Dissolved	**7439-96-5**	**2.95**		**0.200**	**0.0500**
Nickel, Dissolved	**7440-02-0**	**3.03**		**0.400**	**0.100**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079746

Sample Number: **L0709261-05**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/07/2007 12:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 12:24**
File ID: **EL.091707.122448**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2	0.00531	J	0.0100	0.00250
Barium, Total	7440-39-3	0.0495		0.0300	0.00500
Cadmium, Total	7440-43-9		U	0.00500	0.00125
Chromium, Total	7440-47-3	1.02		0.0200	0.00500
Copper, Total	7440-50-8	0.0287		0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2	0.0187		0.0100	0.00500
Thallium, Total	7440-28-0	0.00854		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079747

Sample Number: **L0709261-05**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/07/2007 12:20**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **100**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 14:43**
File ID: **EL.091707.144326**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Manganese, Total	**7439-96-5**	**1.38**		**0.200**	**0.0500**
Nickel, Total	**7440-02-0**	**2.07**		**0.400**	**0.100**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079748

Sample Number: **L0709261-06**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/07/2007 12:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 11:46**
File ID: **EL.091907.114632**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2	0.00335	J	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0514		0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.00949	J	0.0200	0.00500
Copper, Dissolved	7440-50-8	0.00542	J	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	1.06		0.0200	0.00500
Nickel, Dissolved	7440-02-0	1.67		0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2	0.0136		0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.0101		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-07**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/10/2007 13:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 12:57**
File ID: **EL.091707.125749**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2		U	0.0100	0.00250
Barium, Total	7440-39-3	0.0449		0.0300	0.00500
Cadmium, Total	7440-43-9		U	0.00500	0.00125
Chromium, Total	7440-47-3	0.0627		0.0200	0.00500
Copper, Total	7440-50-8		U	0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Manganese, Total	7439-96-5	0.0237		0.0200	0.00500
Nickel, Total	7440-02-0	0.0135	J	0.0400	0.0100
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2		U	0.0100	0.00500
Thallium, Total	7440-28-0		U	0.00200	0.000500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-08**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/10/2007 13:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 11:53**
File ID: **EL.091907.115304**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2		U	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0114	J	0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.00526	J	0.0200	0.00500
Copper, Dissolved	7440-50-8		U	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	0.0150	J	0.0200	0.00500
Nickel, Dissolved	7440-02-0	0.0174	J	0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2		U	0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00428		0.00200	0.000500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-09**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/10/2007 15:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 13:04**
File ID: **EL.091707.130422**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2	0.00620	J	0.0100	0.00250
Barium, Total	7440-39-3	0.0174	J	0.0300	0.00500
Cadmium, Total	7440-43-9	0.00193	J	0.00500	0.00125
Chromium, Total	7440-47-3	0.902		0.0200	0.00500
Copper, Total	7440-50-8	0.0464		0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Manganese, Total	7439-96-5	0.186		0.0200	0.00500
Nickel, Total	7440-02-0	0.626		0.0400	0.0100
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2	0.0227		0.0100	0.00500
Thallium, Total	7440-28-0	0.00492		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-10**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/10/2007 15:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 12:26**
File ID: **EL.091907.122605**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2	0.00618	J	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0267	J	0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.0576		0.0200	0.00500
Copper, Dissolved	7440-50-8	0.0169	J	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	0.0937		0.0200	0.00500
Nickel, Dissolved	7440-02-0	0.602		0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2	0.0208		0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00621		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079753

Sample Number: **L0709261-11**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/11/2007 08:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 13:10**
File ID: **EL.091707.131054**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2		U	0.0100	0.00250
Barium, Total	7440-39-3	0.0316		0.0300	0.00500
Cadmium, Total	7440-43-9		U	0.00500	0.00125
Chromium, Total	7440-47-3	0.0164	J	0.0200	0.00500
Copper, Total	7440-50-8		U	0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Manganese, Total	7439-96-5	0.0635		0.0200	0.00500
Nickel, Total	7440-02-0	0.0758		0.0400	0.0100
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2		U	0.0100	0.00500
Thallium, Total	7440-28-0	0.00194	J	0.00200	0.000500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-12**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/11/2007 08:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 12:32**
File ID: **EL.091907.123238**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2		U	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0301		0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3		U	0.0200	0.00500
Copper, Dissolved	7440-50-8		U	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	0.0474		0.0200	0.00500
Nickel, Dissolved	7440-02-0	0.0704		0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2		U	0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00334		0.00200	0.000500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079755

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 13:17**
File ID: **EL.091707.131725**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2	0.00485	J	0.0100	0.00250
Barium, Total	7440-39-3	0.0166	J	0.0300	0.00500
Cadmium, Total	7440-43-9	0.00391	J	0.00500	0.00125
Chromium, Total	7440-47-3	0.0316		0.0200	0.00500
Copper, Total	7440-50-8	0.0462		0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2	0.0177		0.0100	0.00500
Thallium, Total	7440-28-0	0.00561		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079756

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **100**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 15:03**
File ID: **EL.091707.150303**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Manganese, Total	**7439-96-5**	**3.79**		**0.200**	**0.0500**
Nickel, Total	**7440-02-0**	**3.49**		**0.400**	**0.100**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079757

Sample Number: **L0709261-14**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 12:39**
File ID: **EL.091907.123910**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2	0.00680	J	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0268	J	0.0300	0.00500
Cadmium, Dissolved	7440-43-9	0.00239	J	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.0122	J	0.0200	0.00500
Copper, Dissolved	7440-50-8	0.0491		0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2	0.0257		0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00623		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-14**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/11/2007 09:50**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **100**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 13:11**
File ID: **EL.091907.131146**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Manganese, Dissolved	**7439-96-5**	**3.62**		**0.200**	**0.0500**
Nickel, Dissolved	**7440-02-0**	**3.67**		**0.400**	**0.100**

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-15**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/11/2007 13:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 13:23**
File ID: **EL.091707.132356**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2	0.00405	J	0.0100	0.00250
Barium, Total	7440-39-3	0.0229	J	0.0300	0.00500
Cadmium, Total	7440-43-9		U	0.00500	0.00125
Chromium, Total	7440-47-3	0.923		0.0200	0.00500
Copper, Total	7440-50-8	0.00640	J	0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Manganese, Total	7439-96-5	1.59		0.0200	0.00500
Nickel, Total	7440-02-0	0.0604		0.0400	0.0100
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2	0.0166		0.0100	0.00500
Thallium, Total	7440-28-0	0.00504		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-16**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/11/2007 13:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 12:45**
File ID: **EL.091907.124541**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2	0.00522	J	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0302		0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.0197	J	0.0200	0.00500
Copper, Dissolved	7440-50-8		U	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	1.36		0.0200	0.00500
Nickel, Dissolved	7440-02-0	0.0521		0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2	0.0223		0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00557		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-17**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 13:30**
File ID: **EL.091707.133027**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2	0.00569	J	0.0100	0.00250
Barium, Total	7440-39-3	0.0325		0.0300	0.00500
Cadmium, Total	7440-43-9		U	0.00500	0.00125
Chromium, Total	7440-47-3	0.0582		0.0200	0.00500
Copper, Total	7440-50-8	0.0104	J	0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Manganese, Total	7439-96-5	0.153		0.0200	0.00500
Nickel, Total	7440-02-0	0.0644		0.0400	0.0100
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2	0.0264		0.0100	0.00500
Thallium, Total	7440-28-0	0.00529		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-18**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 12:52**
File ID: **EL.091907.125212**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2	0.00759	J	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0369		0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.0152	J	0.0200	0.00500
Copper, Dissolved	7440-50-8	0.00798	J	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	0.128		0.0200	0.00500
Nickel, Dissolved	7440-02-0	0.0944		0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2	0.0270		0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00543		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079763

Sample Number: **L0709261-19**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250211**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 10:39**
Run Date: **09/17/2007 13:36**
File ID: **EL.091707.133659**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Total	7440-22-4		U	0.0100	0.00250
Arsenic, Total	7440-38-2	0.00871	J	0.0100	0.00250
Barium, Total	7440-39-3	0.0300		0.0300	0.00500
Cadmium, Total	7440-43-9		U	0.00500	0.00125
Chromium, Total	7440-47-3	0.0542		0.0200	0.00500
Copper, Total	7440-50-8	0.00989	J	0.0200	0.00500
Lead, Total	7439-92-1		U	0.00500	0.00250
Manganese, Total	7439-96-5	0.128		0.0200	0.00500
Nickel, Total	7440-02-0	0.0584		0.0400	0.0100
Antimony, Total	7440-36-0		U	0.0100	0.00250
Selenium, Total	7782-49-2	0.0340		0.0100	0.00500
Thallium, Total	7440-28-0	0.00522		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-20**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250414**
Collect Date: **09/11/2007 15:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **09/18/2007 10:00**
Cal Date: **09/19/2007 10:07**
Run Date: **09/19/2007 12:58**
File ID: **EL.091907.125843**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Silver, Dissolved	7440-22-4		U	0.0100	0.00250
Arsenic, Dissolved	7440-38-2	0.00608	J	0.0100	0.00250
Barium, Dissolved	7440-39-3	0.0372		0.0300	0.00500
Cadmium, Dissolved	7440-43-9		U	0.00500	0.00125
Chromium, Dissolved	7440-47-3	0.0153	J	0.0200	0.00500
Copper, Dissolved	7440-50-8	0.00727	J	0.0200	0.00500
Lead, Dissolved	7439-92-1		U	0.00500	0.00250
Manganese, Dissolved	7439-96-5	0.133		0.0200	0.00500
Nickel, Dissolved	7440-02-0	0.0690		0.0400	0.0100
Antimony, Dissolved	7440-36-0		U	0.0100	0.00250
Selenium, Dissolved	7782-49-2	0.0202		0.0100	0.00500
Thallium, Dissolved	7440-28-0	0.00518		0.00200	0.000500

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079765

Sample Number: **L0709261-21**
Client ID: **PRSB01 (9-10)**
Matrix: **Soil**
Workgroup Number: **WG250151**
Collect Date: **09/07/2007 00:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **1**
Units: **mg/kg**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 09:30**
Cal Date: **09/14/2007 10:00**
Run Date: **09/14/2007 15:18**
File ID: **EL.091407.151815**
Percent Solid: **72.7**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Lead, Total	7439-92-1	11.4		0.275	0.137

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079766

Sample Number: **L0709261-22**
Client ID: **PRSB01 (14-15)**
Matrix: **Soil**
Workgroup Number: **WG250151**
Collect Date: **09/07/2007 00:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **1**
Units: **mg/kg**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 09:30**
Cal Date: **09/14/2007 10:00**
Run Date: **09/14/2007 15:24**
File ID: **EL.091407.152448**
Percent Solid: **78.2**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Lead, Total	7439-92-1	11.1		0.256	0.128

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079767

Sample Number: **L0709261-23**
Client ID: **PRSB01 (19-20)**
Matrix: **Soil**
Workgroup Number: **WG250151**
Collect Date: **09/07/2007 00:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **1**
Units: **mg/kg**

Instrument: **ELAN-ICP**
Prep Date: **09/14/2007 09:30**
Cal Date: **09/14/2007 10:00**
Run Date: **09/14/2007 15:31**
File ID: **EL.091407.153121**
Percent Solid: **79.1**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Lead, Total	**7439-92-1**	**7.59**		**0.250**	**0.125**

2.1.2.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer ELAN 6100

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	100
Vi = Initial volume	40
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/L)	0.25

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	200
Vi = Initial volume	0.5
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/kg)	40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	40
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	50

50 ug/kg = 0.050 mg/kg

Perkin Elmer ELAN ICP/MS

STANDARDS KEY

QC Std 1 - ICV
QC Std 2 - ICB
QC Std 3 - CRI - Soil
QC Std 4 - CRI - Water
QC Std 5 - ICSA
QC Std 6 - ICSAB
QC Std 7 - CCV
QC Std 8 - CCB

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.0004	0.05	0.1
Sb	10	0	0.0004	0.05	0.1
As	10	0	0.0004	0.05	0.1
Ba	10	0	0.0004	0.05	0.1
Be	10	0	0.0004	0.05	0.1
Ca	1000	0	0.04	5	10
Cd	10	0	0.0004	0.05	0.1
Cr	10	0	0.0004	0.05	0.1
Co	10	0	0.0004	0.05	0.1
Cu	10	0	0.0004	0.05	0.1
Fe	1000	0	0.04	5	10
Pb	10	0	0.0004	0.05	0.1
Mg	1000	0	0.04	5	10
Mn	10	0	0.0004	0.05	0.1
Ni	10	0	0.0004	0.05	0.1
K	1000	0	0.04	5	10
Se	10	0	0.0004	0.05	0.1
Ag	10	0	0.0004	0.05	0.1
Na	1000	0	0.04	5	10
Tl	10	0	0.0004	0.05	0.1
V	10	0	0.0004	0.05	0.1
Zn	10	0	0.0004	0.05	0.1

KEMRON ENVIRONMENTAL SERVICES

Microwave Digestion Log

Analyst(s): VC
Date: 9/18/07 10:00
LCS: .25mL STD 21717
MS/MSD: .25mL STD 21717
Witness:
HNO_3 Lot #: 60A125K
HCl Lot #:
Digest Tube Lot #: 60A124.0
Earliest Sample Due Date: 9/24
Microwave # MW2

Box: 50
Digestion Work Group: WG 250364 1272134

ME407 Revision # 8 Method 3015-Water
ME406 Revision # _____ Method 3051-Soil-Oil

Relinquished By: VC
Digest Received By: ED Date: 09-18-07

	KEMRON #	Initial Wt/Vol	Final Volume	Initial Weight	Final Weight	Comments	Due Date
1	PBW	40mL	100mL	20624	20622	02	
2	LCS			20624	20623	03	
3	09.26/02			26855	26854	CAB Filtered 01	9/24
4	02MS			26755	26754	04	
5	02MSD			28832	28831	05	
6	04			20750	20749		
7	06			20463	20462		
8	08			20854	20851		
9	10			28821	28820		
10	12			20733	20731		
11	14			26530	26528		
12	16			28962	26749		
13	18			20722	20720		
14	20			20915	20913		
15	~~312.01~~			28860	26749	NPDES 02 9/18/07	9/25
16	VC 9/18/07 01			28827	28824		
17	02			20782	20780		
18	03			20546	20544		
19	04			26789	26785		
20	335.01			20777	20764		9/28
21	336.01			20615	20609		9/28
22	03			20641	20659		
23	05			28816	28805		
24	348.03 *			20968	20806		9/24
25	349.02 *			20631	20630		9/24
26			VC 9/18/07				
27							
28							
29							
30							

Comments: 312's cancelled * level 4

Primary Review: Vicki Cullen 9/19/07 Secondary Review: 9/18/07

KEMRON ENVIRONMENTAL SERVICES

Microwave Digestion Log

Analyst(s): VC
Date: 9/14/07 09:30
LCS: 65 MCSTD 2177
MS/MSD: 65 MC STD 2177
Witness:
HNO_3 Lot #: 09125K
HCl Lot #:
Digest Tube Lot #: 60AD521
Earliest Sample Due Date: 9/18
Microwave # MW2

Box: 74

Digestion Work Group: WG 250137

ME407 Revision # ____ Method 3015-Water
ME406 Revision # 8 Method 3051-Soil-Oil

Relinquished By: VC
Digest Received By: EQ Date: 09-14-07

	KEMRON #	Initial Wt/Vol	Final Volume	Initial Weight	Final Weight	Comments	Due Date
1	PBS	6.500g	200mL	17.51g	17.55g	02	
2	LCS	↓		17.575	17.574	03	
3	09-200-01 *	0.528		17.497	17.498		9/18 9/21 VC 9/14/07
4	261-21	0.500		17.595	17.596		9/24
5	22	6.520		17.445	17.445		
6	23	6.505		17.412	17.412		
7	297.62 *	6.520		17.369	17.367	01	9/18
8	02 MS	6.500		17.433	17.437	04	
9	02 MSD	6.520		17.461	17.461	05	
10							
11							
12							
13							
14							
15							
16							
17							
18				VC 9/14/07			
19							
20							
21							
22							
23							
24							
25							
26							
27							
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29							
30							

Comments: * Level 4

Primary Review: Vicki Kelly 9/14/07 Secondary Review: 9/24/07

KEMRON ENVIRONMENTAL SERVICES

Microwave Digestion Log

Analyst(s): VC
Date: 9/14/07 830
LCS: .25 mL STD 21717
MS/MSD: .25 mL STD 21717
Witness: ///
HNO_3 Lot #: C09 12569
HCl Lot #:
Digest Tube Lot #: C09 12521
Earliest Sample Due Date: 9/21
Microwave # MW2

Box: 49

Digestion Work Group: WG 252135

ME407 Revision # 8 Method 3015-Water
ME406 Revision # ____ Method 3051-Soil-Oil

Relinquished By: VC
Digest Received By: Ed Date: 09-14-07

	KEMRON #	Initial Wt/Vol	Final Volume	Initial Weight	Final Weight	Comments	Due Date
1	PBW 24	40 mL	100 mL	20596	20555	02	
2	LCS			20584	20583	03	
3	09-251-01 A			20730	20729	01	9/21
4	01MS			20809	20807	04	
5	01MSD			20708	20705	05	
6	03			20831	20830		
7	05			20474	20472		
8	07			20753	20750		
9	261-01			20835	20834		9/24
10	03			20721	20719		
11	05			20814	20811		
12	07			20656	20655		
13	09			20857	20856		
14	11			20831	20830		
15	13			20854	20853		
16	15			20957	20957		
17	17			20836	20834		
18	19			20789	20788		
19							
20							
21							
22							
23							
24							
25							
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27							
28							
29							
30							

VC 9/14/07

Comments: A level 4

Primary Review: Vicki Collins 9/14/07 Secondary Review: 9/14/07

KEMRON Environmental Services

Instrument Run Log

Instrument: ELAN-ICP Dataset: 091407A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 4
Maintenance Log ID: 19692

Calibration Std: STD21454 ICV/CCV Std: STD21292 Post Spike: STD15023
ICSA: STD21316 ICSAB: STD21317

Workgroups: 249702,249620,250151

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	EL.091407.093401	Blank	Blank		1		09/14/07 09:34
2	EL.091407.094031	WG250165-01	Calibration Point		1		09/14/07 09:40
3	EL.091407.094701	WG250165-02	Calibration Point		1		09/14/07 09:47
4	EL.091407.095332	WG250165-03	Calibration Point		1		09/14/07 09:53
5	EL.091407.100004	WG250165-04	Calibration Point		1		09/14/07 10:00
6	EL.091407.100637	WG250165-05	Initial Calibration Verification		1		09/14/07 10:06
7	EL.091407.101319	WG250165-06	Initial Calib Blank		1		09/14/07 10:13
8	EL.091407.102001	WG250165-07	CRQL Check Solid		1		09/14/07 10:20
9	EL.091407.102638	WG250165-08	CRQL Check Water		1		09/14/07 10:26
10	EL.091407.103313	WG250165-09	Interference Check		1		09/14/07 10:33
11	EL.091407.103947	WG250165-10	Interference Check		1		09/14/07 10:39
12	EL.091407.104620	WG250165-11	CCV		1		09/14/07 10:46
13	EL.091407.105302	WG250165-12	CCB		1		09/14/07 10:53
14	EL.091407.105942	IDL1	IDL1		1		09/14/07 10:59
15	EL.091407.110612	IDL2	IDL2		1		09/14/07 11:06
16	EL.091407.111243	IDL3	IDL3		1		09/14/07 11:12
17	EL.091407.111914	IDL4	IDL4		1		09/14/07 11:19
18	EL.091407.112545	IDL5	IDL5		1		09/14/07 11:25
19	EL.091407.113216	IDL6	IDL6		1		09/14/07 11:32
20	EL.091407.113847	IDL7	IDL7		1		09/14/07 11:38
21	EL.091407.114520	WG250165-13	CCV		1		09/14/07 11:45
22	EL.091407.115201	WG250165-14	CCB		1		09/14/07 11:52
23	EL.091407.115843	L0708740-01	MDL-1	.5/200	1		09/14/07 11:58
24	EL.091407.120515	L0708740-02	MDL-2	.5/200	1		09/14/07 12:05
25	EL.091407.121148	L0708740-03	MDL-3	.5/200	1		09/14/07 12:11
26	EL.091407.121821	L0708740-04	MDL-4	.5/200	1		09/14/07 12:18
27	EL.091407.122454	L0708740-05	MDL-5	.5/200	1		09/14/07 12:24
28	EL.091407.123126	L0708740-06	MDL-6	.5/200	1		09/14/07 12:31
29	EL.091407.123757	L0708740-07	MDL-7	.5/200	1		09/14/07 12:37
30	EL.091407.124429	WG250165-15	CCV		1		09/14/07 12:44
31	EL.091407.125110	WG250165-16	CCB		1		09/14/07 12:51
32	EL.091407.125751	L0708333-01	MDL1	40/100	1		09/14/07 12:57
33	EL.091407.130422	L0708333-02	MDL2	40/100	1		09/14/07 13:04
34	EL.091407.131054	L0708333-03	MDL3	40/100	1		09/14/07 13:10
35	EL.091407.131726	L0708333-04	MDL4	40/100	1		09/14/07 13:17
36	EL.091407.132358	L0708333-05	MDL5	40/100	1		09/14/07 13:23
37	EL.091407.133030	L0708333-06	MDL6	40/100	1		09/14/07 13:30

Page: 1

Approved: September 19, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: ELAN-ICP Dataset: 091407A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 4
Maintenance Log ID: 19692

Calibration Std: STD21454 ICV/CCV Std: STD21292 Post Spike: STD15023
ICSA: STD21316 ICSAB: STD21317

Workgroups: 249702,249620,250151

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	EL.091407.133704	L0708333-07	MDL7	40/100	1		09/14/07 13:37
39	EL.091407.134336	WG250165-17	CCV		1		09/14/07 13:43
40	EL.091407.135018	WG250165-18	CCB		1		09/14/07 13:50
41	EL.091407.141242	WG250137-02	Method/Prep Blank	.5/200	1		09/14/07 14:12
42	EL.091407.141912	WG250137-03	Laboratory Control S	.5/200	1		09/14/07 14:19
43	EL.091407.142543	WG250137-01	Reference Sample		1	L0709297-02	09/14/07 14:25
44	EL.091407.143213	WG250137-04	Matrix Spike	.5/200	1		09/14/07 14:32
45	EL.091407.143844	WG250137-05	Matrix Spike Duplica	.5/200	1		09/14/07 14:38
46	EL.091407.144516	L0709200-01	NR-12-109-110/113	.528/200	1		09/14/07 14:45
47	EL.091407.145147	WG250151-01	Post Digestion Spike		1	L0709200-01	09/14/07 14:51
48	EL.091407.145820	WG250151-02	Serial Dilution		5	L0709200-01	09/14/07 14:58
49	EL.091407.150452	WG250165-19	CCV		1		09/14/07 15:04
50	EL.091407.151134	WG250165-20	CCB		1		09/14/07 15:11
51	EL.091407.151815	L0709261-21	PRSB01 (9-10)	.5/200	1		09/14/07 15:18
52	EL.091407.152448	L0709261-22	PRSB01 (14-15)	.5/200	1		09/14/07 15:24
53	EL.091407.153121	L0709261-23	PRSB01 (19-20)	.505/200	1		09/14/07 15:31
54	EL.091407.153754	WG250165-21	CCV		1		09/14/07 15:37
55	EL.091407.154435	WG250165-22	CCB		1		09/14/07 15:44

Approved: September 19, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: ELAN-ICP Dataset: 091707A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 4
Maintenance Log ID: 19692

Calibration Std: STD21454 ICV/CCV Std: STD21292 Post Spike: STD15023
ICSA: STD21316 ICSAB: STD21317

Workgroups: 250211

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	EL.091707.101329	Blank	Blank		1		09/17/07 10:13
2	EL.091707.102000	WG250301-01	Calibration Point		1		09/17/07 10:20
3	EL.091707.102630	WG250301-02	Calibration Point		1		09/17/07 10:26
4	EL.091707.103301	WG250301-03	Calibration Point		1		09/17/07 10:33
5	EL.091707.103933	WG250301-04	Calibration Point		1		09/17/07 10:39
6	EL.091707.104606	WG250301-05	Initial Calibration Verification		1		09/17/07 10:46
7	EL.091707.105247	WG250301-06	Initial Calib Blank		1		09/17/07 10:52
8	EL.091707.105930	WG250301-07	CRQL Check Solid		1		09/17/07 10:59
9	EL.091707.110606	WG250301-08	CRQL Check Water		1		09/17/07 11:06
10	EL.091707.111241	WG250301-09	Interference Check		1		09/17/07 11:12
11	EL.091707.111915	WG250301-10	Interference Check		1		09/17/07 11:19
12	EL.091707.112549	WG250301-11	CCV		1		09/17/07 11:25
13	EL.091707.113230	WG250301-12	CCB		1		09/17/07 11:32
14	EL.091707.113910	WG250135-02	Method/Prep Blank	40/100	1		09/17/07 11:39
15	EL.091707.114540	WG250135-03	Laboratory Control S	40/100	1		09/17/07 11:45
16	EL.091707.115211	WG250135-01	Reference Sample		1	L0709251-01	09/17/07 11:52
17	EL.091707.115841	WG250135-04	Matrix Spike	40/100	1		09/17/07 11:58
18	EL.091707.120512	WG250135-05	Matrix Spike Duplica	40/100	1		09/17/07 12:05
19	EL.091707.121144	L0709261-01	46WW02-090707	40/100	10		09/17/07 12:11
20	EL.091707.121816	L0709261-03	46WW04-090707	40/100	10	WG250098-01	09/17/07 12:18
21	EL.091707.122448	L0709261-05	LHSMW11-090707	40/100	10		09/17/07 12:24
22	EL.091707.123120	WG250211-01	Post Digestion Spike		10	L0709261-05	09/17/07 12:31
23	EL.091707.123753	WG250211-02	Serial Dilution		50	L0709261-05	09/17/07 12:37
24	EL.091707.124426	WG250301-13	CCV		1		09/17/07 12:44
25	EL.091707.125107	WG250301-14	CCB		1		09/17/07 12:51
26	EL.091707.125749	L0709261-07	LHSMW14-090707	40/100	10	WG250078-04	09/17/07 12:57
27	EL.091707.130422	L0709261-09	LHSMW15-090707	40/100	10		09/17/07 13:04
28	EL.091707.131054	L0709261-11	LHSMW19-090707	40/100	10		09/17/07 13:10
29	EL.091707.131725	L0709261-13	LHSMW22-090707	40/100	10		09/17/07 13:17
30	EL.091707.132356	L0709261-15	LHSMW23-090707	40/100	10		09/17/07 13:23
31	EL.091707.133027	L0709261-17	LHSMW24-090707	40/100	10		09/17/07 13:30
32	EL.091707.133659	L0709261-19	LHSMW24-090707-FD	40/100	10		09/17/07 13:36
33	EL.091707.134329	WG250135-01	Reference Sample		10	L0709251-01	09/17/07 13:43
34	EL.091707.135000	WG250135-04	Matrix Spike	40/100	10		09/17/07 13:50
35	EL.091707.135631	WG250135-05	Matrix Spike Duplica	40/100	10		09/17/07 13:56
36	EL.091707.140303	WG250301-15	CCV		1		09/17/07 14:03
37	EL.091707.140945	WG250301-16	CCB		1		09/17/07 14:09

Page: 1

Approved: September 18, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: ELAN-ICP Dataset: 091707A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 4
Maintenance Log ID: 19692

Calibration Std: STD21454 ICV/CCV Std: STD21292 Post Spike: STD15023
ICSA: STD21316 ICSAB: STD21317

Workgroups: 250211

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	EL.091707.141625	L0709251-03	MW-03-09	40/100	1	WG250205-04	09/17/07 14:16
39	EL.091707.142257	L0709251-05	EQUIP BLANK	40/100	1		09/17/07 14:22
40	EL.091707.142930	L0709251-07	MW-03-11	40/100	1		09/17/07 14:29
41	EL.091707.143654	L0709261-03	46WW04-090707	40/100	100	WG250098-01	09/17/07 14:36
42	EL.091707.144326	L0709261-05	LHSMW11-090707	40/100	100		09/17/07 14:43
43	EL.091707.144958	WG250211-01	Post Digestion Spike		100	L0709261-05	09/17/07 14:49
44	EL.091707.145631	WG250211-02	Serial Dilution		500	L0709261-05	09/17/07 14:56
45	EL.091707.150303	L0709261-13	LHSMW22-090707	40/100	100		09/17/07 15:03
46	EL.091707.150934	WG250301-17	CCV		1		09/17/07 15:09
47	EL.091707.151616	WG250301-18	CCB		1		09/17/07 15:16
48	EL.091707.152257	IDL1	IDL1		1		09/17/07 15:22
49	EL.091707.152930	IDL2	IDL2		1		09/17/07 15:29
50	EL.091707.153604	IDL3	IDL3		1		09/17/07 15:36
51	EL.091707.154238	IDL4	IDL4		1		09/17/07 15:42
52	EL.091707.154910	IDL5	IDL5		1		09/17/07 15:49
53	EL.091707.155541	IDL6	IDL6		1		09/17/07 15:55
54	EL.091707.160212	IDL7	IDL7		1		09/17/07 16:02
55	EL.091707.160844	WG250301-19	CCV		1		09/17/07 16:08
56	EL.091707.161526	WG250301-20	CCB		1		09/17/07 16:15

Approved: September 18, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: ELAN-ICP Dataset: 091907A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 4
Maintenance Log ID: 19692

Calibration Std: STD21454 ICV/CCV Std: STD21905 Post Spike: STD21680
ICSA: STD21872 ICSAB: STD21873

Workgroups: 250414,250504

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	EL.091907.094145	Blank	Blank		1		09/19/07 09:41
2	EL.091907.094815	WG250498-01	Calibration Point		1		09/19/07 09:48
3	EL.091907.095446	WG250498-02	Calibration Point		1		09/19/07 09:54
4	EL.091907.100117	WG250498-03	Calibration Point		1		09/19/07 10:01
5	EL.091907.100749	WG250498-04	Calibration Point		1		09/19/07 10:07
6	EL.091907.101422	WG250498-05	Initial Calibration Verification		1		09/19/07 10:14
7	EL.091907.102103	WG250498-06	Initial Calib Blank		1		09/19/07 10:21
8	EL.091907.102746	WG250498-07	CRQL Check Solid		1		09/19/07 10:27
9	EL.091907.103422	WG250498-08	CRQL Check Water		1		09/19/07 10:34
10	EL.091907.104057	WG250498-09	Interference Check		1		09/19/07 10:40
11	EL.091907.104731	WG250498-10	Interference Check		1		09/19/07 10:47
12	EL.091907.105405	WG250498-11	CCV		1		09/19/07 10:54
13	EL.091907.110046	WG250498-12	CCB		1		09/19/07 11:00
14	EL.091907.110726	WG250364-02	Method/Prep Blank	40/100	1		09/19/07 11:07
15	EL.091907.111356	WG250364-03	Laboratory Control S	40/100	1		09/19/07 11:13
16	EL.091907.112027	WG250364-01	Reference Sample		10	L0709261-02	09/19/07 11:20
17	EL.091907.112657	WG250364-04	Matrix Spike	40/100	10		09/19/07 11:26
18	EL.091907.113328	WG250364-05	Matrix Spike Duplica	40/100	10		09/19/07 11:33
19	EL.091907.114000	L0709261-04	46WW04-090707	40/100	10	WG250200-01	09/19/07 11:40
20	EL.091907.114632	L0709261-06	LHSMW11-090707	40/100	10		09/19/07 11:46
21	EL.091907.115304	L0709261-08	LHSMW14-090707	40/100	10		09/19/07 11:53
22	EL.091907.115936	WG250414-01	Post Digestion Spike		10	L0709261-08	09/19/07 11:59
23	EL.091907.120609	WG250414-02	Serial Dilution		50	L0709261-08	09/19/07 12:06
24	EL.091907.121242	WG250498-13	CCV		1		09/19/07 12:12
25	EL.091907.121923	WG250498-14	CCB		1		09/19/07 12:19
26	EL.091907.122605	L0709261-10	LHSMW15-090707	40/100	10		09/19/07 12:26
27	EL.091907.123238	L0709261-12	LHSMW19-090707	40/100	10		09/19/07 12:32
28	EL.091907.123910	L0709261-14	LHSMW22-090707	40/100	10		09/19/07 12:39
29	EL.091907.124541	L0709261-16	LHSMW23-090707	40/100	10		09/19/07 12:45
30	EL.091907.125212	L0709261-18	LHSMW24-090707	40/100	10		09/19/07 12:52
31	EL.091907.125843	L0709261-20	LHSMW24-090707-FD	40/100	10		09/19/07 12:58
32	EL.091907.130515	L0709261-04	46WW04-090707	40/100	100	WG250200-01	09/19/07 13:05
33	EL.091907.131146	L0709261-14	LHSMW22-090707	40/100	100		09/19/07 13:11
34	EL.091907.131817	WG250498-15	CCV		1		09/19/07 13:18
35	EL.091907.132459	WG250498-16	CCB		1		09/19/07 13:24
36	EL.091907.133243	L0709335-01	EOL-01	40/100	5	WG250368-04	09/19/07 13:32
37	EL.091907.133915	L0709336-01	OHD-01	40/100	5	WG250228-04	09/19/07 13:39

Approved: September 20, 2007

Sheri L. Blakeslee

KEMRON Environmental Services

Instrument Run Log

Instrument: ELAN-ICP Dataset: 091907A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 4
Maintenance Log ID: 19692

Calibration Std: STD21454 ICV/CCV Std: STD21905 Post Spike: STD21680
ICSA: STD21872 ICSAB: STD21873

Workgroups: 250414,250504

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	EL.091907.134547	L0709336-03	OHD-01D	40/100	5		09/19/07 13:45
39	EL.091907.135220	L0709336-05	OHD-02	40/100	5		09/19/07 13:52
40	EL.091907.135853	L0709348-03	AV-NCB-EB-1-091407	40/100	1		09/19/07 13:58
41	EL.091907.140526	L0709349-02	AV-OU10-EB-1-091407	40/100	1		09/19/07 14:05
42	EL.091907.141159	WG250498-17	CCV		1		09/19/07 14:11
43	EL.091907.141841	WG250498-18	CCB		1		09/19/07 14:18
44	EL.091907.150546	WG250468-02	Method/Prep Blank	.5/200	1		09/19/07 15:05
45	EL.091907.151216	WG250468-03	Laboratory Control S	.5/200	1		09/19/07 15:12
46	EL.091907.151847	WG250468-01	Reference Sample		1	L0709122-01	09/19/07 15:18
47	EL.091907.152517	WG250468-04	Matrix Spike	.5/200	1		09/19/07 15:25
48	EL.091907.153148	WG250468-05	Matrix Spike Duplica	.5/200	1		09/19/07 15:31
49	EL.091907.153820	L0709375-01	LTA16-CS-06A	.5/200	1		09/19/07 15:38
50	EL.091907.154451	L0709375-02	LTA16-CS-FD	.503/200	1		09/19/07 15:44
51	EL.091907.155123	WG250504-01	Post Digestion Spike		1	L0709375-02	09/19/07 15:51
52	EL.091907.155756	WG250504-02	Serial Dilution		5	L0709375-02	09/19/07 15:57
53	EL.091907.160429	WG250498-19	CCV		1		09/19/07 16:04
54	EL.091907.161110	WG250498-20	CCB		1		09/19/07 16:11
55	EL.091907.161752	L0709362-01	SB-01_4.5-5	.504/200	1	WG250472-01	09/19/07 16:17
56	EL.091907.162425	L0709362-02	SB-02_5.5-6	.5/200	1	WG250456-01	09/19/07 16:24
57	EL.091907.163058	L0709376-01	BF-02	.5/200	1		09/19/07 16:30
58	EL.091907.163731	WG250498-21	CCV		1		09/19/07 16:37
59	EL.091907.164413	WG250498-22	CCB		1		09/19/07 16:44

Approved: September 20, 2007

Sheri L. Blaszak

KEMRON Environmental Services
Data Checklist

Date: 14-SEP-2007
Analyst: JYH
Analyst: NA
Method: 6020
Instrument: ELAN
Curve Workgroup: 250165
Runlog ID: 18229
Analytical Workgroups: 249702,249620,250151

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	
Case Narrative	200,261,297
Client Forms	X
Level X	
Level 3	
Level 4	740,333,200,261,297
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	MMB
Comments	

Primary Reviewer:

Secondary Reviewer:
19-SEP-2007

Generated: SEP-19-2007 13:45:29

KEMRON Environmental Services
Data Checklist

Date: 17-SEP-2007
Analyst: JYH
Analyst: NA
Method: 6020
Instrument: ELAN
Curve Workgroup: 250301
Runlog ID: 18251
Analytical Workgroups: 250211

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	
Case Narrative	251,261
Client Forms	X
Level X	
Level 3	261
Level 4	251
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	MMB
Comments	

Primary Reviewer:

Secondary Reviewer:
18-SEP-2007

Generated: SEP-18-2007 17:00:12

KEMRON Environmental Services
Data Checklist

Date: 19-SEP-2007
Analyst: JYH
Analyst: NA
Method: 6020
Instrument: ELAN
Curve Workgroup: 250498
Runlog ID: 18298
Analytical Workgroups: 250414,250504

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	
Case Narrative	261,335,336,348,349,122,375,376
Client Forms	X
Level X	335,336
Level 3	261
Level 4	348,349,122,375,376
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	SLP
Comments	

Primary Reviewer:

Secondary Reviewer:
20-SEP-2007

Generated: SEP-20-2007 10:42:56

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6020 AAB#: WG250414
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW15-090707	09/10/07	09/13/07	09/18/07	180	7.76	09/19/07	180	1.10	
LHSMW24-090707-FD	09/11/07	09/13/07	09/18/07	180	6.77	09/19/07	180	1.12	
46WW04-090707	09/07/07	09/13/07	09/18/07	180	11.0	09/19/07	180	1.07	
LHSMW22-090707	09/11/07	09/13/07	09/18/07	180	7.01	09/19/07	180	1.11	
LHSMW19-090707	09/11/07	09/13/07	09/18/07	180	7.07	09/19/07	180	1.11	
LHSMW23-090707	09/11/07	09/13/07	09/18/07	180	6.85	09/19/07	180	1.12	
LHSMW22-090707	09/11/07	09/13/07	09/18/07	180	7.01	09/19/07	180	1.13	
LHSMW14-090707	09/10/07	09/13/07	09/18/07	180	7.85	09/19/07	180	1.08	
46WW04-090707	09/07/07	09/13/07	09/18/07	180	11.0	09/19/07	180	1.13	
46WW02-090707	09/07/07	09/13/07	09/18/07	180	11.1	09/19/07	180	1.06	
LHSMW24-090707	09/11/07	09/13/07	09/18/07	180	6.77	09/19/07	180	1.12	
LHSMW11-090707	09/07/07	09/13/07	09/18/07	180	10.9	09/19/07	180	1.07	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 875845
Report generated 09/19/2007 14:30

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6020 AAB#: WG250151
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
PRSB01 (14-15)	09/07/07	09/13/07	09/14/07	180	7.40	09/14/07	180	0.246	
PRSB01 (19-20)	09/07/07	09/13/07	09/14/07	180	7.40	09/14/07	180	0.251	
PRSB01 (9-10)	09/07/07	09/13/07	09/14/07	180	7.40	09/14/07	180	0.242	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 875845
Report generated 09/19/2007 14:30

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6020 AAB#: WG250211
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW23-090707	09/11/07	09/13/07	09/14/07	180	2.79	09/17/07	180	3.20	
LHSMW19-090707	09/11/07	09/13/07	09/14/07	180	3.01	09/17/07	180	3.20	
LHSMW22-090707	09/11/07	09/13/07	09/14/07	180	2.94	09/17/07	180	3.20	
46WW04-090707	09/07/07	09/13/07	09/14/07	180	6.93	09/17/07	180	3.25	
46WW04-090707	09/07/07	09/13/07	09/14/07	180	6.93	09/17/07	180	3.16	
46WW02-090707	09/07/07	09/13/07	09/14/07	180	7.00	09/17/07	180	3.15	
LHSMW24-090707	09/11/07	09/13/07	09/14/07	180	2.70	09/17/07	180	3.21	
LHSMW11-090707	09/07/07	09/13/07	09/14/07	180	6.84	09/17/07	180	3.26	
LHSMW15-090707	09/10/07	09/13/07	09/14/07	180	3.70	09/17/07	180	3.19	
LHSMW14-090707	09/10/07	09/13/07	09/14/07	180	3.79	09/17/07	180	3.19	
LHSMW24-090707-FD	09/11/07	09/13/07	09/14/07	180	2.70	09/17/07	180	3.21	
LHSMW11-090707	09/07/07	09/13/07	09/14/07	180	6.84	09/17/07	180	3.16	
LHSMW22-090707	09/11/07	09/13/07	09/14/07	180	2.94	09/17/07	180	3.27	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 875845
Report generated 09/19/2007 14:30

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250151
Blank File ID: EL.091407.141242
Blank Sample ID: WG250137-02
Prep Date: 09/14/07 09:30
Instrument ID: ELAN-ICP
Analyzed Date: 09/14/07 14:12
Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250137-03	EL.091407.141912	09/14/07 14:19	01
PRSB01 (9-10)	L0709261-21	EL.091407.151815	09/14/07 15:18	01
PRSB01 (14-15)	L0709261-22	EL.091407.152448	09/14/07 15:24	01
PRSB01 (19-20)	L0709261-23	EL.091407.153121	09/14/07 15:31	01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 875846
Report generated 09/19/2007 14:30

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250211
Blank File ID: EL.091707.113910
Blank Sample ID: WG250135-02
Prep Date: 09/14/07 08:30
Instrument ID: ELAN-ICP
Analyzed Date: 09/17/07 11:39
Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250135-03	EL.091707.114540	09/17/07 11:45	01
46WW02-090707	L0709261-01	EL.091707.121144	09/17/07 12:11	DL01
46WW04-090707	L0709261-03	EL.091707.121816	09/17/07 12:18	DL01
LHSMW11-090707	L0709261-05	EL.091707.122448	09/17/07 12:24	DL01
LHSMW14-090707	L0709261-07	EL.091707.125749	09/17/07 12:57	DL01
LHSMW15-090707	L0709261-09	EL.091707.130422	09/17/07 13:04	DL01
LHSMW19-090707	L0709261-11	EL.091707.131054	09/17/07 13:10	DL01
LHSMW22-090707	L0709261-13	EL.091707.131725	09/17/07 13:17	DL01
LHSMW23-090707	L0709261-15	EL.091707.132356	09/17/07 13:23	DL01
LHSMW24-090707	L0709261-17	EL.091707.133027	09/17/07 13:30	DL01
LHSMW24-090707-FD	L0709261-19	EL.091707.133659	09/17/07 13:36	DL01
46WW04-090707	L0709261-03	EL.091707.143654	09/17/07 14:36	DL02
LHSMW11-090707	L0709261-05	EL.091707.144326	09/17/07 14:43	DL02
LHSMW22-090707	L0709261-13	EL.091707.150303	09/17/07 15:03	DL02

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 875846
Report generated 09/19/2007 14:30

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250414
Blank File ID: EL.091907.110726
Blank Sample ID: WG250364-02
Prep Date: 09/18/07 10:00
Instrument ID: ELAN-ICP
Analyzed Date: 09/19/07 11:07
Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250364-03	EL.091907.111356	09/19/07 11:13	01
46WW02-090707	L0709261-02	EL.091907.112027	09/19/07 11:20	DL01
46WW04-090707	L0709261-04	EL.091907.114000	09/19/07 11:40	DL01
LHSMW11-090707	L0709261-06	EL.091907.114632	09/19/07 11:46	DL01
LHSMW14-090707	L0709261-08	EL.091907.115304	09/19/07 11:53	DL01
LHSMW15-090707	L0709261-10	EL.091907.122605	09/19/07 12:26	DL01
LHSMW19-090707	L0709261-12	EL.091907.123238	09/19/07 12:32	DL01
LHSMW22-090707	L0709261-14	EL.091907.123910	09/19/07 12:39	DL01
LHSMW23-090707	L0709261-16	EL.091907.124541	09/19/07 12:45	DL01
LHSMW24-090707	L0709261-18	EL.091907.125212	09/19/07 12:52	DL01
LHSMW24-090707-FD	L0709261-20	EL.091907.125843	09/19/07 12:58	DL01
46WW04-090707	L0709261-04	EL.091907.130515	09/19/07 13:05	DL02
LHSMW22-090707	L0709261-14	EL.091907.131146	09/19/07 13:11	DL02

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 875846
Report generated 09/19/2007 14:30

METHOD BLANK REPORT

Login Number: L0709261 Prep Date: 09/14/07 09:30 Sample ID: WG250137-02
Instrument ID: ELAN-ICP Run Date: 09/14/07 14:12 Prep Method: 3051
File ID: EL.091407.141242 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250151 Matrix: Soil Units: mg/kg
Contract #: DACA56-94-D-0020 Cal ID: ELAN-I-14-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Lead, Total	0.100	0.200	0.100	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 875847
Report generated 09/19/2007 14:30

Login Number: L0709261 Prep Date: 09/14/07 08:30 Sample ID: WG250135-02
Instrument ID: ELAN-ICP Run Date: 09/17/07 11:39 Prep Method: 3015
File ID: EL.091707.113910 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250211 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: ELAN-I-17-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Silver, Total	0.000250	0.00100	0.000250	1	U
Arsenic, Total	0.000250	0.00100	0.000250	1	U
Barium, Total	0.000500	0.00300	0.000500	1	U
Cadmium, Total	0.000125	0.000500	0.000125	1	U
Chromium, Total	0.000500	0.00200	0.000500	1	U
Copper, Total	0.000500	0.00200	0.000867	1	J
Lead, Total	0.000250	0.000500	0.000250	1	U
Manganese, Total	0.000500	0.00200	0.000500	1	U
Nickel, Total	0.00100	0.00400	0.00100	1	U
Antimony, Total	0.000250	0.00100	0.000250	1	U
Selenium, Total	0.000500	0.00100	0.000500	1	U
Thallium, Total	0.0000500	0.000200	0.0000500	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 875847
Report generated 09/19/2007 14:30

METHOD BLANK REPORT

Login Number: L0709261 Prep Date: 09/18/07 10:00 Sample ID: WG250364-02
Instrument ID: ELAN-ICP Run Date: 09/19/07 11:07 Prep Method: 3015
File ID: EL.091907.110726 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250414 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: ELAN-I-19-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Silver, Dissolved	0.000250	0.00100	0.000250	1	U
Arsenic, Dissolved	0.000250	0.00100	0.000250	1	U
Barium, Dissolved	0.000500	0.00300	0.000500	1	U
Cadmium, Dissolved	0.000125	0.000500	0.000125	1	U
Chromium, Dissolved	0.000500	0.00200	0.000500	1	U
Copper, Dissolved	0.000500	0.00200	0.000500	1	U
Lead, Dissolved	0.000250	0.000500	0.000250	1	U
Manganese, Dissolved	0.000500	0.00200	0.000500	1	U
Nickel, Dissolved	0.00100	0.00400	0.00100	1	U
Antimony, Dissolved	0.000250	0.00100	0.000250	1	U
Selenium, Dissolved	0.000500	0.00100	0.000500	1	U
Thallium, Dissolved	0.0000500	0.000200	0.0000500	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 875847
Report generated 09/19/2007 14:30

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250137-03
Instrument ID: ELAN-ICP Run Time: 14:19 Prep Method: 3051
File ID: EL.091407.141912 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250151 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD21680 Cal ID: ELAN-I-14-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Lead, Total	10.0	10.2	102	80 - 120	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 875848
Report generated 09/19/2007 14:30

KEMRON Environmental Services

00079793

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250135-03
Instrument ID: ELAN-ICP Run Time: 11:45 Prep Method: 3015
File ID: EL.091707.114540 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250211 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD21680 Cal ID: ELAN-I-17-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Silver, Total	0.0625	0.0610	97.6	80 - 120	
Arsenic, Total	0.0625	0.0649	104	80 - 120	
Barium, Total	0.0625	0.0636	102	80 - 120	
Cadmium, Total	0.0625	0.0642	103	80 - 120	
Chromium, Total	0.0625	0.0645	103	80 - 120	
Copper, Total	0.0625	0.0671	107	80 - 120	
Lead, Total	0.0625	0.0674	108	80 - 120	
Manganese, Total	0.0625	0.0638	102	80 - 120	
Nickel, Total	0.0625	0.0661	106	80 - 120	
Antimony, Total	0.0625	0.0650	104	80 - 120	
Selenium, Total	0.0625	0.0665	106	80 - 120	
Thallium, Total	0.0625	0.0671	107	80 - 120	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 875848
Report generated 09/19/2007 14:30

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250364-03
Instrument ID: ELAN-ICP Run Time: 11:13 Prep Method: 3015
File ID: EL.091907.111356 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250414 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD21680 Cal ID: ELAN-I-19-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Silver, Dissolved	0.0625	0.0631	101	80 - 120	
Arsenic, Dissolved	0.0625	0.0636	102	80 - 120	
Barium, Dissolved	0.0625	0.0652	104	80 - 120	
Cadmium, Dissolved	0.0625	0.0660	106	80 - 120	
Chromium, Dissolved	0.0625	0.0625	100	80 - 120	
Copper, Dissolved	0.0625	0.0648	104	80 - 120	
Lead, Dissolved	0.0625	0.0663	106	80 - 120	
Manganese, Dissolved	0.0625	0.0645	103	80 - 120	
Nickel, Dissolved	0.0625	0.0659	105	80 - 120	
Antimony, Dissolved	0.0625	0.0656	105	80 - 120	
Selenium, Dissolved	0.0625	0.0637	102	80 - 120	
Thallium, Dissolved	0.0625	0.0650	104	80 - 120	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 875848
Report generated 09/19/2007 14:30

Loginnum:L0709261 Cal ID: ELAN-ICP- Worknum:WG250151
Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Method:6020
Parent ID:WG250137-01 File ID:EL.091407.142543 Dil:1 Matrix:SOLID
Sample ID:WG250137-04 MS File ID:EL.091407.143213 Dil:1 Units:mg/kg
Sample ID:WG250137-05 MSD File ID:EL.091407.143844 Dil:1 Percent Solid:92.0

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Lead, Total, Total	14.4	10.9	25.5	102	10.9	24.8	94.9	2.97	75 - 125	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 875849
Report generated 09/19/2007 14:30

Loginnum:L0709261 Cal ID: ELAN-ICP- Worknum:WG250211
Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Method:6020
Parent ID:WG250135-01 File ID:EL.091707.134329 Dil:10 Matrix:WATER
Sample ID:WG250135-04 MS File ID:EL.091707.135000 Dil:10 Units:mg/L
Sample ID:WG250135-05 MSD File ID:EL.091707.135631 Dil:10

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Manganese	0.552	0.0625	0.616	103	0.0625	0.655	165	6.11	75 - 125	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 875849
Report generated 09/19/2007 14:30

Loginnum:L0709261 Cal ID: ELAN-ICP- Worknum:WG250211
Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Method:6020
Parent ID:WG250135-01 File ID:EL.091707.115211 Dil:1 Matrix:WATER
Sample ID:WG250135-04 MS File ID:EL.091707.115841 Dil:1 Units:mg/L
Sample ID:WG250135-05 MSD File ID:EL.091707.120512 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Antimony	0.000381	0.0625	0.0671	107	0.0625	0.0644	102	4.06	75 - 125	20	
Arsenic	0.00106	0.0625	0.0635	99.9	0.0625	0.0616	96.8	3.10	75 - 125	20	
Barium	0.0131	0.0625	0.0790	105	0.0625	0.0763	101	3.45	75 - 125	20	
Cadmium	ND	0.0625	0.0630	101	0.0625	0.0612	97.9	2.85	75 - 125	20	
Chromium	0.00643	0.0625	0.0692	100	0.0625	0.0670	96.9	3.24	75 - 125	20	
Copper	0.00233	0.0625	0.0703	109	0.0625	0.0688	106	2.12	75 - 125	20	
Lead	0.000425	0.0625	0.0678	108	0.0625	0.0679	108	0.0814	75 - 125	20	
Nickel	0.0119	0.0625	0.0765	103	0.0625	0.0750	101	2.05	75 - 125	20	
Selenium	0.00234	0.0625	0.0596	91.6	0.0625	0.0586	90.0	1.62	75 - 125	20	
Silver	ND	0.0625	0.0603	96.4	0.0625	0.0594	95.0	1.54	75 - 125	20	
Thallium	0.00202	0.0625	0.0678	105	0.0625	0.0677	105	0.0753	75 - 125	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 875849
Report generated 09/19/2007 14:30

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00079798

Loginnum:L0709261 Cal ID: ELAN-ICP- Worknum:WG250414
Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Method:6020
Parent ID:WG250364-01 File ID:EL.091907.112027 Dil:10 Matrix:WATER
Sample ID:WG250364-04 MS File ID:EL.091907.112657 Dil:10 Units:mg/L
Sample ID:WG250364-05 MSD File ID:EL.091907.113328 Dil:10

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Antimony, Dissolved	0.00196	0.0625	0.0649	101	0.0625	0.0669	104	3.01	75 - 125	20	
Arsenic, Dissolved	0.00112	0.0625	0.0623	97.9	0.0625	0.0639	100	2.48	75 - 125	20	
Barium, Dissolved	0.0195	0.0625	0.0837	103	0.0625	0.0872	108	4.14	75 - 125	20	
Cadmium, Dissolved	0.000175	0.0625	0.0618	98.6	0.0625	0.0652	104	5.36	75 - 125	20	
Chromium, Dissolved	0.00356	0.0625	0.0600	90.2	0.0625	0.0591	88.8	1.51	75 - 125	20	
Copper, Dissolved	0.00367	0.0625	0.0653	98.6	0.0625	0.0668	101	2.18	75 - 125	20	
Lead, Dissolved	0.000383	0.0625	0.0655	104	0.0625	0.0669	106	2.16	75 - 125	20	
Manganese, Dissolved	0.148	0.0625	0.206	92.9	0.0625	0.204	90.2	0.833	75 - 125	20	
Nickel, Dissolved	0.0586	0.0625	0.119	96.0	0.0625	0.119	96.5	0.253	75 - 125	20	
Selenium, Dissolved	ND	0.0625	0.0626	100	0.0625	0.0580	92.8	7.61	75 - 125	20	
Silver, Dissolved	ND	0.0625	0.0564	90.2	0.0625	0.0607	97.2	7.49	75 - 125	20	
Thallium, Dissolved	0.00348	0.0625	0.0620	93.7	0.0625	0.0696	106	11.5	75 - 125	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 875849
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
SERIAL DILUTION REPORT

Sample Login ID: L0709261 Worknum: WG250211
Instrument ID: ELAN-ICP Method: 6020
Sample ID: L0709261-05 File ID: EL.091707.144326 Dil: 100 Units: ug/L
Serial Dilution ID: WG250211-02 File ID: EL.091707.145631 Dil: 500

Analyte	Sample	C	Serial Dilution	C	% Difference	Q
Antimony	ND	U	0	U		
Arsenic	ND	U	0	U		
Barium	20.6	F	0	U	100	E
Cadmium	0	U	0	U		
Chromium	450	X	515	X	14.4	E
Copper	0	U	0	U		
Lead	0	U	0	U		
Manganese	550	X	562	X	2.18	
Nickel	830	X	892	X	7.47	
Selenium	ND	U	ND	U		
Silver	ND	U	0	U		
Thallium	2.88	F	0	U	100	E

U = Result is below MDL
F = Result is between MDL and RL
X = Result is greater than RL and less than 100 times the MDL
E = %D exceeds control limit of 10% and initial
sample result is greater than or equal to 100 times the MDL

KEMRON FORMS - Modified 02/14/2006
Version 1.3 PDF File ID: 875843
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
SERIAL DILUTION REPORT

Sample Login ID: L0709261 Worknum: WG250211
Instrument ID: ELAN-ICP Method: 6020
Sample ID: L0709261-05 File ID: EL.091707.122448 Dil: 10 Units: ug/L
Serial Dilution ID: WG250211-02 File ID: EL.091707.123753 Dil: 50

Analyte	Sample	C	Serial Dilution	C	% Difference	Q
Antimony	ND	U	0	U		
Arsenic	2.12	F	0	U	100	E
Barium	19.8	X	20.1	F	1.52	
Cadmium	0	U	0	U		
Chromium	409		427	X	4.40	
Copper	11.5	X	12.7	F	10.4	E
Lead	0	U	0	U		
Manganese	519		534	X	2.89	
Nickel	782		812	X	3.84	
Selenium	7.48	X	0	U	100	E
Silver	ND	U	0	U		
Thallium	3.42	X	6.55	X	91.5	E

U = Result is below MDL
F = Result is between MDL and RL
X = Result is greater than RL and less than 100 times the MDL
E = %D exceeds control limit of 10% and initial
sample result is greater than or equal to 100 times the MDL

KEMRON FORMS - Modified 02/14/2006
Version 1.3 PDF File ID: 875843
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
SERIAL DILUTION REPORT

Sample Login ID: L0709261 Worknum: WG250414
Instrument ID: ELAN-ICP Method: 6020
Sample ID: L0709261-08 File ID: EL.091907.115304 Dil: 10 Units: ug/L
Serial Dilution ID: WG250414-02 File ID: EL.091907.120609 Dil: 50

Analyte	Sample	C	Serial Dilution	C	% Difference	Q
Antimony	ND	U	0	U		
Arsenic	0	U	0	U		
Barium	4.55	F	0	U	100	E
Cadmium	ND	U	ND	U		
Chromium	2.11	F	0	U	100	E
Copper	0	U	0	U		
Lead	0	U	ND	U		
Manganese	6.00	F	0	U	100	E
Nickel	6.97	F	0	U	100	E
Selenium	0	U	0	U		
Silver	ND	U	0	U		
Thallium	1.71	X	1.28	F	25.1	E

U = Result is below MDL
F = Result is between MDL and RL
X = Result is greater than RL and less than 100 times the MDL
E = %D exceeds control limit of 10% and initial
sample result is greater than or equal to 100 times the MDL

KEMRON FORMS - Modified 02/14/2006
Version 1.3 PDF File ID: 875843
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
SERIAL DILUTION REPORT

Sample Login ID: L0709261 Worknum: WG250151
Instrument ID: ELAN-ICP Method: 6020
Sample ID: L0709200-01 File ID: EL.091407.144516 Dil: 1 Units: ug/kg
Serial Dilution ID: WG250151-02 File ID: EL.091407.145820 Dil: 5

Analyte	Sample	C	Serial Dilution	C	% Difference	Q
Lead	11.0	X	11.4	X	3.64	

U = Result is below MDL
F = Result is between MDL and RL
X = Result is greater than RL and less than 100 times the MDL
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 100 times the MDL

KEMRON FORMS - Modified 02/14/2006
Version 1.3 PDF File ID: 875843
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250414
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG250414-01 **File ID:** EL.091907.115936 **Dil:** 10 **Units:** ug/L
Sample ID: L0709261-08 **File ID:** EL.091907.115304 **Dil:** 10 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ANTIMONY	53.8		0	U	50	107.6	75 - 125	
ARSENIC	53.3		0	U	50	106.7	75 - 125	
BARIUM	55.3		0.455	F	50	109.7	75 - 125	
CADMIUM	56.1		0	U	50	112.3	75 - 125	
CHROMIUM	50.8		0.211	F	50	101.2	75 - 125	
COPPER	54.3		0	U	50	108.7	75 - 125	
LEAD	56.3		0	U	50	112.5	75 - 125	
MANGANESE	52.0		0.600	F	50	102.8	75 - 125	
NICKEL	54.1		0.697	F	50	106.8	75 - 125	
SELENIUM	52.4		0	U	50	104.7	75 - 125	
SILVER	53.8		0	U	50	107.7	75 - 125	
THALLIUM	56.2		0.171		50	112.0	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 875844
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250211
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG250211-01 **File ID:** EL.091707.123120 **Dil:** 10 **Units:** ug/L
Sample ID: L0709261-05 **File ID:** EL.091707.122448 **Dil:** 10 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ANTIMONY	54.9		0	U	50	109.9	75 - 125	
ARSENIC	54.4		0.212	F	50	108.4	75 - 125	
BARIUM	56.0		1.98		50	108.0	75 - 125	
CADMIUM	53.0		0	U	50	106.0	75 - 125	
CHROMIUM	97.0		40.9		50	112.3	75 - 125	
COPPER	56.1		1.15		50	109.8	75 - 125	
LEAD	57.1		0	U	50	114.1	75 - 125	
MANGANESE	109		51.9		50	114.1	75 - 125	
NICKEL	133		78.2		50	109.6	75 - 125	
SELENIUM	53.0		0.748		50	104.5	75 - 125	
SILVER	49.8		0	U	50	99.5	75 - 125	
THALLIUM	56.7		0.342		50	112.7	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 875844
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250151
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG250151-01 **File ID:** EL.091407.145147 **Dil:** 1 **Units:** ug/L
Sample ID: L0709200-01 **File ID:** EL.091407.144516 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
LEAD	69.0		11.0		50	116.0	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 875844
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250211
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG250211-01 **File ID:** EL.091707.144958 **Dil:** 100 **Units:** ug/L
Sample ID: L0709261-05 **File ID:** EL.091707.144326 **Dil:** 100 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ANTIMONY	50.6		0	U	50	101.3	75 - 125	
ARSENIC	49.4		0	U	50	98.9	75 - 125	
BARIUM	50.2		0.206	F	50	100.1	75 - 125	
CADMIUM	50.3		0	U	50	100.6	75 - 125	
CHROMIUM	56.3		4.50		50	103.5	75 - 125	
COPPER	51.6		0	U	50	103.2	75 - 125	
LEAD	51.5		0	U	50	103.1	75 - 125	
MANGANESE	58.2		5.50		50	105.4	75 - 125	
NICKEL	59.6		8.30		50	102.7	75 - 125	
SELENIUM	50.1		0	U	50	100.2	75 - 125	
SILVER	48.8		0	U	50	97.7	75 - 125	
THALLIUM	50.7		0.0288	F	50	101.4	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 875844
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

00079807

Login Number: L0709261 Workgroup (AAB#): WG250151

Analytical Method: 6020 Instrument ID: ELAN-ICP

ICAL Worknum: WG250165 Initial Calibration Date: 14-SEP-2007 10:00

Analyte	WG250165-01		WG250165-02		WG250165-03		WG250165-04		R	Q
	STD	INT	STD	INT	STD	INT	STD	INT		
Lead	0	429.676	.4	14880.86	50	1676517.389	100	3265275.24	1.00000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

KEMRON FORMS - Modified 03/08/2007
Version 1.5 PDF File ID: 875852
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

Login Number: L0709261 **Workgroup (AAB#):** WG250211

Analytical Method: 6020 **Instrument ID:** ELAN-ICP

ICAL Worknum: WG250301 **Initial Calibration Date:** 17-SEP-2007 10:39

Analyte	WG250301-01		WG250301-02		WG250301-03		WG250301-04			
	STD	INT	STD	INT	STD	INT	STD	INT	R	Q
Antimony	0	21.988	.4	2609.823	50	290907.774	100	586465.292	0.999898	
Arsenic	0	-450.193	.4	555.377	50	114903.826	100	227227.782	0.999993	
Barium	0	38.667	.4	971.743	50	116695.367	100	233528.762	0.999986	
Cadmium	0	18.716	.4	796.639	50	101558.355	100	205077.946	0.999894	
Chromium	0	19008.115	.4	22947.373	50	627432.041	100	1286384.491	0.999525	
Copper	0	127.002	.4	1475.5	50	169952.501	100	331433.479	0.999998	
Lead	0	307.672	.4	11048.442	50	1371350.777	100	2779230.26	0.999971	
Manganese	0	800.053	.4	7456.632	50	871612.584	100	1800789.03	0.999645	
Nickel	0	42.001	.4	1199.779	50	145777.138	100	287794.982	0.999993	
Selenium	0	8.035	.4	114.775	50	9886.496	100	19717.479	0.999952	
Silver	0	29	.4	4507.467	50	563586.125	100	1120794.723	0.999975	
Thallium	0	27	.4	3238.433	50	419550.539	100	849080.541	0.999977	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 03/08/2007
Version 1.5 PDF File ID: 875852
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

Login Number: L0709261 **Workgroup (AAB#):** WG250414

Analytical Method: 6020 **Instrument ID:** ELAN-ICP

ICAL Worknum: WG250498 **Initial Calibration Date:** 19-SEP-2007 10:07

Analyte	WG250498-01		WG250498-02		WG250498-03		WG250498-04			
	STD	INT	STD	INT	STD	INT	STD	INT	R	Q
Antimony	0	23.865	.4	2137.998	50	249993.276	100	496623.383	0.999947	
Arsenic	0	-382.462	.4	323.179	50	95914.226	100	187566.441	0.999837	
Barium	0	40.001	.4	845.058	50	108712.639	100	215299.604	0.999791	
Cadmium	0	30.585	.4	722.394	50	83922.337	100	168072.886	0.999983	
Chromium	0	17017.754	.4	19839.379	50	511308.558	100	1020481.316	0.999997	
Copper	0	107.669	.4	1169.441	50	138625.47	100	271973.67	0.999893	
Lead	0	330.006	.4	9956.123	50	1275485.895	100	2564510.675	0.999985	
Manganese	0	829.723	.4	6004.918	50	696289.881	100	1402613.065	0.999999	
Nickel	0	53.667	.4	939.738	50	118253.863	100	230969.151	0.999847	
Selenium	0	5.507	.4	75.866	50	8288.524	100	15935.082	0.999691	
Silver	0	28.334	.4	3438.863	50	452444.292	100	873036.011	0.999697	
Thallium	0	31.334	.4	2970.315	50	394943.66	100	787322.849	0.999952	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

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Version 1.5 PDF File ID: 875852
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079810

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-06

Instrument ID: ELAN-ICP Run Time: 10:21 Method: 6020

File ID: EL.091907.102103 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	-.001	1	U
Arsenic	0.100	0.400	.0173	1	U
Barium	0.200	1.20	.0015	1	U
Cadmium	0.0500	0.200	-.0331	1	U
Chromium	0.200	0.800	.0865	1	U
Copper	0.200	0.800	-.0102	1	U
Lead	0.100	0.200	-.011	1	U
Manganese	0.200	0.800	.0004	1	U
Nickel	0.400	1.60	-.0093	1	U
Antimony	0.100	0.400	.174	1	F
Selenium	0.200	0.400	-.0745	1	U
Thallium	0.0200	0.0800	-.006	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 10/02/2006
Version 1.5 PDF File ID: 875854
Report generated 09/19/2007 14:30

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-06
Instrument ID: ELAN-ICP Run Time: 10:52 Method: 6020
File ID: EL.091707.105247 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	-.0136	1	U
Arsenic	0.100	0.400	-.0421	1	U
Barium	0.200	1.20	-.0162	1	U
Cadmium	0.0500	0.200	.0124	1	U
Chromium	0.200	0.800	.125	1	U
Copper	0.200	0.800	-.0134	1	U
Lead	0.100	0.200	-.008	1	U
Manganese	0.200	0.800	.0063	1	U
Nickel	0.400	1.60	-.0168	1	U
Antimony	0.100	0.400	.16	1	F
Selenium	0.200	0.400	-.127	1	U
Thallium	0.0200	0.0800	.0017	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 10/02/2006
Version 1.5 PDF File ID: 875854
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079812

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-06

Instrument ID: ELAN-ICP Run Time: 10:13 Method: 6020

File ID: EL.091407.101319 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Lead	0.250	0.500	-.0185	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 10/02/2006
Version 1.5 PDF File ID: 875854
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079813

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-12
Instrument ID: ELAN-ICP Run Time: 10:53 Method: 6020
File ID: EL.091407.105302 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Lead	0.250	0.500	-0.0178	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079814

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-18
Instrument ID: ELAN-ICP Run Time: 13:50 Method: 6020
File ID: EL.091407.135018 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Lead	0.250	0.500	-0.0146	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079815

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-20
Instrument ID: ELAN-ICP Run Time: 15:11 Method: 6020
File ID: EL.091407.151134 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Lead	0.250	0.500	-0.0129	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

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Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079816

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-22
Instrument ID: ELAN-ICP Run Time: 15:44 Method: 6020
File ID: EL.091407.154435 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Lead	0.250	0.500	-0.0153	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079817

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-12
Instrument ID: ELAN-ICP Run Time: 11:32 Method: 6020
File ID: EL.091707.113230 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	-0.0135	1	U
Arsenic	0.100	0.400	-0.0478	1	U
Barium	0.200	1.20	-0.0148	1	U
Cadmium	0.0500	0.200	0.0122	1	U
Chromium	0.200	0.800	0.164	1	U
Copper	0.200	0.800	-0.0158	1	U
Lead	0.100	0.200	-0.00810	1	U
Manganese	0.200	0.800	0.00860	1	U
Nickel	0.400	1.60	-0.0188	1	U
Antimony	0.100	0.400	0.158	1	F
Selenium	0.200	0.400	-0.116	1	U
Thallium	0.0200	0.0800	0.000900	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079818

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-14
Instrument ID: ELAN-ICP Run Time: 12:51 Method: 6020
File ID: EL.091707.125107 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	0.0413	1	U
Arsenic	0.100	0.400	-0.0386	1	U
Barium	0.200	1.20	-0.0148	1	U
Cadmium	0.0500	0.200	0.0119	1	U
Chromium	0.200	0.800	0.136	1	U
Copper	0.200	0.800	-0.0117	1	U
Lead	0.100	0.200	-0.00740	1	U
Manganese	0.200	0.800	0.00510	1	U
Nickel	0.400	1.60	-0.0146	1	U
Antimony	0.100	0.400	0.114	1	F
Selenium	0.200	0.400	-0.168	1	U
Thallium	0.0200	0.0800	0.00180	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079819

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-16
Instrument ID: ELAN-ICP Run Time: 14:09 Method: 6020
File ID: EL.091707.140945 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	-0.00910	1	U
Arsenic	0.100	0.400	-0.0143	1	U
Barium	0.200	1.20	-0.0157	1	U
Cadmium	0.0500	0.200	0.00340	1	U
Chromium	0.200	0.800	0.132	1	U
Copper	0.200	0.800	-0.0112	1	U
Lead	0.100	0.200	-0.00800	1	U
Manganese	0.200	0.800	0.00480	1	U
Nickel	0.400	1.60	-0.0143	1	U
Antimony	0.100	0.400	0.108	1	F
Selenium	0.200	0.400	-0.0743	1	U
Thallium	0.0200	0.0800	0.00320	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079820

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-18
Instrument ID: ELAN-ICP Run Time: 15:16 Method: 6020
File ID: EL.091707.151616 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	-0.00930	1	U
Arsenic	0.100	0.400	-0.0516	1	U
Barium	0.200	1.20	-0.0152	1	U
Cadmium	0.0500	0.200	0.00840	1	U
Chromium	0.200	0.800	0.169	1	U
Copper	0.200	0.800	-0.0107	1	U
Lead	0.100	0.200	-0.00840	1	U
Manganese	0.200	0.800	0.00310	1	U
Nickel	0.400	1.60	-0.0155	1	U
Antimony	0.100	0.400	0.126	1	F
Selenium	0.200	0.400	-0.187	1	U
Thallium	0.0200	0.0800	-0.000100	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079821

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-12
Instrument ID: ELAN-ICP Run Time: 11:00 Method: 6020
File ID: EL.091907.110046 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	-0.00180	1	U
Arsenic	0.100	0.400	0.0208	1	U
Barium	0.200	1.20	-0.00230	1	U
Cadmium	0.0500	0.200	-0.0337	1	U
Chromium	0.200	0.800	0.0805	1	U
Copper	0.200	0.800	-0.0100	1	U
Lead	0.100	0.200	-0.0111	1	U
Manganese	0.200	0.800	-0.00440	1	U
Nickel	0.400	1.60	-0.00830	1	U
Antimony	0.100	0.400	0.184	1	F
Selenium	0.200	0.400	-0.0503	1	U
Thallium	0.0200	0.0800	-0.00570	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079822

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-14
Instrument ID: ELAN-ICP Run Time: 12:19 Method: 6020
File ID: EL.091907.121923 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	-0.00100	1	U
Arsenic	0.100	0.400	0.0194	1	U
Barium	0.200	1.20	0.00240	1	U
Cadmium	0.0500	0.200	-0.0351	1	U
Chromium	0.200	0.800	0.0700	1	U
Copper	0.200	0.800	-0.0117	1	U
Lead	0.100	0.200	-0.0114	1	U
Manganese	0.200	0.800	-0.0107	1	U
Nickel	0.400	1.60	-0.0125	1	U
Antimony	0.100	0.400	0.143	1	F
Selenium	0.200	0.400	-0.0526	1	U
Thallium	0.0200	0.0800	-0.00610	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

00079823

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-16
Instrument ID: ELAN-ICP Run Time: 13:24 Method: 6020
File ID: EL.091907.132459 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.100	0.400	0.000200	1	U
Arsenic	0.100	0.400	0.0152	1	U
Barium	0.200	1.20	0.00520	1	U
Cadmium	0.0500	0.200	-0.0190	1	U
Chromium	0.200	0.800	0.0542	1	U
Copper	0.200	0.800	-0.00680	1	U
Lead	0.100	0.200	-0.0104	1	U
Manganese	0.200	0.800	-0.0113	1	U
Nickel	0.400	1.60	-0.00610	1	U
Antimony	0.100	0.400	0.110	1	F
Selenium	0.200	0.400	-0.0745	1	U
Thallium	0.0200	0.0800	-0.00510	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 875857
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079824

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-05
Instrument ID: ELAN-ICP Run Time: 10:06 Method: 6020
File ID: EL.091407.100637 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Lead		50	49.7	99.5	90 - 110	

* Exceeds LIMITS Limit

KEMRON FORMS - Modified 09/06/2007 (ICV)
Version 1.5 PDF File ID: 875853
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079825

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-05
Instrument ID: ELAN-ICP Run Time: 10:46 Method: 6020
File ID: EL.091707.104606 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Silver		50	47.7	95.4	90 - 110	
Arsenic		50	49.9	99.7	90 - 110	
Barium		50	49.4	98.7	90 - 110	
Cadmium		50	50.5	101	90 - 110	
Chromium		50	49.1	98.3	90 - 110	
Copper		50	50.3	101	90 - 110	
Lead		50	49.8	99.5	90 - 110	
Manganese		50	49.4	98.8	90 - 110	
Nickel		50	49.7	99.5	90 - 110	
Antimony		50	50.1	100	90 - 110	
Selenium		50	51.1	102	90 - 110	
Thallium		50	48.8	97.6	90 - 110	

* Exceeds LIMITS Limit

KEMRON FORMS - Modified 09/06/2007 (ICV)
Version 1.5 PDF File ID: 875853
Report generated 09/19/2007 14:30

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079826

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-05
Instrument ID: ELAN-ICP Run Time: 10:14 Method: 6020
File ID: EL.091907.101422 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Silver		50	48.4	96.7	90 - 110	
Arsenic		50	48.7	97.4	90 - 110	
Barium		50	49.1	98.3	90 - 110	
Cadmium		50	50.6	101	90 - 110	
Chromium		50	49.3	98.7	90 - 110	
Copper		50	49.0	98.1	90 - 110	
Lead		50	50.2	100	90 - 110	
Manganese		50	49.8	99.7	90 - 110	
Nickel		50	49.3	98.5	90 - 110	
Antimony		50	50.6	101	90 - 110	
Selenium		50	50.1	100	90 - 110	
Thallium		50	49.2	98.3	90 - 110	

* Exceeds LIMITS Limit

KEMRON FORMS - Modified 09/06/2007 (ICV)
Version 1.5 PDF File ID: 875853
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079827

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-11
Instrument ID: ELAN-ICP Run Time: 10:46 Method: 6020
File ID: EL.091407.104620 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	50.5	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
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Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079828

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-17
Instrument ID: ELAN-ICP Run Time: 13:43 Method: 6020
File ID: EL.091407.134336 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	51.0	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079829

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-19
Instrument ID: ELAN-ICP Run Time: 15:04 Method: 6020
File ID: EL.091407.150452 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	50.7	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV) 00079830

Login Number: L0709261 Run Date: 09/14/2007 Sample ID: WG250165-21
Instrument ID: ELAN-ICP Run Time: 15:37 Method: 6020
File ID: EL.091407.153754 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250151 Cal ID: ELAN-I - 14-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	52.4	ug/L	105	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079831

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-11
Instrument ID: ELAN-ICP Run Time: 11:25 Method: 6020
File ID: EL.091707.112549 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	47.1	ug/L	94.3	90 - 110		
Arsenic		50.0	50.4	ug/L	101	90 - 110		
Barium		50.0	48.1	ug/L	96.3	90 - 110		
Cadmium		50.0	50.3	ug/L	101	90 - 110		
Chromium		50.0	50.6	ug/L	101	90 - 110		
Copper		50.0	50.6	ug/L	101	90 - 110		
Lead		50.0	52.3	ug/L	105	90 - 110		
Manganese		50.0	50.1	ug/L	100	90 - 110		
Nickel		50.0	50.6	ug/L	101	90 - 110		
Antimony		50.0	50.8	ug/L	102	90 - 110		
Selenium		50.0	51.3	ug/L	103	90 - 110		
Thallium		50.0	52.2	ug/L	104	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079832

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-13
Instrument ID: ELAN-ICP Run Time: 12:44 Method: 6020
File ID: EL.091707.124426 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	49.6	ug/L	99.2	90 - 110		
Arsenic		50.0	50.4	ug/L	101	90 - 110		
Barium		50.0	50.6	ug/L	101	90 - 110		
Cadmium		50.0	50.8	ug/L	102	90 - 110		
Chromium		50.0	52.4	ug/L	105	90 - 110		
Copper		50.0	51.5	ug/L	103	90 - 110		
Lead		50.0	52.4	ug/L	105	90 - 110		
Manganese		50.0	52.8	ug/L	106	90 - 110		
Nickel		50.0	51.5	ug/L	103	90 - 110		
Antimony		50.0	50.8	ug/L	102	90 - 110		
Selenium		50.0	50.9	ug/L	102	90 - 110		
Thallium		50.0	51.6	ug/L	103	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079833

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-15
Instrument ID: ELAN-ICP Run Time: 14:03 Method: 6020
File ID: EL.091707.140303 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	48.5	ug/L	97.1	90 - 110		
Arsenic		50.0	48.7	ug/L	97.3	90 - 110		
Barium		50.0	49.9	ug/L	99.8	90 - 110		
Cadmium		50.0	50.9	ug/L	102	90 - 110		
Chromium		50.0	51.1	ug/L	102	90 - 110		
Copper		50.0	50.2	ug/L	100	90 - 110		
Lead		50.0	52.1	ug/L	104	90 - 110		
Manganese		50.0	51.2	ug/L	102	90 - 110		
Nickel		50.0	50.5	ug/L	101	90 - 110		
Antimony		50.0	50.1	ug/L	100	90 - 110		
Selenium		50.0	49.3	ug/L	98.6	90 - 110		
Thallium		50.0	51.1	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079834

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-17
Instrument ID: ELAN-ICP Run Time: 15:09 Method: 6020
File ID: EL.091707.150934 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250211 Cal ID: ELAN-I - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	48.0	ug/L	95.9	90 - 110		
Arsenic		50.0	49.8	ug/L	99.6	90 - 110		
Barium		50.0	49.8	ug/L	99.6	90 - 110		
Cadmium		50.0	50.1	ug/L	100	90 - 110		
Chromium		50.0	52.2	ug/L	104	90 - 110		
Copper		50.0	51.4	ug/L	103	90 - 110		
Lead		50.0	52.8	ug/L	106	90 - 110		
Manganese		50.0	52.4	ug/L	105	90 - 110		
Nickel		50.0	51.4	ug/L	103	90 - 110		
Antimony		50.0	49.2	ug/L	98.4	90 - 110		
Selenium		50.0	51.9	ug/L	104	90 - 110		
Thallium		50.0	52.5	ug/L	105	90 - 110		

* Exceeds LIMITS Criteria

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Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079835

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-11
Instrument ID: ELAN-ICP Run Time: 10:54 Method: 6020
File ID: EL.091907.105405 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	46.3	ug/L	92.6	90 - 110		
Arsenic		50.0	48.7	ug/L	97.4	90 - 110		
Barium		50.0	48.6	ug/L	97.3	90 - 110		
Cadmium		50.0	48.3	ug/L	96.6	90 - 110		
Chromium		50.0	49.0	ug/L	97.9	90 - 110		
Copper		50.0	49.8	ug/L	99.5	90 - 110		
Lead		50.0	50.8	ug/L	102	90 - 110		
Manganese		50.0	51.4	ug/L	103	90 - 110		
Nickel		50.0	49.2	ug/L	98.4	90 - 110		
Antimony		50.0	48.5	ug/L	97.0	90 - 110		
Selenium		50.0	51.0	ug/L	102	90 - 110		
Thallium		50.0	50.1	ug/L	100	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079836

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-13
Instrument ID: ELAN-ICP Run Time: 12:12 Method: 6020
File ID: EL.091907.121242 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	47.5	ug/L	95.1	90 - 110		
Arsenic		50.0	48.6	ug/L	97.3	90 - 110		
Barium		50.0	50.0	ug/L	99.9	90 - 110		
Cadmium		50.0	50.8	ug/L	102	90 - 110		
Chromium		50.0	45.7	ug/L	91.3	90 - 110		
Copper		50.0	48.1	ug/L	96.2	90 - 110		
Lead		50.0	51.7	ug/L	103	90 - 110		
Manganese		50.0	45.8	ug/L	91.6	90 - 110		
Nickel		50.0	48.9	ug/L	97.8	90 - 110		
Antimony		50.0	50.0	ug/L	100	90 - 110		
Selenium		50.0	49.8	ug/L	99.6	90 - 110		
Thallium		50.0	50.3	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079837

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-15
Instrument ID: ELAN-ICP Run Time: 13:18 Method: 6020
File ID: EL.091907.131817 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG250414 Cal ID: ELAN-I - 19-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	48.9	ug/L	97.8	90 - 110		
Arsenic		50.0	47.5	ug/L	94.9	90 - 110		
Barium		50.0	50.0	ug/L	100	90 - 110		
Cadmium		50.0	50.9	ug/L	102	90 - 110		
Chromium		50.0	47.8	ug/L	95.6	90 - 110		
Copper		50.0	48.1	ug/L	96.2	90 - 110		
Lead		50.0	51.9	ug/L	104	90 - 110		
Manganese		50.0	50.0	ug/L	100	90 - 110		
Nickel		50.0	48.2	ug/L	96.3	90 - 110		
Antimony		50.0	49.6	ug/L	99.2	90 - 110		
Selenium		50.0	48.3	ug/L	96.7	90 - 110		
Thallium		50.0	50.8	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875856
Report generated 09/19/2007 14:30

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250151
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG250165-09 **File ID:** EL.091407.103313 **Units:** ug/L
Sol. AB : WG250165-10 **File ID:** EL.091407.103947

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Lead	NS	0.0435	NS	100	106	106	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250211
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG250301-09 **File ID:** EL.091707.111241 **Units:** ug/L
Sol. AB : WG250301-10 **File ID:** EL.091707.111915

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.00180	NS	100	108	108	
Arsenic	NS	-0.0497	NS	100	107	107	
Barium	NS	0.00740	NS	100	103	103	
Cadmium	NS	0.0731	NS	100	108	108	
Chromium	NS	0.188	NS	100	108	108	
Copper	NS	0.247	NS	100	103	103	
Lead	NS	0.0622	NS	100	107	107	
Manganese	NS	0.375	NS	100	108	108	
Nickel	NS	0.753	NS	100	104	104	
Selenium	NS	-0.274	NS	100	106	106	
Silver	NS	-0.00940	NS	100	99.8	99.8	
Thallium	NS	0.0332	NS	100	106	106	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

KEMRON ENVIRONMENTAL SERVICES
INTERFERENCE CHECK SAMPLES

Login number: L0709261 **Workgroup (AAB#):** WG250414
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG250498-09 **File ID:** EL.091907.104057 **Units:** ug/L
Sol. AB : WG250498-10 **File ID:** EL.091907.104731

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0314	NS	100	103	103	
Arsenic	NS	0.00480	NS	100	101	101	
Barium	NS	0.0259	NS	100	100	100	
Cadmium	NS	0.0283	NS	100	102	102	
Chromium	NS	0.107	NS	100	103	103	
Copper	NS	0.249	NS	100	101	101	
Lead	NS	0.0559	NS	100	104	104	
Manganese	NS	0.363	NS	100	106	106	
Nickel	NS	0.775	NS	100	102	102	
Selenium	NS	-0.0954	NS	100	103	103	
Silver	NS	0.00440	NS	100	95.4	95.4	
Thallium	NS	0.0222	NS	100	103	103	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250301-08
Instrument ID: ELAN-ICP Run Time: 11:06 Prep Method: 3015
File ID: EL.091707.110606 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250301 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: ELAN-ICP-17-SEP-2007 10:39

Analytes	Expected	Found	% Rec	Limits	Q
Cadmium	0.200	0.229	114	50 - 150	
Thallium	0.0800	0.0916	115	50 - 150	

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 875851
Report generated 09/19/2007 14:30

Login Number: L0709261 Run Date: 09/19/2007 Sample ID: WG250498-08
Instrument ID: ELAN-ICP Run Time: 10:34 Prep Method: 3015
File ID: EL.091907.103422 Analyst: JYH Method: 6020
Workgroup (AAB#): WG250498 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: ELAN-ICP-19-SEP-2007 10:07

Analytes	Expected	Found	% Rec	Limits	Q
Cadmium	0.200	0.174	86.8	50 - 150	
Thallium	0.0800	0.0795	99.4	50 - 150	

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 875851
Report generated 09/19/2007 14:30

Login Number: L0709261 **Date:** 09/07/2007
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

Comments:

Login Number: L0709261 **Date:** 09/07/2007
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

Comments:

2.1.3 Metals CVAA Data (Mercury)

2.1.3.1 Summary Data

LABORATORY REPORT

00079847

L0709261

09/26/07 14:09

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP-46

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
46WW02-090707	L0709261-01	7470A	1	13-SEP-07
46WW02-090707	L0709261-02	7470A	1	13-SEP-07
46WW04-090707	L0709261-03	7470A	1	13-SEP-07
46WW04-090707	L0709261-04	7470A	1	13-SEP-07
LHSMW11-090707	L0709261-05	7470A	1	13-SEP-07
LHSMW11-090707	L0709261-06	7470A	1	13-SEP-07
LHSMW14-090707	L0709261-07	7470A	1	13-SEP-07
LHSMW14-090707	L0709261-08	7470A	1	13-SEP-07
LHSMW15-090707	L0709261-09	7470A	1	13-SEP-07
LHSMW15-090707	L0709261-10	7470A	1	13-SEP-07
LHSMW19-090707	L0709261-11	7470A	1	13-SEP-07
LHSMW19-090707	L0709261-12	7470A	1	13-SEP-07
LHSMW22-090707	L0709261-13	7470A	1	13-SEP-07
LHSMW22-090707	L0709261-14	7470A	1	13-SEP-07
LHSMW23-090707	L0709261-15	7470A	1	13-SEP-07
LHSMW23-090707	L0709261-16	7470A	1	13-SEP-07
LHSMW24-090707	L0709261-17	7470A	1	13-SEP-07
LHSMW24-090707	L0709261-18	7470A	1	13-SEP-07
LHSMW24-090707-FD	L0709261-19	7470A	1	13-SEP-07
LHSMW24-090707-FD	L0709261-20	7470A	1	13-SEP-07

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079848

Sample Number: **L0709261-01**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/07/2007 08:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 09:49**
File ID: **HY.091707.094919**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079849

Sample Number: **L0709261-02**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/07/2007 08:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:04**
File ID: **HY.091807.110447**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079850

Sample Number: **L0709261-03**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/07/2007 10:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 09:52**
File ID: **HY.091707.095229**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079851

Sample Number: **L0709261-04**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/07/2007 10:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:10**
File ID: **HY.091807.111047**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079852

Sample Number: **L0709261-05**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/07/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 09:54**
File ID: **HY.091707.095406**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079853

Sample Number: **L0709261-06**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/07/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:16**
File ID: **HY.091807.111645**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079854

Sample Number: **L0709261-07**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/10/2007 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 09:55**
File ID: **HY.091707.095543**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079855

Sample Number: **L0709261-08**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/10/2007 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:18**
File ID: **HY.091807.111834**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079856

Sample Number: **L0709261-09**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/10/2007 15:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 09:57**
File ID: **HY.091707.095732**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6	0.000193	J	0.000200	0.000100

J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079857

Sample Number: **L0709261-10**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/10/2007 15:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:20**
File ID: **HY.091807.112032**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6	0.000165	J	0.000200	0.000100

J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079858

Sample Number: **L0709261-11**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/11/2007 08:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 09:59**
File ID: **HY.091707.095928**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-12**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/11/2007 08:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:27**
File ID: **HY.091807.112717**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079860

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/11/2007 09:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 10:01**
File ID: **HY.091707.100117**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079861

Sample Number: **L0709261-14**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/11/2007 09:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:29**
File ID: **HY.091807.112910**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079862

Sample Number: **L0709261-15**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/11/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 10:06**
File ID: **HY.091707.100631**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079863

Sample Number: **L0709261-16**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/11/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:31**
File ID: **HY.091807.113149**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079864

Sample Number: **L0709261-17**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 10:08**
File ID: **HY.091707.100808**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6	0.00146		0.000200	0.000100

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079865

Sample Number: **L0709261-18**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:33**
File ID: **HY.091807.113326**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6	0.00115		0.000200	0.000100

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079866

Sample Number: **L0709261-19**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250149**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/14/2007 08:30**
Cal Date: **09/17/2007 09:25**
Run Date: **09/17/2007 10:09**
File ID: **HY.091707.100957**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury	7439-97-6	0.00142		0.000200	0.000100

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079867

Sample Number: **L0709261-20**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250283**
Collect Date: **09/11/2007 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **09/17/2007 09:10**
Cal Date: **09/18/2007 10:46**
Run Date: **09/18/2007 11:35**
File ID: **HY.091807.113515**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Mercury, Dissolved	7439-97-6	0.000988		0.000200	0.000100

2.1.3.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	1
Cx = Concentration of element in ppb (ug/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	1
Cx = Concentration of element in ug/kg	6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)	6.67
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	8.33

8.33 ug/kg = 0.00833 mg/kg

Mercury Digestion Log

Analyst(s): DK
Date: 9/14/07
LCS: 4ml STD 21885
MS/MSD: 4ml STD 21885
Witness: VC
H_2SO_4 Lot #: CMO 12284
$K2S_2O_8$ Lot #: ACT 11993
$KMNO_4$ Lot #: MT 12044
HNO_3 Lot #: CMO 12526
Digest Tube Lot #: CMO 12521
Aqua Regia: NA
Earliest Sample Due Date: 9/19/07
ICV / CCV: STD 21887
Stds: 0, 0.2, 1, 2, 5, 10: STD 21888 - 21893

Box: 68

Digestion Work Group: WG 250107

ME404 Revision # 10 - Method 7470A-Water
ME405 Revision # ____ - Method 7471A-Soil

Hot Block Temperature at start: 96.6 @ 0830
Hot Block Temperature at end: 97.9 @ 1030

Relinquished By: MA
Digest Received By: [illegible] Date: 9/14/07

	KEMRON #	Initial Wt/Vol	Final Volume	Comments	Due Date
1	MBW	46ml	40ml	-02	
2	LCSW			CJ	
3	09-261-01				9/24
4	-03				
5	-05				
6	-07				
7	-09				
8	-11				
9	-13				
10	-15				
11	-17				
12	-19				
13	TCBLK 9/13	4ml		WG 250058 @ 1400	
14	09-230-01			-01	9/19
15	-01MS			WJ	
16	-01MSD			CJ	9/14 PM
17	09-248-01				9/17 21
18					
19					
20					
21					
22					
23					
24					
25					

DK 9/14/07

Comments: _____

Primary Review: [signature] 9/14/07 Secondary Review: [signature] 9/14/07

Mercury Digestion Log

Analyst(s): RM
Date: 9/17/07
LCS: 4ml STD 21924
MS/MSD: 4ml STD 21924
Witness: √
H_2SO_4 Lot #: CUD 12284
$K2S_2O_8$ Lot #: RET 11993
$KMNO_4$ Lot #: RET 12044
HNO_3 Lot #: CUD 12526
Digest Tube Lot #: CUD 12400
Aqua Regia: N10
Earliest Sample Due Date: 9/24/07
ICV / CCV: STD 21926
Stds: 0, 0.2, 1, 2, 5, 10: STD 21927 to 21932

Box: 89

Digestion Work Group: WG 250231

ME404 Revision # 10 - Method 7470A-Water
ME405 Revision # ____ - Method 7471A-Soil

Hot Block Temperature at start: 94.3 °C 0910

Hot Block Temperature at end: 95.0 °C 1110

Relinquished By: RM
Digest Received By: √YH Date: 9/17/07

	KEMRON #	Initial Wt/Vol	Final Volume	Comments	Due Date
1	MBW	40ml	40ml	LAB FICT 9/14 -02	
2	LCS			-03	
3	09-261-02			-01	9/24
4	-02MS	36ml		-04	
5	-02MSD	"		-05	
6	-04	40ml			
7	-06				
8	-08				
9	-10				
10	-12				
11	-14				
12	-16				
13	-18				
14	-20				
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

RM 9/17/07

Comments: ____

Primary Review: 9/17/07 Secondary Review: 9/17/07

KEMRON Environmental Services

Instrument Run Log

Instrument: HYDRA Dataset: 091707C.PRN
Analyst1: ED Analyst2: NA
Method: 7470A SOP: 404 Rev: 10
Maintenance Log ID: 20843

Calibration Std: STD21893 ICV/CCV Std: STD21885 Post Spike: STD21893
ICSA: N/A ICSAB: N/A

Workgroups: WG250149

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.091707.091612	WG250296-01	Calibration Point		1		09/17/07 09:16
2	HY.091707.091803	WG250296-02	Calibration Point		1		09/17/07 09:18
3	HY.091707.091945	WG250296-03	Calibration Point		1		09/17/07 09:19
4	HY.091707.092124	WG250296-04	Calibration Point		1		09/17/07 09:21
5	HY.091707.092313	WG250296-05	Calibration Point		1		09/17/07 09:23
6	HY.091707.092500	WG250296-06	Calibration Point		1		09/17/07 09:25
7	HY.091707.092829	WG250296-07	Initial Calibration Verification		1		09/17/07 09:28
8	HY.091707.093006	WG250296-08	Initial Calib Blank		1		09/17/07 09:30
9	HY.091707.093149	WG250296-09	CCV		1		09/17/07 09:31
10	HY.091707.093348	WG250296-10	CCB		1		09/17/07 09:33
11	HY.091707.094507	WG250107-02	Method/Prep Blank	40/40	1		09/17/07 09:45
12	HY.091707.094713	WG250107-03	Laboratory Control S		1		09/17/07 09:47
13	HY.091707.094919	L0709261-01	46WW02-090707	40/40	1		09/17/07 09:49
14	HY.091707.095055	WG250149-01	Post Digestion Spike		1	L0709261-01	09/17/07 09:50
15	HY.091707.095229	L0709261-03	46WW04-090707	40/40	1	WG250098-01	09/17/07 09:52
16	HY.091707.095406	L0709261-05	LHSMW11-090707	40/40	1		09/17/07 09:54
17	HY.091707.095543	L0709261-07	LHSMW14-090707	40/40	1	WG250078-04	09/17/07 09:55
18	HY.091707.095732	L0709261-09	LHSMW15-090707	40/40	1		09/17/07 09:57
19	HY.091707.095928	L0709261-11	LHSMW19-090707	40/40	1		09/17/07 09:59
20	HY.091707.100117	L0709261-13	LHSMW22-090707	40/40	1		09/17/07 10:01
21	HY.091707.100254	WG250296-11	CCV		1		09/17/07 10:02
22	HY.091707.100453	WG250296-12	CCB		1		09/17/07 10:04
23	HY.091707.100631	L0709261-15	LHSMW23-090707	40/40	1		09/17/07 10:06
24	HY.091707.100808	L0709261-17	LHSMW24-090707	40/40	1		09/17/07 10:08
25	HY.091707.100957	L0709261-19	LHSMW24-090707-FD	40/40	1		09/17/07 10:09
26	HY.091707.101138	WG250058-01	Fluid Blank		1		09/17/07 10:11
27	HY.091707.101326	WG250107-01	Reference Sample		1	L0709230-01	09/17/07 10:13
28	HY.091707.101502	WG250149-02	Post Digestion Spike		1	L0709230-01	09/17/07 10:15
29	HY.091707.101715	WG250107-04	Matrix Spike	4/40	1		09/17/07 10:17
30	HY.091707.101903	WG250107-05	Matrix Spike Duplica	4/40	1		09/17/07 10:19
31	HY.091707.102040	L0709248-01	COLD MILL TANK DIKE	4/40	1		09/17/07 10:20
32	HY.091707.102228	WG250296-13	CCV		1		09/17/07 10:22
33	HY.091707.102405	WG250296-14	CCB		1		09/17/07 10:24
34	HY.091707.103104	WG250107-03	Laboratory Control S	40/40	1		09/17/07 10:31
35	HY.091707.103241	WG250296-15	CCV		1		09/17/07 10:32
36	HY.091707.103418	WG250296-16	CCB		1		09/17/07 10:34

Approved: September 17, 2007

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: HYDRA Dataset: 091807C.PRN
Analyst1: ED Analyst2: NA
Method: 7470A SOP: 404 Rev: 10
Maintenance Log ID: 20871

Calibration Std: STD21932 ICV/CCV Std: STD21924 Post Spike: STD21932
ICSA: N/A ICSAB: N/A

Workgroups: WG250283

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.091807.103632	WG250401-01	Calibration Point		1		09/18/07 10:36
2	HY.091807.103811	WG250401-02	Calibration Point		1		09/18/07 10:38
3	HY.091807.104000	WG250401-03	Calibration Point		1		09/18/07 10:40
4	HY.091807.104143	WG250401-04	Calibration Point		1		09/18/07 10:41
5	HY.091807.104427	WG250401-05	Calibration Point		1		09/18/07 10:44
6	HY.091807.104607	WG250401-06	Calibration Point		1		09/18/07 10:46
7	HY.091807.104747	WG250401-07	Initial Calibration Verification		1		09/18/07 10:47
8	HY.091807.105135	WG250401-08	Initial Calibration Verification		1		09/18/07 10:51
9	HY.091807.105311	WG250401-09	Initial Calib Blank		1		09/18/07 10:53
10	HY.091807.105517	WG250401-10	CCV		1		09/18/07 10:55
11	HY.091807.105654	WG250401-11	CCB		1		09/18/07 10:56
12	HY.091807.110103	WG250231-02	Method/Prep Blank	40/40	1		09/18/07 11:01
13	HY.091807.110311	WG250231-03	Laboratory Control S	40/40	1		09/18/07 11:03
14	HY.091807.110447	WG250231-01	Reference Sample		1	L0709261-02	09/18/07 11:04
15	HY.091807.110626	WG250231-04	Matrix Spike	36/40	1		09/18/07 11:06
16	HY.091807.110807	WG250231-05	Matrix Spike Duplica	36/40	1		09/18/07 11:08
17	HY.091807.111047	L0709261-04	46WW04-090707	40/40	1	WG250200-01	09/18/07 11:10
18	HY.091807.111316	WG250283-01	Post Digestion Spike		1	L0709261-04	09/18/07 11:13
19	HY.091807.111645	L0709261-06	LHSMW11-090707	40/40	1		09/18/07 11:16
20	HY.091807.111834	L0709261-08	LHSMW14-090707	40/40	1		09/18/07 11:18
21	HY.091807.112032	L0709261-10	LHSMW15-090707	40/40	1		09/18/07 11:20
22	HY.091807.112241	WG250401-12	CCV		1		09/18/07 11:22
23	HY.091807.112458	WG250401-13	CCB		1		09/18/07 11:24
24	HY.091807.112717	L0709261-12	LHSMW19-090707	40/40	1		09/18/07 11:27
25	HY.091807.112910	L0709261-14	LHSMW22-090707	40/40	1		09/18/07 11:29
26	HY.091807.113149	L0709261-16	LHSMW23-090707	40/40	1		09/18/07 11:31
27	HY.091807.113326	L0709261-18	LHSMW24-090707	40/40	1		09/18/07 11:33
28	HY.091807.113515	L0709261-20	LHSMW24-090707-FD	40/40	1		09/18/07 11:35
29	HY.091807.113652	WG250401-14	CCV		1		09/18/07 11:36
30	HY.091807.113844	WG250401-15	CCB		1		09/18/07 11:38

Page: 1 Approved:

KEMRON Environmental Services
Data Checklist

Date: 17-SEP-2007
Analyst: ED
Analyst: NA
Method: 7470A
Instrument: HYDRA
Curve Workgroup: WG250296
Runlog ID: 18243
Analytical Workgroups: WG250149

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	261,230,248
Client Forms	
Level X	
Level 3	261
Level 4	
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	ED
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
17-SEP-2007

Secondary Reviewer:
17-SEP-2007

Generated: SEP-17-2007 16:11:22

KEMRON Environmental Services
Data Checklist

Date: 18-SEP-2007
Analyst: ED
Analyst: NA
Method: 7470A
Instrument: HYDRA
Curve Workgroup: WG250401
Runlog ID: 18283
Analytical Workgroups: WG250283

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	261
Client Forms	
Level X	
Level 3	261
Level 4	
Check for compliance with method and project specific requirements	
Check the completeness of reported information	
Check the information for the report narrative	
Primary Reviewer	ED
Secondary Reviewer	
Comments	

Primary Reviewer:
18-SEP-2007

Secondary Reviewer:

Generated: SEP-18-2007 15:10:52

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 7470A AAB#: WG250149
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW14-090707	09/10/07	09/13/07	09/14/07	28	3.79	09/17/07	28	3.06	
LHSMW11-090707	09/07/07	09/13/07	09/14/07	28	6.84	09/17/07	28	3.06	
LHSMW24-090707	09/11/07	09/13/07	09/14/07	28	2.70	09/17/07	28	3.07	
LHSMW22-090707	09/11/07	09/13/07	09/14/07	28	2.94	09/17/07	28	3.06	
LHSMW24-090707-FD	09/11/07	09/13/07	09/14/07	28	2.70	09/17/07	28	3.07	
LHSMW23-090707	09/11/07	09/13/07	09/14/07	28	2.79	09/17/07	28	3.07	
LHSMW19-090707	09/11/07	09/13/07	09/14/07	28	3.01	09/17/07	28	3.06	
LHSMW15-090707	09/10/07	09/13/07	09/14/07	28	3.70	09/17/07	28	3.06	
46WW02-090707	09/07/07	09/13/07	09/14/07	28	7.00	09/17/07	28	3.06	
46WW04-090707	09/07/07	09/13/07	09/14/07	28	6.93	09/17/07	28	3.06	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 876708
Report generated 09/17/2007 14:46

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 7470A AAB#: WG250283
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW19-090707	09/11/07	09/13/07	09/17/07	28	6.03	09/18/07	28	1.10	
LHSMW23-090707	09/11/07	09/13/07	09/17/07	28	5.82	09/18/07	28	1.10	
LHSMW14-090707	09/10/07	09/13/07	09/17/07	28	6.82	09/18/07	28	1.09	
LHSMW22-090707	09/11/07	09/13/07	09/17/07	28	5.97	09/18/07	28	1.10	
LHSMW11-090707	09/07/07	09/13/07	09/17/07	28	9.87	09/18/07	28	1.09	
46WW04-090707	09/07/07	09/13/07	09/17/07	28	9.96	09/18/07	28	1.08	
LHSMW15-090707	09/10/07	09/13/07	09/17/07	28	6.73	09/18/07	28	1.09	
LHSMW24-090707-FD	09/11/07	09/13/07	09/17/07	28	5.73	09/18/07	28	1.10	
LHSMW24-090707	09/11/07	09/13/07	09/17/07	28	5.73	09/18/07	28	1.10	
46WW02-090707	09/07/07	09/13/07	09/17/07	28	10.0	09/18/07	28	1.08	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 877817
Report generated 09/18/2007 14:58

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250149
Blank File ID: HY.091707.094507
Blank Sample ID: WG250107-02
Prep Date: 09/14/07 08:30
Instrument ID: HYDRA
Analyzed Date: 09/17/07 09:45
Method: 7470A
Analyst: ED

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
46WW02-090707	L0709261-01	HY.091707.094919	09/17/07 09:49	01
46WW04-090707	L0709261-03	HY.091707.095229	09/17/07 09:52	01
LHSMW11-090707	L0709261-05	HY.091707.095406	09/17/07 09:54	01
LHSMW14-090707	L0709261-07	HY.091707.095543	09/17/07 09:55	01
LHSMW15-090707	L0709261-09	HY.091707.095732	09/17/07 09:57	01
LHSMW19-090707	L0709261-11	HY.091707.095928	09/17/07 09:59	01
LHSMW22-090707	L0709261-13	HY.091707.100117	09/17/07 10:01	01
LHSMW23-090707	L0709261-15	HY.091707.100631	09/17/07 10:06	01
LHSMW24-090707	L0709261-17	HY.091707.100808	09/17/07 10:08	01
LHSMW24-090707-FD	L0709261-19	HY.091707.100957	09/17/07 10:09	01
LCS	WG250107-03	HY.091707.103104	09/17/07 10:31	01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 876709
Report generated 09/17/2007 14:46

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250283
Blank File ID: HY.091807.110103
Blank Sample ID: WG250231-02
Prep Date: 09/17/07 09:10
Instrument ID: HYDRA
Analyzed Date: 09/18/07 11:01
Method: 7470A
Analyst: ED

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250231-03	HY.091807.110311	09/18/07 11:03	01
46WW02-090707	L0709261-02	HY.091807.110447	09/18/07 11:04	01
46WW04-090707	L0709261-04	HY.091807.111047	09/18/07 11:10	01
LHSMW11-090707	L0709261-06	HY.091807.111645	09/18/07 11:16	01
LHSMW14-090707	L0709261-08	HY.091807.111834	09/18/07 11:18	01
LHSMW15-090707	L0709261-10	HY.091807.112032	09/18/07 11:20	01
LHSMW19-090707	L0709261-12	HY.091807.112717	09/18/07 11:27	01
LHSMW22-090707	L0709261-14	HY.091807.112910	09/18/07 11:29	01
LHSMW23-090707	L0709261-16	HY.091807.113149	09/18/07 11:31	01
LHSMW24-090707	L0709261-18	HY.091807.113326	09/18/07 11:33	01
LHSMW24-090707-FD	L0709261-20	HY.091807.113515	09/18/07 11:35	01

METHOD BLANK REPORT

Login Number: L0709261 Prep Date: 09/14/07 08:30 Sample ID: WG250107-02
Instrument ID: HYDRA Run Date: 09/17/07 09:45 Prep Method: METHOD
File ID: HY.091707.094507 Analyst: ED Method: 7470A
Workgroup (AAB#): WG250149 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-17-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Mercury	0.000100	0.000200	0.000100	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 876710
Report generated 09/17/2007 14:46

METHOD BLANK REPORT

Login Number: L0709261 Prep Date: 09/17/07 09:10 Sample ID: WG250231-02
Instrument ID: HYDRA Run Date: 09/18/07 11:01 Prep Method: METHOD
File ID: HY.091807.110103 Analyst: ED Method: 7470A
Workgroup (AAB#): WG250283 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-18-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Mercury, Dissolved	0.000100	0.000200	0.000100	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 877819
Report generated 09/18/2007 14:58

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250107-03
Instrument ID: HYDRA Run Time: 10:31 Prep Method: METHOD
File ID: HY.091707.103104 Analyst: ED Method: 7470A
Workgroup (AAB#): WG250149 Matrix: Water Units: mg/L
QC Key: STD Lot#: MI-7470-01 Cal ID: HYDRA-17-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury	0.00400	0.00446	112	85 - 115	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 876711
Report generated 09/17/2007 14:46

KEMRON Environmental Services

00079883

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250231-03
Instrument ID: HYDRA Run Time: 11:03 Prep Method: METHOD
File ID: HY.091807.110311 Analyst: ED Method: 7470A
Workgroup (AAB#): WG250283 Matrix: Water Units: mg/L
QC Key: STD Lot#: MI-7470-01 Cal ID: HYDRA-18-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury, Dissolved	0.00400	0.00451	113	85 - 115	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 877820
Report generated 09/18/2007 14:59

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00079884

Loginnum:L0709261 Cal ID:HYDRA- Worknum:WG250149
Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7470A
Parent ID:WG250107-01 File ID:HY.091707.101326 Dil:1 Matrix:WATER
Sample ID:WG250107-04 MS File ID:HY.091707.101715 Dil:1 Units:mg/L
Sample ID:WG250107-05 MSD File ID:HY.091707.101903 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury	ND	0.0400	0.0479	120	0.0400	0.0478	120	0.209	85 - 115	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 876712
Report generated 09/17/2007 14:46

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L0709261 Cal ID: HYDRA- Worknum:WG250283
Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7470A
Parent ID:WG250231-01 File ID:HY.091807.110447 Dil:1 Matrix:WATER
Sample ID:WG250231-04 MS File ID:HY.091807.110626 Dil:1 Units:mg/L
Sample ID:WG250231-05 MSD File ID:HY.091807.110807 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury, Dissolved	ND	0.00444	0.00493	111	0.00444	0.00493	111	0	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 877821
Report generated 09/18/2007 14:59

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250149
Instrument ID: HYDRA **Method:** 7470A
Post Spike ID: WG250149-01 **File ID:** HY.091707.095055 **Dil:** 1 **Units:** ug/L
Sample ID: L0709261-01 **File ID:** HY.091707.094919 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	1.09		0	U	1	109.0	85 - 115	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 876707
Report generated 09/17/2007 14:46

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L0709261 **Worknum:** WG250283
Instrument ID: HYDRA **Method:** 7470A
Post Spike ID: WG250283-01 **File ID:** HY.091807.111316 **Dil:** 1 **Units:** ug/L
Sample ID: L0709261-04 **File ID:** HY.091807.111047 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	1.04		0	U	1	104.0	85 - 115	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 877816
Report generated 09/18/2007 14:58

Login Number:L0709261
Analytical Method:7470A
ICAL Worknum:WG250296

Workgroup (AAB#):WG250149
Instrument ID:HYDRA
Initial Calibration Date:09/17/2007 09:25

Analyte	WG250296-01		WG250296-02		WG250296-03		WG250296-04		WG250296-05		WG250296-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	1702	0.200	15246	1.00	63875	2.00	114367	5.00	290334	10.0	575368

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

KEMRON FORMS - Modified 02/02/2007
Version 1.5 PDF File ID: 876713
Report generated 09/17/2007 14:46

Login Number: L0709261
Analytical Method: 7470A
ICAL Worknum: WG250296

Workgroup (AAB#): WG250149
Instrument ID: HYDRA
Initial Calibration Date: 09/17/2007 09:25

Analyte	R	Q
Mercury	0.9999	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

KEMRON FORMS - Modified 02/02/2007
Version 1.5 PDF File ID: 876713
Report generated 09/17/2007 14:46

Login Number:L0709261
Analytical Method:7470A
ICAL Worknum:WG250401

Workgroup (AAB#):WG250283
Instrument ID:HYDRA
Initial Calibration Date:09/18/2007 10:46

Analyte	WG250401-01		WG250401-02		WG250401-03		WG250401-04		WG250401-05		WG250401-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	1451	0.200	12800	1.00	58653	2.00	115931	5.00	291848	10.0	559686

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

KEMRON FORMS - Modified 02/02/2007
Version 1.5 PDF File ID: 877822
Report generated 09/18/2007 14:59

Login Number: L0709261
Analytical Method: 7470A
ICAL Worknum: WG250401

Workgroup (AAB#): WG250283
Instrument ID: HYDRA
Initial Calibration Date: 09/18/2007 10:46

Analyte	R	Q
Mercury	0.9998	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

KEMRON FORMS - Modified 02/02/2007
Version 1.5 PDF File ID: 877822
Report generated 09/18/2007 14:59

KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079892

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-08
Instrument ID: HYDRA Run Time: 09:30 Method: 7470A
File ID: HY.091707.093006 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	-.086	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 10/02/2006
Version 1.5 PDF File ID: 876715
Report generated 09/17/2007 14:46

KEMRON Environmental Services

INITIAL CALIBRATION BLANK (ICB)

00079893

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-09

Instrument ID: HYDRA Run Time: 10:53 Method: 7470A

File ID: HY.091807.105311 Analyst: ED Units: ug/L

Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	-.121	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 10/02/2006
Version 1.5 PDF File ID: 877824
Report generated 09/18/2007 14:59

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079894

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-10
Instrument ID: HYDRA Run Time: 09:33 Method: 7470A
File ID: HY.091707.093348 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	-0.0550	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 876717
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079895

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-12
Instrument ID: HYDRA Run Time: 10:04 Method: 7470A
File ID: HY.091707.100453 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	0.00800	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 876717
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079896

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-14
Instrument ID: HYDRA Run Time: 10:24 Method: 7470A
File ID: HY.091707.102405 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	-0.109	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 876717
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079897

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-16
Instrument ID: HYDRA Run Time: 10:34 Method: 7470A
File ID: HY.091707.103418 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	-0.125	1	F

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 876717
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079898

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-11
Instrument ID: HYDRA Run Time: 10:56 Method: 7470A
File ID: HY.091807.105654 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	-0.0850	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 877826
Report generated 09/18/2007 14:59

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079899

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-13
Instrument ID: HYDRA Run Time: 11:24 Method: 7470A
File ID: HY.091807.112458 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	0.0320	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 877826
Report generated 09/18/2007 14:59

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00079900

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-15
Instrument ID: HYDRA Run Time: 11:38 Method: 7470A
File ID: HY.091807.113844 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.200	0.0100	1	U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 877826
Report generated 09/18/2007 14:59

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079901

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-07
Instrument ID: HYDRA Run Time: 09:28 Method: 7470A
File ID: HY.091707.092829 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	2.08	104	90 - 110	

* Exceeds LIMITS Limit

KEMRON FORMS - Modified 09/06/2007 (ICV)
Version 1.5 PDF File ID: 876714
Report generated 09/17/2007 14:46

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00079902

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-08
Instrument ID: HYDRA Run Time: 10:51 Method: 7470A
File ID: HY.091807.105135 Analyst: ED Units: ug/L
Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	2.05	103	90 - 110	

* Exceeds LIMITS Limit

KEMRON FORMS - Modified 09/06/2007 (ICV)
Version 1.5 PDF File ID: 877823
Report generated 09/18/2007 14:59

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079903

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-09
Instrument ID: HYDRA Run Time: 09:31 Method: 7470A
File ID: HY.091707.093149 Analyst: ED QC Key: STD
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00205	mg/L	103	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876716
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079904

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-11
Instrument ID: HYDRA Run Time: 10:02 Method: 7470A
File ID: HY.091707.100254 Analyst: ED QC Key: STD
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00202	mg/L	101	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876716
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079905

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-13
Instrument ID: HYDRA Run Time: 10:22 Method: 7470A
File ID: HY.091707.102228 Analyst: ED QC Key: STD
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00204	mg/L	102	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876716
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079906

Login Number: L0709261 Run Date: 09/17/2007 Sample ID: WG250296-15
Instrument ID: HYDRA Run Time: 10:32 Method: 7470A
File ID: HY.091707.103241 Analyst: ED QC Key: STD
Workgroup (AAB#): WG250149 Cal ID: HYDRA - 17-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00191	mg/L	95.5	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 876716
Report generated 09/17/2007 14:46

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079907

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-10
Instrument ID: HYDRA Run Time: 10:55 Method: 7470A
File ID: HY.091807.105517 Analyst: ED QC Key: STD
Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00212	mg/L	106	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877825
Report generated 09/18/2007 14:59

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079908

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-12
Instrument ID: HYDRA Run Time: 11:22 Method: 7470A
File ID: HY.091807.112241 Analyst: ED QC Key: STD
Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00210	mg/L	105	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877825
Report generated 09/18/2007 14:59

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00079909

Login Number: L0709261 Run Date: 09/18/2007 Sample ID: WG250401-14
Instrument ID: HYDRA Run Time: 11:36 Method: 7470A
File ID: HY.091807.113652 Analyst: ED QC Key: STD
Workgroup (AAB#): WG250283 Cal ID: HYDRA - 18-SEP-07

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00193	mg/L	96.5	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877825
Report generated 09/18/2007 14:59

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

% Moisture = 100 - % Solids from 1.0 calculation

WORKGROUP: WG250297

PERCENT SOLIDS

SOP K0003 Rev: 9

Balance: (OHAUS EIRW60)/Other

Sample	Empty Pan WT 1	WET WT2	DRY WT 3A	WET WT 3B	DRY WT 3C
L0709321-5,7,8	1.35	22.86	20.25		
06	1.31	27.29	24.05		
L0709261-21	1.34	17.59	13.16		
22	1.32	18.76	14.95		
23	1.27	19.03	15.32		
L0709291-01	1.33	20.12	18.26		
02	1.29	18.03	16.36		
03	1.34	17.65	16.31		
04	1.34	18.56	16.64		
05	1.34	25.67	22.86		
06	1.32	19.31	18.21		
07	1.34	20.27	18.07		
8,9,10	1.29	19.75	17.62		
11	1.32	17.97	15.60		
12	1.34	17.36	15.32		
13	1.31	20.56	17.76		
14	1.32	28.17	23.32		
15	1.37	16.70	14.51		
16	1.38	30.25	25.09		
17	1.33	18.24	17.68		
Duplicate: ~~L0709291~~ L0709291-17 JH 9/17/07	1.38	21.08	15.50		

Analyst: Justin V. Hesson
Jammy Morris

ADT (on): 9/17/2007 @ ~~1~~ 1451 JH 9/17/07
ADT (off): 9/18/2007 @ 945
ADT (off): _____

DCN#71011

Approved: September 20, 2007

KEMRON ENVIRONMENTAL SERVICES
PERCENT SOLID REPORT

Workgroup (AAB#):WG250297 Run Date:09/17/2007
Method:D2216-90 Run Time:14:51
Analyst:TMM

SAMPLE NUMBER	Pan WT.	Int WT.	Fnl WT.	% Solid	% Moist	UNITS
L0709261-21	1.340	17.59	13.16	72.74		%
L0709261-22	1.320	18.76	14.95	78.15		%
L0709261-23	1.270	19.03	15.32	79.11		%
L0709291-01	1.330	20.12	18.26	90.10		%
L0709291-02	1.290	18.03	16.36	90.02		%
L0709291-03	1.340	17.65	16.31	91.78		%
L0709291-04	1.340	18.56	16.64	88.85		%
L0709291-05	1.340	25.67	22.86	88.45		%
L0709291-06	1.320	19.31	18.21	93.89		%
L0709291-07	1.340	20.27	18.07	88.38		%
L0709291-08	1.290	19.75	17.62	88.46		%
L0709291-09	1.290	19.75	17.62	88.46		%
L0709291-10	1.290	19.75	17.62	88.46		%
L0709291-11	1.320	17.97	15.60	85.77		%
L0709291-12	1.340	17.36	15.32	87.27		%
L0709291-13	1.310	20.56	17.76	85.45		%
L0709291-14	1.320	28.17	23.32	81.94		%
L0709291-15	1.370	16.70	14.51	85.71		%
L0709291-16	1.380	30.25	25.09	82.13		%
L0709291-17	1.330	18.24	17.68	96.69		%
L0709321-05	1.350	22.86	20.25	87.87		%
L0709321-06	1.310	27.29	24.05	87.53		%
L0709321-07	1.350	22.86	20.25	87.87		%
L0709321-08	1.350	22.86	20.25	87.87		%
WG250297-01	1.330	18.24	17.68	96.69	3.312	%
WG250297-02	1.380	21.08	15.50	71.68	28.32	%

KEMRON FORMS - Modified 02/25/2007
Version 1.2
Report generated 09/18/2007 10:59

Approved: September 20, 2007

2.2.2 Total Dissolved Solids Data

2.2.2.1 Summary Data

LABORATORY REPORT

00079918

L0709261

09/26/07 14:09

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP-46

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
46WW02-090707	L0709261-01	160.1	1	13-SEP-07
46WW04-090707	L0709261-03	160.1	1	13-SEP-07
LHSMW11-090707	L0709261-05	160.1	1	13-SEP-07
LHSMW14-090707	L0709261-07	160.1	1	13-SEP-07
LHSMW15-090707	L0709261-09	160.1	1	13-SEP-07
LHSMW19-090707	L0709261-11	160.1	1	13-SEP-07
LHSMW22-090707	L0709261-13	160.1	1	13-SEP-07
LHSMW23-090707	L0709261-15	160.1	1	13-SEP-07
LHSMW24-090707	L0709261-17	160.1	1	13-SEP-07
LHSMW24-090707-FD	L0709261-19	160.1	1	13-SEP-07

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079919

Sample Number: **L0709261-01**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/07/2007 08:30**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-04**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**372**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079920

Sample Number: **L0709261-03**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/07/2007 10:10**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-10**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**2760**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079921

Sample Number: **L0709261-05**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/07/2007 12:20**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-05**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**2990**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079922

Sample Number: **L0709261-07**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/10/2007 13:30**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-08**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**122**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079923

Sample Number: **L0709261-09**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/10/2007 15:45**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-07**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**3830**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079924

Sample Number: **L0709261-11**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/11/2007 08:20**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-12**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**870**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079925

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/11/2007 09:50**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-13**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**3760**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079926

Sample Number: **L0709261-15**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/11/2007 13:35**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-14**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**3280**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079927

Sample Number: **L0709261-17**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/11/2007 15:35**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-15**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**3990**		**20.0**	**10.0**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079928

Sample Number: **L0709261-19**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250079**
Collect Date: **09/11/2007 15:35**

PrePrep Method: **NONE**
Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:20**
Cal Date:
Run Date: **09/14/2007 08:20**
File ID: **EN.0709140820-16**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Dissolved Solids		**3980**		**20.0**	**10.0**

2.2.2.2 QC Summary Data

Example Total Dissolved Solids Calculations

[(WT2 - WT1) * 1000000]/volume = mg/L

where:

WT1 = weight (grams) of empty container.
WT2 = weight (grams) of dried sample and container.
1000000 = factor to get to mg/L.
volume = mL of sample used.

KEMRON Environmental Services
Data Checklist

Date: 14-SEP-2007
Analyst: HJR
Analyst: NA
Method: TDS
Instrument: OVEN
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG250079

Calibration/Linearity	9/14/07
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	HJR
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
17-SEP-2007

Secondary Reviewer:
18-SEP-2007

Generated: SEP-18-2007 14:42:14

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 160.1 AAB#: WG250079
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW22-090707	09/11/07	09/13/07	09/14/07	7	2.94	09/14/07	7	2.94	
LHSMW24-090707	09/11/07	09/13/07	09/14/07	7	2.70	09/14/07	7	2.70	
46WW02-090707	09/07/07	09/13/07	09/14/07	7	6.99	09/14/07	7	6.99	
LHSMW11-090707	09/07/07	09/13/07	09/14/07	7	6.83	09/14/07	7	6.83	
LHSMW14-090707	09/10/07	09/13/07	09/14/07	7	3.78	09/14/07	7	3.78	
LHSMW19-090707	09/11/07	09/13/07	09/14/07	7	3.00	09/14/07	7	3.00	
46WW04-090707	09/07/07	09/13/07	09/14/07	7	6.92	09/14/07	7	6.92	
LHSMW24-090707-FD	09/11/07	09/13/07	09/14/07	7	2.70	09/14/07	7	2.70	
LHSMW15-090707	09/10/07	09/13/07	09/14/07	7	3.69	09/14/07	7	3.69	
LHSMW23-090707	09/11/07	09/13/07	09/14/07	7	2.78	09/14/07	7	2.78	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 877707
Report generated 09/18/2007 14:26

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250079
Blank File ID: EN.0709140820-01
Blank Sample ID: WG250079-01
Prep Date: 09/14/07 08:20
Instrument ID: OVEN
Analyzed Date: 09/14/07 08:20
Method: 160.1
Analyst: TMM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250079-02	EN.0709140820-02	09/14/07 08:20	
LCS2	WG250079-03	EN.0709140820-03	09/14/07 08:20	
46WW02-090707	L0709261-01	EN.0709140820-04	09/14/07 08:20	
LHSMW11-090707	L0709261-05	EN.0709140820-05	09/14/07 08:20	
LHSMW15-090707	L0709261-09	EN.0709140820-07	09/14/07 08:20	
LHSMW14-090707	L0709261-07	EN.0709140820-08	09/14/07 08:20	
46WW04-090707	L0709261-03	EN.0709140820-10	09/14/07 08:20	
LHSMW19-090707	L0709261-11	EN.0709140820-12	09/14/07 08:20	
LHSMW22-090707	L0709261-13	EN.0709140820-13	09/14/07 08:20	
LHSMW23-090707	L0709261-15	EN.0709140820-14	09/14/07 08:20	
LHSMW24-090707	L0709261-17	EN.0709140820-15	09/14/07 08:20	
LHSMW24-090707-FD	L0709261-19	EN.0709140820-16	09/14/07 08:20	
DUP	WG250079-05	EN.0709140820-24	09/14/07 08:20	

KEMRON Environmental Services

METHOD BLANK REPORT

00079934

Login Number: L0709261 Prep Date: 09/14/07 08:20 Sample ID: WG250079-01
Instrument ID: OVEN Run Date: 09/14/07 08:20 Prep Method: 160.1
File ID: EN.0709140820-01 Analyst: TMM Method: 160.1
Workgroup (AAB#): WG250079 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: OVEN-

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 877709
Report generated 09/18/2007 14:26

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Analyst: TMM Prep Method: 160.1
Instrument ID: OVEN Matrix: Water Method: 160.1
Workgroup (AAB#): WG250079 Units: mg/L
QC Key: STD Lot #: STD19758

Sample ID: WG250079-02 LCS File ID: EN.0709140820-02 Run Date: 09/14/2007 08:20
Sample ID: WG250079-03 LCS2 File ID: EN.0709140820-03 Run Date: 09/14/2007 08:20

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	490	98.0	500	500	100	2.02	80 - 120	25	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 877710
Report generated 09/18/2007 14:26

2.2.2.3 Raw Data

KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG250079

TOTAL DISSOLVED SOLIDS

SOP K1601 Revision #: _____
☐ EPA 160.1/ SM2540C
☐ Other: _____
LCS: 2nd 19758
Daily Dilution: _____

Workgroup #: _____
Balance: AND GR-202 / Other
Matrix Spike: _____
Daily Dilution: _____

SAMPLE	#	VOLUME (mL)	INITIAL WEIGHT WT1 (g)	DRY WEIGHT WT2A (g)	DRY WEIGHT WT2B (g)	DRY WEIGHT WT2C (g)
BLANK	B8	100	67.2281	67.2280	67.2281	
LCS: _____mg/L	K4	50	82.1629	82.1875	82.1874	
LCSDUP: _____mg/L	B7	50	64.5838	64.6088	64.6088	
09-261-01	10	50	54.0011	54.0198	54.0197	
-05	19		53.0009	53.1506	53.1506	
09-192-01	5		51.5415	51.6683	51.6680	
09-261-09	17		54.1810	54.3724	54.3723	
-07	F9		58.8554	58.8613	58.8615	
09-192-02	J2		54.4092	54.4389	54.4390	
09-261-03	12		53.3105	53.4488	53.4485	
09-212-01	N2		48.7144	48.7282	48.7281	
09-261-11	J1		56.9080	56.9514	56.9515	
-13	14		55.4111	55.5990	55.5990	
-15	X2		53.4819	53.6461	53.6460	
-17	TA		48.8674	49.0670	49.0669	
-19	☺		45.1891	45.8882	45.8879	
09-212-02	B11		51.6543	51.6704	51.6704	
-03	F4		59.8776	59.8873	59.8870	
-04	K6	9-14-07	51.0611	51.6705	51.0704	
05	Y6		46.9739	46.9835	46.9835	
09-267-01	X7		49.5607	49.5825	49.5824	
-02	J7		54.8011	54.8091	54.8090	
-03	M3		59.7652	59.7774	59.7773	
DUP 09-267-03	20		53.9169	53.9300	53.9300	

ANALYST: Deanna Hosson

DATE/TIME: (on) 9-14-07 0820
DATE/TIME: (off) 9-17-07 0910
DATE/TIME: (off) 9-17-07 1130
DATE/TIME: (off) _____

DCN#70980

Deanna Hosson
Approved: September 18, 2007

KEMRON ENVIRONMENTAL SERVICES
GRAVIMETRIC REPORT

Workgroup (AAB#): WG250079
Product: 160.1
Analyte: TOTAL DISSOLVED SOLIDS

Analyst: TMM
Run Date: 09/14/2007 08:20

SAMPLE NUMBER	INITIAL VOL	INITIAL WT	FINAL WT	Anal. Conc	Rep. Conc.	Units
WG250079-01	100	67.2281	67.2281	0	0	mg/L
WG250079-02	50	82.1629	82.1874	490.0	490.0	mg/L
WG250079-03	50	64.5838	64.6088	500.0	500.0	mg/L
L0709261-01	50	54.0011	54.0197	372.0	372.0	mg/L
L0709261-05	50	53.0009	53.1506	2994	2994	mg/L
L0709192-01	50	51.5415	51.668	2530	2530	mg/L
L0709261-09	50	54.181	54.3723	3826	3826	mg/L
L0709261-07	50	58.8554	58.8615	122.0	122.0	mg/L
L0709192-02	50	54.4092	54.439	596.0	596.0	mg/L
L0709261-03	50	53.3105	53.4485	2760	2760	mg/L
L0709212-01	50	48.7144	48.7281	274.0	274.0	mg/L
L0709261-11	50	56.908	56.9515	870.0	870.0	mg/L
L0709261-13	50	55.4111	55.599	3758	3758	mg/L
L0709261-15	50	53.4819	53.646	3282	3282	mg/L
L0709261-17	50	48.8674	49.0669	3990	3990	mg/L
L0709261-19	50	45.6891	45.8879	3976	3976	mg/L
L0709212-02	50	51.6543	51.6704	322.0	322.0	mg/L
L0709212-03	50	59.8776	59.887	188.0	188.0	mg/L
L0709212-04	50	51.0611	51.0704	186.0	186.0	mg/L
L0709212-05	50	46.9739	46.9835	192.0	192.0	mg/L
L0709267-01	50	49.5607	49.5824	434.0	434.0	mg/L
L0709267-02	50	54.8011	54.809	158.0	158.0	mg/L
L0709267-03	50	59.7652	59.7773	242.0	242.0	mg/L
WG250079-04	50	59.7652	59.7773	242.0	242.0	mg/L
WG250079-05	50	53.9169	53.93	262.0	262.0	mg/L

KEMRON FORMS - Modified 02/26/2007
Version 1.3
Report generated 09/17/2007 15:38

Approved: September 18, 2007

2.2.3 Total Suspended Solids Data

2.2.3.1 Summary Data

LABORATORY REPORT

00079941

L0709261

09/26/07 14:09

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP-46

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
46WW02-090707	L0709261-01	160.2	1	13-SEP-07
46WW04-090707	L0709261-03	160.2	1	13-SEP-07
LHSMW11-090707	L0709261-05	160.2	1	13-SEP-07
LHSMW14-090707	L0709261-07	160.2	1	13-SEP-07
LHSMW15-090707	L0709261-09	160.2	1	13-SEP-07
LHSMW19-090707	L0709261-11	160.2	1	13-SEP-07
LHSMW22-090707	L0709261-13	160.2	1	13-SEP-07
LHSMW23-090707	L0709261-15	160.2	1	13-SEP-07
LHSMW24-090707	L0709261-17	160.2	1	13-SEP-07
LHSMW24-090707-FD	L0709261-19	160.2	1	13-SEP-07

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079942

Sample Number: **L0709261-01**
Client ID: **46WW02-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/07/2007 08:30**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-04**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**4.50**	**J**	**5.00**	**2.50**

J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079943

Sample Number: **L0709261-03**
Client ID: **46WW04-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/07/2007 10:10**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-05**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**13.0**		**5.00**	**2.50**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079944

Sample Number: **L0709261-05**
Client ID: **LHSMW11-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/07/2007 12:20**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-06**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**25.5**		**5.00**	**2.50**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079945

Sample Number: **L0709261-07**
Client ID: **LHSMW14-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/10/2007 13:30**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-07**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**23.5**		**5.00**	**2.50**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079946

Sample Number: **L0709261-09**
Client ID: **LHSMW15-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/10/2007 15:45**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-08**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**6.50**		**5.00**	**2.50**

Report Number: **L0709261**
Report Date : **September 26, 2007**

Sample Number: **L0709261-11**
Client ID: **LHSMW19-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/11/2007 08:20**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-09**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**9.50**		**5.00**	**2.50**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079948

Sample Number: **L0709261-13**
Client ID: **LHSMW22-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/11/2007 09:50**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-10**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids			**U**	**5.00**	**2.50**

U Not detected at or above adjusted sample detection limit

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079949

Sample Number: **L0709261-15**
Client ID: **LHSMW23-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/11/2007 13:35**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-11**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**13.5**		**5.00**	**2.50**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079950

Sample Number: **L0709261-17**
Client ID: **LHSMW24-090707**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/11/2007 15:35**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-12**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**5.00**		**5.00**	**2.50**

Report Number: **L0709261**
Report Date : **September 26, 2007**

00079951

Sample Number: **L0709261-19**
Client ID: **LHSMW24-090707-FD**
Matrix: **Water**
Workgroup Number: **WG250078**
Collect Date: **09/11/2007 15:35**

PrePrep Method: **NONE**
Prep Method: **160.2**
Analytical Method: **160.2**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **09/14/2007 08:00**
Cal Date:
Run Date: **09/14/2007 08:00**
File ID: **EN.0709140800-13**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Suspended Solids		**6.00**		**5.00**	**2.50**

2.2.3.2 QC Summary Data

Example Total Suspended Solids Calculations

[(WT2 - WT1) * 1000000]/volume = mg/L

where:

WT1 = weight (grams) of empty container.
WT2 = weight (grams) of dried sample and container.
1000000 = factor to get to mg/L.
volume = mL of sample used.

KEMRON Environmental Services
Data Checklist

Date: 14-SEP-2007
Analyst: HJR
Analyst: NA
Method: TSS
Instrument: OVEN
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG250078

Calibration/Linearity	9/14/07
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	HJR
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
18-SEP-2007

Secondary Reviewer:
18-SEP-2007

Generated: SEP-18-2007 14:42:17

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 160.2 AAB#: WG250078
Login Number: L0709261

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
46WW04-090707	09/07/07	09/13/07	09/14/07	7	6.91	09/14/07	7	6.91	
LHSMW14-090707	09/10/07	09/13/07	09/14/07	7	3.77	09/14/07	7	3.77	
46WW02-090707	09/07/07	09/13/07	09/14/07	7	6.98	09/14/07	7	6.98	
LHSMW23-090707	09/11/07	09/13/07	09/14/07	7	2.77	09/14/07	7	2.77	
LHSMW11-090707	09/07/07	09/13/07	09/14/07	7	6.82	09/14/07	7	6.82	
LHSMW15-090707	09/10/07	09/13/07	09/14/07	7	3.68	09/14/07	7	3.68	
LHSMW22-090707	09/11/07	09/13/07	09/14/07	7	2.92	09/14/07	7	2.92	
LHSMW24-090707	09/11/07	09/13/07	09/14/07	7	2.68	09/14/07	7	2.68	
LHSMW24-090707-FD	09/11/07	09/13/07	09/14/07	7	2.68	09/14/07	7	2.68	
LHSMW19-090707	09/11/07	09/13/07	09/14/07	7	2.99	09/14/07	7	2.99	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 877737
Report generated 09/18/2007 14:29

METHOD BLANK SUMMARY

Login Number: L0709261
Work Group: WG250078
Blank File ID: EN.0709140800-01
Blank Sample ID: WG250078-01
Prep Date: 09/14/07 08:00
Instrument ID: OVEN
Analyzed Date: 09/14/07 08:00
Method: 160.2
Analyst: TMM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250078-02	EN.0709140800-02	09/14/07 08:00	
LCS2	WG250078-03	EN.0709140800-03	09/14/07 08:00	
46WW02-090707	L0709261-01	EN.0709140800-04	09/14/07 08:00	
46WW04-090707	L0709261-03	EN.0709140800-05	09/14/07 08:00	
LHSMW11-090707	L0709261-05	EN.0709140800-06	09/14/07 08:00	
LHSMW14-090707	L0709261-07	EN.0709140800-07	09/14/07 08:00	
LHSMW15-090707	L0709261-09	EN.0709140800-08	09/14/07 08:00	
LHSMW19-090707	L0709261-11	EN.0709140800-09	09/14/07 08:00	
LHSMW22-090707	L0709261-13	EN.0709140800-10	09/14/07 08:00	
LHSMW23-090707	L0709261-15	EN.0709140800-11	09/14/07 08:00	
LHSMW24-090707	L0709261-17	EN.0709140800-12	09/14/07 08:00	
LHSMW24-090707-FD	L0709261-19	EN.0709140800-13	09/14/07 08:00	
DUP	WG250078-05	EN.0709140800-21	09/14/07 08:00	

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 877738
Report generated 09/18/2007 14:29

KEMRON Environmental Services

METHOD BLANK REPORT

00079957

Login Number: L0709261 Prep Date: 09/14/07 08:00 Sample ID: WG250078-01
Instrument ID: OVEN Run Date: 09/14/07 08:00 Prep Method: 160.2
File ID: EN.0709140800-01 Analyst: TMM Method: 160.2
Workgroup (AAB#): WG250078 Matrix: Water Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: OVEN-

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Total Suspended Solids	2.50	5.00	2.50	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 877739
Report generated 09/18/2007 14:29

KEMRON Environmental Services

00079958

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L0709261 Analyst: TMM Prep Method: 160.2
Instrument ID: OVEN Matrix: Water Method: 160.2
Workgroup (AAB#): WG250078 Units: mg/L
QC Key: STD Lot #: STD21832

Sample ID: WG250078-02 LCS File ID: EN.0709140800-02 Run Date: 09/14/2007 08:00
Sample ID: WG250078-03 LCS2 File ID: EN.0709140800-03 Run Date: 09/14/2007 08:00

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Suspended Solids	50.0	54.0	108	50.0	55.0	110	1.83	75 - 125	25	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 877740
Report generated 09/18/2007 14:29

2.2.3.3 Raw Data

KEMRON ENVIRONMENTAL SERVICES

Tray 4

WORKGROUP: WG250078

TOTAL SUSPENDED SOLIDS

LCS: Std 21932

MS: _____ mL LCS & _____ mL sample

Method: EPA 160.2 / SM2540D SOP #: K1602 Revision #: 11

Workgroup #: _____

Balance: AND GR-202 / Other

SAMPLE	#	VOLUME (mL)	INITIAL WEIGHT WT1 (g)	DRY WEIGHT WT2A (g)	DRY WEIGHT WT2B (g)	DRY WEIGHT WT2C (g)
BLANK	BLK	200	0.0903	0.0909	0.0908	
LCS: 50 mg/L	LCS	100	0.0909	0.0964	0.09163	
LCSDUP: 50 mg/L	LCS2	100	0.0909	0.0963	0.0964	
09-261-01	1	200	0.0898	0.0967	0.0907	
-03	2	"	0.0901	0.0927	0.0927	
-05	3	↓	0.0911	0.0964	0.09162	
-07	4	200	0.0896	0.0946	0.0943	
-09	5	"	0.0912	0.0926	0.0925	
-11	6	"	0.0897	0.0918	0.0916	
-13	7	"	0.0911	0.0913	0.0912	
-15	8	"	0.0910	0.0939	0.0937	
-17	9	"	0.0896	0.0907	0.0906	
-19	10	"	0.0899	0.0910	0.0911	
09-260-01	11	"	0.0907	0.0935	0.0935	
09-271-02	12	"	0.0878	0.0890	0.0889	
-04	13	"	0.0904	0.0906	0.0905	
09-259-01	14	"	0.0893	0.0900	0.0899	
-04	15	"	0.0910	0.0911	0.0911	
-06	16	"	0.0913	0.0906	0.0905	
09-277-01	17	↓	0.0889	0.0903	0.0903	
	18		0.0907			
	19		0.0910			
	20		0.0903			
DUP: 09-261-07	DUP	200	0.0885	0.0915	0.0916	0.0936

HW 9-17-07

ANALYST: _____

DATE/TIME: (on) 9-14-07 0860

DATE/TIME: (off) 9-17-07 0855

DATE/TIME: (off) 9-17-07 1115

DATE/TIME: (off) _____

DCN#70979

Approved: September 18, 2007

KEMRON ENVIRONMENTAL SERVICES
GRAVIMETRIC REPORT

Workgroup (AAB#):WG250078 Analyst:TMM
Product:160.2 Run Date:09/14/2007 08:00
Analyte:TOTAL SUSPENDED SOLIDS

SAMPLE NUMBER	INITIAL VOL	INITIAL WT	FINAL WT	Anal. Conc	Rep. Conc.	Units
WG250078-01	200	0.0908	0.0908	0	0	mg/L
WG250078-02	100	0.0909	0.0963	54.00	54.00	mg/L
WG250078-03	100	0.0909	0.0964	55.00	55.00	mg/L
L0709261-01	200	0.0898	0.0907	4.500	4.500 F	mg/L
L0709261-03	200	0.0901	0.0927	13.00	13.00	mg/L
L0709261-05	200	0.0911	0.0962	25.50	25.50	mg/L
L0709261-07	200	0.0896	0.0943	23.50	23.50	mg/L
WG250078-04	200	0.0896	0.0943	23.50	23.50	mg/L
L0709261-09	200	0.0912	0.0925	6.500	6.500	mg/L
L0709261-11	200	0.0897	0.0916	9.500	9.500	mg/L
L0709261-13	200	0.0911	0.0912	0.5000	ND	mg/L
L0709261-15	200	0.091	0.0937	13.50	13.50	mg/L
L0709261-17	200	0.0896	0.0906	5.000	5.000	mg/L
L0709261-19	200	0.0899	0.0911	6.000	6.000	mg/L
L0709260-01	200	0.0902	0.0935	16.50	16.50	mg/L
L0709271-02	200	0.0878	0.0889	5.500	5.500	mg/L
L0709271-04	200	0.0904	0.0905	0.5000	ND	mg/L
L0709259-01	200	0.0893	0.0899	3.000	ND	mg/L
L0709259-04	200	0.091	0.0911	0.5000	ND	mg/L
L0709259-06	200	0.0903	0.0905	1.000	ND	mg/L
L0709277-01	200	0.0889	0.0903	7.000	7.000	mg/L
WG250078-05	200	0.0885	0.0936	25.50	25.50	mg/L

KEMRON FORMS - Modified 02/26/2007
Version 1.3
Report generated 09/18/2007 12:07

Approved: September 18, 2007

3.0 Attachments

Kemron Environmental Services
Analyst Listing
September 26, 2007

AJF – AMANDA J. FICKIESEN
ALB – ANNIE L. BOCK
AML – ANTHONY M. LONG
ARA – ADRIAN R. ACHTERMANN
ASP – AARON S. PETRIE
BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN
CAF – CHERYL A. FLOWERS
CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS
CM – CHARLIE MARTIN
CMS – CRYSTAL M. STEPHENS
CPD – CHAD P. DAVIS
CSH – CHRIS S. HILL
DD – DIANE M. DENNIS
DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS
DRP – DAVE R. PITZER
DSF – DEBRA S. FREDERICK
DST – DENNIS S. TEPE
ECL – ERIC C. LAWSON
ED – EMILY E. DECKER
ERE – ERIN R. ELDER
FJB – FRANCES J. BOLDEN
HAV – HEMA VILASAGAR
HJR – HOLLY J. REED
JAB – JUANITA A. BECKER
JAL – JOHN A. LENT
JBK – JEREMY B. KINNEY
JCO – JOE C. OWENS
JDH – JUSTIN D. HESSON
JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES
JYH – JI Y. HU
KCZ – KEVIN C. ZUMBRO
KEB – KATHRYN E. BARNES
KHR – KIM H. RHODES
KJW – KATIE J. WIEFERICH
KRA – KATHY R. ALBERTSON
KRV – KATHRINE R. VICKERS
LKN – LINDA K. NEDEFF
LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN
MES – MARY E. SCHILLING
MKZ – MARILYN K. ZUMBRO
MLR – MARY L. ROCHOTTE
MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON
NJB – NATALIE J. BOOTH
PJM – PAUL J. MILLER
RAH – ROY A. HALSTEAD
RB – ROBERT BUCHANAN
REK – ROBERT E. KYER
RLF – RACHEL L. FRYE
RLK – ROBIN L. KLINGER
RNP – RICK N. PETTY
RWC – RODNEY W. CAMPBELL
SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF
SMH – SHAUNA M. HYDE
TDH – TRICIA D. HUCK
TMB – TIFFANY M. BAILEY
TMM – TAMMY M. MORRIS
VC – VICKI COLLIER
WFM – WALTER F. MARTIN

KEMRON Environmental Services

List of Valid Qualifiers

September 26, 2007

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

00079965

Chain of Custody

NO. 10225

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Kemron Address: 156 Starlite Marrietta, Ohio Contact: Stephanie Mosburgh

Project Name: LONGHORN - PBC Project Location: LHAAP-46

Project No.: 117591. Project Contact: Allen Willmore Project Telephone No.: (713) 247-9292

Point of Contact: Larry Doty Telephone No. (713) 996-4547

Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample ID ~~Telephone Number~~	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	TAL metals (HNO3 unfiltered)	TAL metals (to be filtered)	TOTAL Dissolved Solids	TOTAL Suspended Solids				Remarks
1	46WW02-090707	9/7/07	8:30		✓	W	Groundwater, Site 46	4	1	1	1	1				
2	46WW04-090707	9/7/07	10:10		✓	W	Groundwater, Site 46	4	1	1	1	1				
3	LHSMW11-090707	9/7/07	12:20		✓	W	Groundwater, Site46	4	1	1	1	1				
4	LHSMW14-091007	9/10/07	13:30		✓	W	Groundwater, Site 46	4	1	1	1	1				
5	LHSMW15-091007	9/10/07	1545		✓	W	Groundwater, Site 46	4	1	1	1	1				
6	LHSMW19-091107	9/11/07	0820		✓	W	Groundwater, Site 46	4	1	1	1	1				
7	LHSMW22-091107	9/11/07	09:50		✓	W	Groundwater, Site 46	4	1	1	1	1				Time Sampled = 09:50
8	LHSMW23-091107	9/11/07	13:35 09:50		✓	W	Groundwater, Site46	4	1	1	1	1				Time Sampled = 13:35
9	LHSMW ~~24~~ 091107-FD	9/11/07	15:35		✓	W	Groundwater, Site 46	4	1	1	1	1				Time Sampled = 15:35
10	LHSSMW24-091107	9/11/07	15:35		✓	W	Groundwater, Site 46	4	1	1	1	1				

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
Scott Beesinger	9/7/07 16:00	M. Hall	9/7/07 16:00
M. Hall	9/12/07 1030		
		Laboratory Erin Ebler	9-13-07 1100

Special Instructions

FedEx Airbill No.:

Sampler's Signature: M. Hall

TAT: _____ Standard _____ Rush Date _____ Seals Intact? _____ Y _____ N Received Good Condition _____ Y _____ N _____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

Shaw® Shaw Environmental, Inc.
3010 Briarpark Drive, Suite 4N
Houston, TX 77042 (713) 996-4400

CHAIN-OF-CUSTODY

No. 10749

Laboratory Name: Kemron Address: 156 Starlite, Marrietta, Ohio Contact: Stephanie Marburg

Project Name: Longhorn-PBC Project Location: LHAAP-46

Project No.: 117591.009C400 Project Contact: Allen Willmore Project Telephone No.: (713) 247-9292

Point of contact: Larry Daly Telephone No. (713) 996-4547 Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	LEAD	Analysis and Method Desired (Indicate separate containers)						Remarks
1	PRSB01 (9-10)	9/5/07	10:35		✓	S	Soil, Pistol Range	1	X							
2	PRSB01 (14-15)	9/5/07	10:50		✓	S	Soil, Pistol Range	1	X							
3	PRSB01 (19-20)	9/5/07	11:15		✓	S	Soil, Pistol Range	1	X							
4																
5																
6																
7																
8																
9																
10																

Transfers Relinquished By (Signature)	Date/Time	Transfers Accepted By (Signature)	Date/Time
M. Mclaren	9/12/07 / 1030		
		Laboratory Erin Ellen	9-13-07 1100

Special Instructions

FedEx Airbill No.:

Sampler's Signature M. Mclaren

TAT: ____ Standard ____ Rush Due: ___ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

KEMRON Environmental Services

SAMPLE RECEIPT FORM

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	SHAW Houston (LongHorn)
Workorder Number:	B —
Date Received:	9-13-07
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 1100
Opened by:	EC
IR Temp Gun:	( ) D (✓) G
Logged by:	BLG L 9261

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
1822	3	124016632210063107		WATERS
563	2	124016632210063116		NOTE: sid 9/7/07 TDS/TSS Rush out 9/14/07

Inspection Checklist	Y	N	NA	Discrepancy ID
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/information complete/signed/dated?	✓			
Were sample containers and labels intact?	✓			
Were correct containers used?	✓			
Were correct preservatives used (water only)?	✓			
Were pH ranges acceptable?		✓		(1)
Were VOA samples free of headspace?				
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

(1) PH lo on TAI metal bottle ID 15-091007@1545

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-07	372864	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-13	372875	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-03	372855	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-11	372870	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-17	372882	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-21	372890	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:27	REK	ERE
3	STORE	DIG	W1	14-SEP-2007 14:00	RLK	REK
4	ANALYZ	W1	WET	14-SEP-2007 16:05	JDH	RLK
5	STORE	WET	A1	18-SEP-2007 07:26	ERE	DIH

Samplenum	Container ID	Products
L0709261-14	372877	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

Samplenum	Container ID	Products
L0709261-02	372853	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-16	372881	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

Samplenum	Container ID	Products
L0709261-18	372885	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:55	ERE	REK

Samplenum	Container ID	Products
L0709261-11	372872	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-11	372871	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:38	ERE	HJR

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-09	372867	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-19	372887	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-05	372859	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-13	372874	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-09	372866	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-01	372850	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-05	372858	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-22	372891	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:27	REK	ERE
3	STORE	DIG	W1	14-SEP-2007 14:00	RLK	REK
4	ANALYZ	W1	WET	14-SEP-2007 16:06	JDH	RLK
5	STORE	WET	A1	18-SEP-2007 07:26	ERE	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-06	372861	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

Samplenum	Container ID	Products
L0709261-07	372863	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-19	372886	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-10	372869	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-13	372876	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-17	372883	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-12	372873	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

Samplenum	Container ID	Products
L0709261-20	372889	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-15	372880	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:38	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-19	372888	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-15	372879	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-23	372892	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:27	REK	ERE
3	STORE	DIG	W1	14-SEP-2007 14:00	RLK	REK
4	ANALYZ	W1	WET	14-SEP-2007 16:06	JDH	RLK
5	STORE	WET	A1	18-SEP-2007 07:26	ERE	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-08	372865	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

Samplenum	Container ID	Products
L0709261-04	372857	AG-MSD AL-D AS-MS-D BA-MS-D BE-AX-D CA-D CD-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 07:26	REK	ERE
3	STORE	DIG	A1	18-SEP-2007 13:54	ERE	REK

Samplenum	Container ID	Products
L0709261-17	372884	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:54	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-01	372852	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-01	372851	TSS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-09	372868	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:38	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-03	372856	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

Samplenum	Container ID	Products
L0709261-05	372860	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	PREP	W1	DIG	14-SEP-2007 06:37	REK	ERE
3	STORE	DIG	A1	14-SEP-2007 13:57	RLK	REK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709261
Account: 2773
Project: 2773.025
Samples: 23
Due Date: 24-SEP-2007

Samplenum	Container ID	Products
L0709261-15	372878	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-03	372854	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:50	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

Samplenum	Container ID	Products
L0709261-07	372862	TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	13-SEP-2007 12:53	BRG	
2	ANALYZ	W1	WET	14-SEP-2007 07:49	HJR	ERE
3	STORE	WET	A1	17-SEP-2007 09:39	ERE	HJR

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON
ENVIRONMENTAL SERVICES

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L08010692

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

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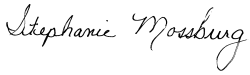
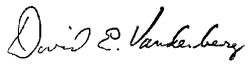
This report was reviewed on February 01, 2008.



STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on February 01, 2008.



David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 52 pages.

Protecting Our Environmental Future

KEMRON REPORT L08010692
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L08010692

CHAIN OF CUSTODY: The chain of custody number was 10235.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 1 degree C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 01-FEB-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00079983

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	February 1, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08010692
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	WG262097
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	February 01, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	RA(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?		✓			1
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER#(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

1) Vinyl acetate exceeded the upper control limit.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00079990

L08010692

02/01/08 15:06

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: GROUNDWATER TREATMENT PLANT

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
LHSMW04-013008	L08010692-01	8260B	1	31-JAN-08

Report Number: **L08010692**
Report Date : **February 1, 2008**

00079991

Sample Number: **L08010692-01**
Client ID: **LHSMW04-013008**
Matrix: **Water**
Workgroup Number: **WG262097**
Collect Date: **01/30/2008 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **02/01/2008 12:54**
Cal Date: **12/11/2007 14:48**
Run Date: **02/01/2008 12:54**
File ID: **6M72640**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3	0.581	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L08010692**
Report Date : **February 1, 2008**

00079992

Sample Number: **L08010692-01**
Client ID: **LHSMW04-013008**
Matrix: **Water**
Workgroup Number: **WG262097**
Collect Date: **01/30/2008 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **02/01/2008 12:54**
Cal Date: **12/11/2007 14:48**
Run Date: **02/01/2008 12:54**
File ID: **6M72640**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4	8.74		1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	5.74		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	106	86	118	
1,2-Dichloroethane-d4	105	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	98.2	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a\left(c - y\right)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS6 Dataset: 121107
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV01 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 22146

Internal Standard: STD23486 Surrogate Standard: STD23588
CCV: STD23557 LCS: STD23438 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG257140

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M71590	SYSTEM BLANK	NA	1	1		12/11/07 06:55
2	6M71591	BFB STD CHK	NA	1	1	STD23459	12/11/07 07:26
3	6M71592	50ug/L STD CHECK	NA	1	1	STD23522	12/11/07 07:55
4	6M71593	SYSTEM BLANK	NA	1	1		12/11/07 08:30
5	6M71594	WG258140-01 BFB 50ng STD 8260	NA	1	1	STD23459	12/11/07 09:08
6	6M71595	WG258140-01 BFB 50ng STD 8260	NA	1	1	STD23459	12/11/07 09:24
7	6M71596	WG258140-02 0.30ug/L STD 8260	NA	1	1	STD23557	12/11/07 09:50
8	6M71597	WG258140-03 0.40ug/L STD 8260	NA	1	1	STD23557	12/11/07 10:23
9	6M71598	WG258140-04 1ug/L STD 8260	NA	1	1	STD23557	12/11/07 10:55
10	6M71599	WG258140-05 2ug/L STD 8260	NA	1	1	STD23557	12/11/07 11:29
11	6M71600	WG258140-06 5ug/L STD 8260	NA	1	1	STD23557	12/11/07 12:02
12	6M71601	WG258140-07 20ug/L STD 8260	NA	1	1	STD23557	12/11/07 12:34
13	6M71602	WG258140-08 50ug/L STD 8260	NA	1	1	STD23557	12/11/07 13:09
14	6M71603	WG258140-09 100ug/L STD 8260	NA	1	1	STD23557	12/11/07 13:43
15	6M71604	WG258140-10 200ug/L STD 8260	NA	1	1	STD23557	12/11/07 14:16
16	6M71605	WG258140-11 300ug/L STD 8260	NA	1	1	STD23557	12/11/07 14:48
17	6M71606	SYSTEM BLANK	NA	1	1		12/11/07 15:20
18	6M71607	SYSTEM BLANK	NA	1	1		12/11/07 15:52
19	6M71608	WG258140-12 20ug/L ALT SRC STD 8260	NA	1	1	STD23438	12/11/07 16:24
20	6M71609	SYSTEM BLANK	NA	1	1		12/11/07 16:55
21	6M71610	SYSTEM BLANK	NA	1	1		12/11/07 17:27
22	6M71611	SYSTEM BLANK	NA	1	1		12/11/07 17:59
23	6M71612	SYSTEM BLANK	NA	1	1		12/11/07 18:31
24	6M71613	SYSTEM BLANK	NA	1	1		12/11/07 19:03

Comments

Seq.	Rerun	Dil.	Reason	Analytes
5	X			
File ID: 6M71594				
			Tune failed/DNR	
19	X			
File ID: 6M71608				
			DNR	

Approved: December 17, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS6 Dataset: 121207
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 22149

Internal Standard: STD23486 Surrogate Standard: STD23588
CCV: STD23557 LCS: STD23438 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG258140;WG258265

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M71615	SYSTEM BLANK	NA	1	1		12/12/07 08:53
2	6M71616	SYSTEM BLANK	NA	1	1		12/12/07 09:25
3	6M71617	WG258264-01 BFB 50ng STD 8260	NA	1	1	STD23459	12/12/07 09:56
4	6M71618	WG258264-02 50ug/L STD 8260	NA	1	1	STD23557	12/12/07 10:18
5	6M71619	WG258266-01 100ug/L A9FOO STD 8260	NA	1	1	STD23433	12/12/07 10:52
6	6M71620	WG258265-01 VBLK1212 BLANK 8260	NA	1	1		12/12/07 11:24
7	6M71621	WG258140-12 20ug/L ALT SRC STD 8260	NA	1	1	STD23438	12/12/07 11:56
8	6M71622	WG258265-02 20ug/L LCS STD 8260	NA	1	1	STD23438	12/12/07 12:28
9	6M71623	WG258265-03 20ug/L LCSDUP STD 8260	NA	1	1	STD23438	12/12/07 12:59
10	6M71624	WG258265-04 100ug/L A9FOOLCS STD 82	NA	1	1	STD23434	12/12/07 13:31
11	6M71625	WG258265-05 100ug/L A9FOOLCSDUP ST	NA	1	1	STD23434	12/12/07 14:03
12	6M71626	L0712285-01 A 826-SPE	=7	1	1		12/12/07 14:35
13	6M71627	L0712285-10 A 826-SPE	=7	1	1		12/12/07 15:07
14	6M71628	L0712285-11 A 826-SPE	=7	1	1		12/12/07 15:38
15	6M71629	L0712285-02 A 826-SPE	=7	1	1		12/12/07 16:10
16	6M71630	L0712285-03 A 826-SPE	=7	1	1		12/12/07 16:42
17	6M71631	L0712285-04 A 826-SPE	=7	1	1		12/12/07 17:14
18	6M71632	L0712285-05 A 826-SPE	=7	1	1		12/12/07 17:45
19	6M71633	L0712285-06 A 826-SPE	=7	1	1		12/12/07 18:17
20	6M71634	L0712285-07 A 826-SPE	=7	1	1		12/12/07 18:49
21	6M71635	L0712285-09 A 826-SPE	=7	1	1		12/12/07 19:21
22	6M71636	L0712285-12 A 826-SPE	=7	1	1		12/12/07 19:53
23	6M71637	L0712285-13 A 826-SPE	=7	1	1		12/12/07 20:25
24	6M71638	L0712285-14 A 826-SPE	=7	1	1		12/12/07 20:56
25	6M71639	L0712285-08 A 1000X 826-SPE D1	=7	1	1000		12/12/07 21:28
26	6M71640	SYSTEM BLANK	NA	1	1		12/12/07 22:00

Comments

Seq.	Rerun	Dil.	Reason	Analytes
25	X	100	Analyzed too dilute	
File ID: 6M71639				

Approved: December 14, 2007

KEMRON Environmental Services
Data Checklist

Date: 11-DEC-2007
Analyst: CMS
Analyst: NA
Method: 8260B624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 19809
Analytical Workgroups: WG258140

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-DEC-2007

Secondary Reviewer:
17-DEC-2007

Generated: DEC-17-2007 13:38:04

KEMRON Environmental Services
Data Checklist

Date: 12-DEC-2007
Analyst: CMS
Analyst: NA
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 19812
Analytical Workgroups: WG258140;WG258265

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-DEC-2007

Secondary Reviewer:
14-DEC-2007

Generated: DEC-14-2007 14:26:00

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B AAB#: WG262097
Login Number: L08010692

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW04-013008	01/30/08	01/31/08	02/01/08	14	1.95	02/01/08	14	1.95	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 1010316
Report generated 02/01/2008 13:58

SURROGATE STANDARDS

Login Number: L08010692
Instrument Id: HPMS6
Workgroup (AAB#): WG262097

Method: 8260
CAL ID: HPMS6-11-DEC-07
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08010692-01	1.00	01	105	106	98.2	103
WG262097-01	1.00	01	102	107	100	105
WG262097-02	1.00	01	102	106	97.5	103
WG262097-03	1.00	01	100	105	97.0	102

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 09/27/2006
Version 1.5 PDF File ID: 1010324
Report generated 02/01/2008 13:58

METHOD BLANK SUMMARY

Login Number: L08010692
Work Group: WG262097
Blank File ID: 6M72635
Blank Sample ID: WG262097-01
Prep Date: 02/01/08 10:14
Instrument ID: HPMS6
Analyzed Date: 02/01/08 10:14
Method: 8260B
Analyst: CMS

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG262097-02	6M72636	02/01/08 10:46	01
LCS2	WG262097-03	6M72637	02/01/08 11:18	01
LHSMW04-013008	L08010692-01	6M72640	02/01/08 12:54	01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 1010317
Report generated 02/01/2008 13:58

Login Number: L08010692 Prep Date: 02/01/08 10:14 Sample ID: WG262097-01
Instrument ID: HPMS6 Run Date: 02/01/08 10:14 Prep Method: 5030B
File ID: 6M72635 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG262097 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS6-11-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.305	1	J

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 1010318
Report generated 02/01/2008 13:58

Login Number: L08010692 Prep Date: 02/01/08 10:14 Sample ID: WG262097-01
Instrument ID: HPMS6 Run Date: 02/01/08 10:14 Prep Method: 5030B
File ID: 6M72635 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG262097 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS6-11-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.404	1	J
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.435	1	J
1,2,4-Trichlorobenzene	0.200	1.00	0.347	1	J
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	107	86 - 118	PASS
1,2-Dichloroethane-d4	102	80 - 120	PASS
Toluene-d8	105	88 - 110	PASS
4-Bromofluorobenzene	100	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 1010318
Report generated 02/01/2008 13:58

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L08010692 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG262097 Units:ug/L
QC Key:STD Lot #:STD24227

Sample ID:WG262097-02 LCS File ID:6M72636 Run Date:02/01/2008 10:46
Sample ID:WG262097-03 LCS2 File ID:6M72637 Run Date:02/01/2008 11:18

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	24.0	120	20.0	23.7	118	1.58	40 - 142	20	
Benzene	20.0	21.4	107	20.0	21.5	108	0.819	80 - 121	20	
Bromobenzene	20.0	20.3	101	20.0	20.7	103	2.04	80 - 120	20	
Bromochloromethane	20.0	22.4	112	20.0	22.3	112	0.438	65 - 130	20	
Bromodichloromethane	20.0	24.8	124	20.0	25.3	126	2.08	80 - 131	20	
Bromoform	20.0	22.0	110	20.0	21.9	110	0.477	70 - 130	20	
Bromomethane	20.0	21.5	108	20.0	22.9	115	6.30	30 - 145	20	
2-Butanone	20.0	24.0	120	20.0	24.4	122	1.72	30 - 150	20	
n-Butylbenzene	20.0	19.9	99.6	20.0	20.5	103	2.89	80 - 131	20	
sec-Butylbenzene	20.0	19.9	99.3	20.0	20.3	101	2.02	80 - 127	20	
tert-Butylbenzene	20.0	19.3	96.5	20.0	19.6	98.1	1.65	80 - 126	20	
Carbon disulfide	20.0	21.1	106	20.0	22.0	110	4.29	58 - 138	20	
Carbon tetrachloride	20.0	22.5	113	20.0	23.1	116	2.64	65 - 140	20	
Chlorobenzene	20.0	19.6	98.1	20.0	20.1	100	2.31	80 - 120	20	
Chlorodibromomethane	20.0	21.2	106	20.0	21.0	105	0.972	60 - 135	20	
Chloroethane	20.0	20.1	100	20.0	21.2	106	5.27	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	20.1	100	20.0	20.3	101	1.09	58 - 151	20	
Chloroform	20.0	21.8	109	20.0	22.3	112	2.27	80 - 125	20	
Chloromethane	20.0	20.5	102	20.0	21.4	107	4.29	40 - 125	20	
2-Chlorotoluene	20.0	20.5	103	20.0	20.6	103	0.151	80 - 127	20	
4-Chlorotoluene	20.0	18.9	94.6	20.0	19.4	96.9	2.38	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	21.2	106	20.0	22.1	111	4.49	50 - 130	20	
1,2-Dibromoethane	20.0	21.2	106	20.0	21.4	107	0.853	80 - 125	20	
Dibromomethane	20.0	24.2	121	20.0	23.6	118	2.55	75 - 125	20	
1,2-Dichlorobenzene	20.0	19.3	96.5	20.0	19.6	98.1	1.60	80 - 125	20	
1,3-Dichlorobenzene	20.0	19.6	98.2	20.0	19.9	99.6	1.43	80 - 120	20	
1,4-Dichlorobenzene	20.0	18.5	92.7	20.0	18.7	93.7	1.10	80 - 120	20	
Dichlorodifluoromethane	20.0	24.8	124	20.0	26.0	130	4.57	50 - 133	20	
1,1-Dichloroethane	20.0	20.7	104	20.0	20.9	105	0.850	80 - 125	20	
1,2-Dichloroethane	20.0	21.1	106	20.0	20.9	105	0.745	80 - 129	20	
1,1-Dichloroethene	20.0	21.2	106	20.0	21.7	108	2.10	80 - 132	20	
cis-1,2-Dichloroethene	20.0	22.6	113	20.0	22.8	114	0.997	70 - 125	20	
trans-1,2-Dichloroethene	20.0	21.2	106	20.0	21.5	107	1.25	80 - 127	20	
1,2-Dichloropropane	20.0	20.4	102	20.0	21.1	106	3.43	80 - 120	20	
1,3-Dichloropropane	20.0	20.7	103	20.0	20.4	102	1.30	80 - 120	20	
2,2-Dichloropropane	20.0	22.3	111	20.0	22.7	114	1.94	80 - 133	20	
cis-1,3-Dichloropropene	20.0	21.5	107	20.0	21.2	106	1.35	70 - 130	20	
trans-1,3-Dichloropropene	20.0	19.5	97.7	20.0	19.5	97.3	0.462	80 - 130	20	
1,1-Dichloropropene	20.0	21.4	107	20.0	22.1	111	3.36	75 - 130	20	
Ethylbenzene	20.0	20.1	100	20.0	20.6	103	2.82	80 - 122	20	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID:1010312
Report generated 02/01/2008 13:58

KEMRON Environmental Services

00080006

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L08010692 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG262097 Units:ug/L
QC Key:STD Lot #:STD24227

Sample ID:WG262097-02 LCS File ID:6M72636 Run Date:02/01/2008 10:46
Sample ID:WG262097-03 LCS2 File ID:6M72637 Run Date:02/01/2008 11:18

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	18.6	93.0	20.0	18.4	91.8	1.31	55 - 130	20	
Hexachlorobutadiene	20.0	19.4	97.1	20.0	19.7	98.5	1.47	72 - 132	20	
Isopropylbenzene	20.0	19.0	95.0	20.0	19.4	97.1	2.25	80 - 122	20	
p-Isopropyltoluene	20.0	18.9	94.6	20.0	19.2	95.9	1.34	80 - 122	20	
4-Methyl-2-pentanone	20.0	20.3	102	20.0	20.6	103	1.27	64 - 140	20	
Methylene chloride	20.0	20.9	105	20.0	21.2	106	1.33	80 - 123	20	
Naphthalene	20.0	20.1	100	20.0	20.2	101	0.450	59 - 149	20	
n-Propylbenzene	20.0	20.1	100	20.0	20.6	103	2.44	80 - 129	20	
Styrene	20.0	20.8	104	20.0	20.9	105	0.504	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	22.8	114	20.0	22.8	114	0.276	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	21.8	109	20.0	21.9	110	0.777	79 - 125	20	
Tetrachloroethene	20.0	21.0	105	20.0	21.2	106	0.831	80 - 124	20	
Toluene	20.0	20.4	102	20.0	20.9	104	2.31	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	19.6	97.8	20.0	19.6	98.0	0.155	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	19.2	96.1	20.0	19.5	97.4	1.35	65 - 135	20	
1,1,1-Trichloroethane	20.0	23.6	118	20.0	23.9	119	1.36	80 - 134	20	
1,1,2-Trichloroethane	20.0	20.9	104	20.0	21.3	107	2.18	80 - 125	20	
Trichloroethene	20.0	21.5	108	20.0	22.4	112	3.98	80 - 122	20	
Trichlorofluoromethane	20.0	18.6	93.0	20.0	19.0	94.9	2.01	62 - 151	20	
1,2,3-Trichloropropane	20.0	21.6	108	20.0	21.2	106	2.03	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	19.8	99.0	20.0	20.3	102	2.66	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	19.8	99.1	20.0	20.3	101	2.16	80 - 127	20	
Vinyl acetate	20.0	27.7	138	20.0	28.2	141	1.91	10 - 150	20	
Vinyl chloride	20.0	23.5	117	20.0	24.3	122	3.48	65 - 140	20	
o-Xylene	20.0	19.9	99.3	20.0	20.0	99.9	0.579	80 - 122	20	
m-,p-Xylene	40.0	40.4	101	40.0	40.8	102	1.17	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	106	105	86 - 118	PASS
1,2-Dichloroethane-d4	102	100	80 - 120	PASS
Toluene-d8	103	102	88 - 110	PASS
4-Bromofluorobenzene	97.5	97.0	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID:1010312
Report generated 02/01/2008 13:58

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08010692 Tune ID: WG258140-01
Instrument: HPMS6 Run Date: 12/11/2007
Analyst: CMS Run Time: 09:24
Workgroup: WG258140 File ID: 6M71595
Cal ID: HPMS6-11-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.2	8080	PASS
75.0	95.0	30.0	60.0	46.3	19450	PASS
95.0	95.0	100	100	100	41984	PASS
96.0	95.0	5.00	9.00	7.31	3070	PASS
173	174	0	2.00	0.326	108	PASS
174	95.0	50.0	100	79.0	33173	PASS
175	174	5.00	9.00	6.90	2288	PASS
176	174	95.0	101	98.0	32520	PASS
177	176	5.00	9.00	6.22	2024	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG258140-02	STD	01	12/11/2007 09:50	
WG258140-03	STD	01	12/11/2007 10:23	
WG258140-04	STD	01	12/11/2007 10:55	
WG258140-05	STD	01	12/11/2007 11:29	
WG258140-06	STD	01	12/11/2007 12:02	
WG258140-07	STD	01	12/11/2007 12:34	
WG258140-08	STD-CCV	01	12/11/2007 13:09	
WG258140-09	STD	01	12/11/2007 13:43	
WG258140-10	STD	01	12/11/2007 14:16	
WG258140-11	STD	01	12/11/2007 14:48	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1010321
Report generated 02/01/2008 13:58

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08010692 Tune ID: WG258264-01
Instrument: HPMS6 Run Date: 12/12/2007
Analyst: CMS Run Time: 09:56
Workgroup: WG258264 File ID: 6M71617
Cal ID: HPMS6-11-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.7	4855	PASS
75.0	95.0	30.0	60.0	46.8	11566	PASS
95.0	95.0	100	100	100	24696	PASS
96.0	95.0	5.00	9.00	7.55	1864	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	77.7	19197	PASS
175	174	5.00	9.00	7.27	1396	PASS
176	174	95.0	101	98.1	18831	PASS
177	176	5.00	9.00	6.31	1189	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG258140-12	SSCV	01	12/12/2007 11:56	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1010321
Report generated 02/01/2008 13:58

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08010692 Tune ID: WG262096-01
Instrument: HPMS6 Run Date: 02/01/2008
Analyst: CMS Run Time: 08:07
Workgroup: WG262096 File ID: 6M72631
Cal ID: HPMS6-11-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	17.8	8789	PASS
75.0	95.0	30.0	60.0	44.7	22112	PASS
95.0	95.0	100	100	100	49440	PASS
96.0	95.0	5.00	9.00	7.17	3547	PASS
173	174	0	2.00	0.548	219	PASS
174	95.0	50.0	100	80.9	39973	PASS
175	174	5.00	9.00	6.96	2783	PASS
176	174	95.0	101	95.5	38173	PASS
177	176	5.00	9.00	6.80	2597	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG262097-01	BLANK	01	02/01/2008 10:14	
WG262097-02	LCS	01	02/01/2008 10:46	
WG262097-03	LCS2	01	02/01/2008 11:18	
L08010692-01	LHSMW04-013008	01	02/01/2008 12:54	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1010321
Report generated 02/01/2008 13:58

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
ICAL Workgroup: WG258140 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.3147	9.39		
1,2-Dichloropropane	CCC	0.1991	6.38		
Chloroform	CCC	0.4034	5.77		
Ethylbenzene	CCC	0.4468	8.35		
Toluene	CCC	1.170	8.34		
Vinyl Chloride	CCC	0.1551	17.8		1.00
1,1,2,2-Tetrachloroethane	SPCC	0.3344	4.87		
1,1-Dichloroethane	SPCC	0.4014	7.91		
Bromoform	SPCC	0.1213	28.1	0.999	
Chlorobenzene	SPCC	0.8398	8.32		
Chloromethane	SPCC	0.2055	6.85		
1,1,1,2-Tetrachloroethane		0.2693	11.5		
1,1,1-Trichloroethane		0.3459	10.7		
1,1,2-Trichloroethane		0.1872	3.47		
1,1-Dichloropropene		0.2926	10.3		
1,2,3-Trichlorobenzene		0.6424	11.4		
1,2,3-Trichloropropane		0.1081	7.86		
1,2,4-Trichlorobenzene		0.7847	10.1		
1,2,4-Trimethylbenzene		2.200	7.59		
1,2-Dibromo-3-Chloropropane		0.05552	14.4		
1,2-Dibromoethane		0.1904	4.68		
1,2-Dichlorobenzene		1.168	10.2		
1,2-Dichloroethane		0.2651	3.95		
1,3,5-Trimethylbenzene		2.076	7.92		
1,3-Dichlorobenzene		1.282	6.08		
1,3-Dichloropropane		0.3340	3.73		
1,4-Dichlorobenzene		1.376	12.4		
2,2-Dichloropropane		0.3408	12.6		
2-Butanone		0.04477	2.91		
2-Chloroethyl Vinyl Ether		0.08636	12.4		
2-Chlorotoluene		1.874	6.23		
2-Hexanone		0.09032	5.06		
4-Chlorotoluene		1.789	8.03		
4-Methyl-2-Pentanone		0.04007	5.97		
Acetone		0.03092	7.44		
Benzene		0.8377	7.66		
Bromobenzene		0.6123	4.86		
Bromochloromethane		0.1271	8.70		
Bromodichloromethane		0.2591	12.2		
Bromomethane		0.1825	4.60		
Carbon Disulfide		0.6218	5.58		
Carbon Tetrachloride		0.2778	18.0	1.00	
Chloroethane		0.1634	6.39		
Dibromochloromethane		0.2171	19.3		1.00
Dibromomethane		0.09898	13.8		

KEMRON FORMS - Modified 01/18/2007
Version 1.5 PDF File ID: 1010319
Report generated 02/01/2008 13:58

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
ICAL Workgroup: WG258140 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.2795	6.84		
Hexachlorobutadiene		0.4034	9.58		
Isopropylbenzene		1.339	8.77		
Methylene Chloride		0.3226	60.8		1.00
Naphthalene		1.253	10.0		
Styrene		0.9061	7.09		
Tetrachloroethene		0.3112	9.53		
Trichloroethene		0.2301	8.68		
Trichlorofluoromethane		0.4209	7.62		
Vinyl Acetate		0.2166	4.47		
cis-1,2-Dichloroethene		0.2342	7.16		
cis-1,3-Dichloropropene		0.3155	7.78		
m-,p-Xylene		0.5547	9.03		
n-Butylbenzene		2.118	9.22		
n-Propylbenzene		2.858	8.40		
o-Xylene		0.5504	7.75		
p-Isopropyltoluene		2.331	9.13		
sec-Butylbenzene		2.641	9.82		
tert-Butylbenzene		0.4788	8.48		
trans-1,2-Dichloroethene		0.2255	9.92		
trans-1,3-Dichloropropene		0.3529	9.46		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-02			WG258140-03			WG258140-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	4318.00000	0.3151	1.00	9541.00000	0.2807
1,2-Dichloropropane	NA	NA	NA	0.400	2592.00000	0.1892	1.00	6219.00000	0.1830
Chloroform	0.300	4273.00000	0.4004	0.400	5845.00000	0.4265	1.00	12830.0000	0.3775
Ethylbenzene	NA	NA	NA	0.400	4945.00000	0.4896	1.00	11122.0000	0.4435
Toluene	NA	NA	NA	0.400	13043.0000	1.291	1.00	29303.0000	1.169
Vinyl Chloride	NA	NA	NA	0.400	2768.00000	0.2020	1.00	6190.00000	0.1821
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1751.00000	0.3124	1.00	4558.00000	0.3259
1,1-Dichloroethane	NA	NA	NA	0.400	5922.00000	0.4322	1.00	12990.0000	0.3822
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1903.00000	0.07590
Chlorobenzene	NA	NA	NA	0.400	9641.00000	0.9545	1.00	21122.0000	0.8423
Chloromethane	NA	NA	NA	0.400	3008.00000	0.2195	1.00	7240.00000	0.2130
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2549.00000	0.2524	1.00	5764.00000	0.2299
1,1,1-Trichloroethane	NA	NA	NA	0.400	4939.00000	0.3604	1.00	10310.0000	0.3033
1,1,2-Trichloroethane	NA	NA	NA	0.400	1871.00000	0.1852	1.00	4582.00000	0.1827
1,1-Dichloropropene	NA	NA	NA	0.400	4130.00000	0.3014	1.00	8498.00000	0.2500
1,2,3-Trichlorobenzene	NA	NA	NA	0.400	4203.00000	0.7498	1.00	9421.00000	0.6737
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1303.00000	0.09320
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	5121.00000	0.9135	1.00	11122.0000	0.7953
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	13201.0000	2.355	1.00	31282.0000	2.237
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1929.00000	0.1910	1.00	4336.00000	0.1729
1,2-Dichlorobenzene	0.300	5777.00000	1.363	0.400	7525.00000	1.342	1.00	15849.0000	1.133
1,2-Dichloroethane	NA	NA	NA	0.400	3560.00000	0.2598	1.00	9148.00000	0.2691
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	12473.0000	2.225	1.00	27954.0000	1.999
1,3-Dichlorobenzene	NA	NA	NA	0.400	7605.00000	1.357	1.00	17901.0000	1.280
1,3-Dichloropropane	NA	NA	NA	0.400	3279.00000	0.3246	1.00	8506.00000	0.3392
1,4-Dichlorobenzene	0.300	7406.00000	1.747	0.400	8405.00000	1.499	1.00	19139.0000	1.369
2,2-Dichloropropane	NA	NA	NA	0.400	4082.00000	0.2979	1.00	9721.00000	0.2860
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	1.00	2219.00000	0.06530
2-Chlorotoluene	NA	NA	NA	0.400	11473.0000	2.047	1.00	26415.0000	1.889
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	11061.0000	1.973	1.00	24699.0000	1.766
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	12819.0000	0.9355	1.00	27564.0000	0.8110
Bromobenzene	0.300	2679.00000	0.6320	0.400	3436.00000	0.6130	1.00	8676.00000	0.6204
Bromochloromethane	NA	NA	NA	0.400	1421.00000	0.1037	1.00	4468.00000	0.1315
Bromodichloromethane	NA	NA	NA	0.400	3027.00000	0.2209	1.00	7736.00000	0.2276
Bromomethane	NA	NA	NA	0.400	2600.00000	0.1897	1.00	6428.00000	0.1891
Carbon Disulfide	NA	NA	NA	0.400	8296.00000	0.6054	1.00	20060.0000	0.5902
Carbon Tetrachloride	NA	NA	NA	0.400	3399.00000	0.2480	1.00	7429.00000	0.2186

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1010319
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Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-05			WG258140-06			WG258140-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	20793.0000	0.3127	5.00	44329.0000	0.2637	20.0	233359.000	0.3475
1,2-Dichloropropane	2.00	13745.0000	0.2067	5.00	30498.0000	0.1814	20.0	144121.000	0.2146
Chloroform	2.00	26489.0000	0.3984	5.00	60153.0000	0.3578	20.0	286593.000	0.4268
Ethylbenzene	2.00	22194.0000	0.4448	5.00	49622.0000	0.3926	20.0	247708.000	0.4944
Toluene	2.00	59334.0000	1.189	5.00	129976.000	1.028	20.0	638718.000	1.275
Vinyl Chloride	2.00	11292.0000	0.1698	5.00	23170.0000	0.1378	20.0	102099.000	0.1520
1,1,2,2-Tetrachloroethane	2.00	9351.00000	0.3334	5.00	23257.0000	0.3240	20.0	105851.000	0.3650
1,1-Dichloroethane	2.00	26326.0000	0.3960	5.00	56240.0000	0.3345	20.0	284300.000	0.4234
Bromoform	2.00	4483.00000	0.08980	5.00	11986.0000	0.09480	20.0	65748.0000	0.1312
Chlorobenzene	2.00	42422.0000	0.8501	5.00	94004.0000	0.7437	20.0	449837.000	0.8979
Chloromethane	2.00	14944.0000	0.2248	5.00	30541.0000	0.1817	20.0	140698.000	0.2095
1,1,1,2-Tetrachloroethane	2.00	12503.0000	0.2506	5.00	29885.0000	0.2364	20.0	154488.000	0.3084
1,1,1-Trichloroethane	2.00	22094.0000	0.3323	5.00	47230.0000	0.2809	20.0	258801.000	0.3854
1,1,2-Trichloroethane	2.00	9329.00000	0.1869	5.00	23110.0000	0.1828	20.0	101297.000	0.2022
1,1-Dichloropropene	2.00	18975.0000	0.2854	5.00	41313.0000	0.2458	20.0	219784.000	0.3273
1,2,3-Trichlorobenzene	2.00	19144.0000	0.6826	5.00	45507.0000	0.6340	20.0	200723.000	0.6922
1,2,3-Trichloropropane	2.00	2857.00000	0.1019	5.00	8046.00000	0.1121	20.0	34674.0000	0.1196
1,2,4-Trichlorobenzene	2.00	23030.0000	0.8211	5.00	52727.0000	0.7346	20.0	246339.000	0.8495
1,2,4-Trimethylbenzene	2.00	61956.0000	2.209	5.00	140428.000	1.957	20.0	701435.000	2.419
1,2-Dibromo-3-Chloropropane	2.00	1147.00000	0.04090	5.00	3777.00000	0.05260	20.0	18408.0000	0.06350
1,2-Dibromoethane	2.00	9409.00000	0.1886	5.00	23819.0000	0.1884	20.0	102450.000	0.2045
1,2-Dichlorobenzene	2.00	32194.0000	1.148	5.00	75024.0000	1.045	20.0	353391.000	1.219
1,2-Dichloroethane	2.00	18261.0000	0.2747	5.00	42362.0000	0.2520	20.0	188957.000	0.2814
1,3,5-Trimethylbenzene	2.00	58666.0000	2.092	5.00	130889.000	1.824	20.0	669236.000	2.308
1,3-Dichlorobenzene	2.00	36071.0000	1.286	5.00	83050.0000	1.157	20.0	402221.000	1.387
1,3-Dichloropropane	2.00	16697.0000	0.3346	5.00	41039.0000	0.3247	20.0	180665.000	0.3606
1,4-Dichlorobenzene	2.00	37986.0000	1.354	5.00	85930.0000	1.197	20.0	409479.000	1.412
2,2-Dichloropropane	2.00	23173.0000	0.3485	5.00	48491.0000	0.2885	20.0	257328.000	0.3832
2-Butanone	NA	NA	NA	5.00	7353.00000	0.04370	20.0	30500.0000	0.04540
2-Chloroethyl Vinyl Ether	2.00	5359.00000	0.08060	5.00	14461.0000	0.08600	20.0	62147.0000	0.09250
2-Chlorotoluene	2.00	53244.0000	1.898	5.00	120964.000	1.685	20.0	570476.000	1.967
2-Hexanone	NA	NA	NA	5.00	10750.0000	0.08500	20.0	47725.0000	0.09530
4-Chlorotoluene	2.00	50866.0000	1.814	5.00	111974.000	1.560	20.0	567680.000	1.958
4-Methyl-2-Pentanone	NA	NA	NA	5.00	6247.00000	0.03720	20.0	27806.0000	0.04140
Acetone	NA	NA	NA	5.00	5556.00000	0.03310	20.0	21546.0000	0.03210
Benzene	2.00	57042.0000	0.8580	5.00	121851.000	0.7248	20.0	594781.000	0.8857
Bromobenzene	2.00	17169.0000	0.6122	5.00	39296.0000	0.5475	20.0	190875.000	0.6582
Bromochloromethane	2.00	8612.00000	0.1295	5.00	20212.0000	0.1202	20.0	93498.0000	0.1392
Bromodichloromethane	2.00	16414.0000	0.2469	5.00	38010.0000	0.2261	20.0	192189.000	0.2862
Bromomethane	2.00	12211.0000	0.1837	5.00	27477.0000	0.1634	20.0	120774.000	0.1799
Carbon Disulfide	2.00	41636.0000	0.6262	5.00	98955.0000	0.5886	20.0	453958.000	0.6760
Carbon Tetrachloride	2.00	16235.0000	0.2442	5.00	36731.0000	0.2185	20.0	217782.000	0.3243

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1010319
Report generated 02/01/2008 13:58

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-08			WG258140-09			WG258140-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	588572.000	0.3452	100	1144549.00	0.3327	200	2316516.00	0.3197
1,2-Dichloropropane	50.0	354087.000	0.2077	100	714158.000	0.2076	200	1469825.00	0.2028
Chloroform	50.0	718557.000	0.4214	100	1427538.00	0.4149	200	2950035.00	0.4071
Ethylbenzene	50.0	601852.000	0.4694	100	1173981.00	0.4393	200	2322523.00	0.4007
Toluene	50.0	1571755.00	1.226	100	3058981.00	1.145	200	6031740.00	1.041
Vinyl Chloride	50.0	246939.000	0.1448	100	459454.000	0.1335	200	858916.000	0.1185
1,1,2,2-Tetrachloroethane	50.0	260970.000	0.3418	100	574163.000	0.3460	200	1108486.00	0.3263
1,1-Dichloroethane	50.0	724530.000	0.4249	100	1430189.00	0.4157	200	2916986.00	0.4026
Bromoform	50.0	181620.000	0.1417	100	430071.000	0.1609	200	898390.000	0.1550
Chlorobenzene	50.0	1100937.00	0.8587	100	2185616.00	0.8178	200	4367891.00	0.7536
Chloromethane	50.0	345282.000	0.2025	100	669772.000	0.1947	200	1435953.00	0.1982
1,1,1,2-Tetrachloroethane	50.0	384824.000	0.3002	100	796068.000	0.2979	200	1615131.00	0.2787
1,1,1-Trichloroethane	50.0	642178.000	0.3766	100	1269986.00	0.3691	200	2602521.00	0.3592
1,1,2-Trichloroethane	50.0	239820.000	0.1871	100	503900.000	0.1885	200	1055723.00	0.1821
1,1-Dichloropropene	50.0	541708.000	0.3177	100	1066950.00	0.3101	200	2197936.00	0.3033
1,2,3-Trichlorobenzene	50.0	469102.000	0.6144	100	949949.000	0.5725	200	1765539.00	0.5197
1,2,3-Trichloropropane	50.0	83204.0000	0.1090	100	187387.000	0.1129	200	367993.000	0.1083
1,2,4-Trichlorobenzene	50.0	598367.000	0.7837	100	1192196.00	0.7185	200	2246156.00	0.6612
1,2,4-Trimethylbenzene	50.0	1763174.00	2.309	100	3531584.00	2.128	200	6751050.00	1.987
1,2-Dibromo-3-Chloropropane	50.0	45326.0000	0.05940	100	98406.0000	0.05930	200	194855.000	0.05740
1,2-Dibromoethane	50.0	247868.000	0.1933	100	524231.000	0.1961	200	1092590.00	0.1885
1,2-Dichlorobenzene	50.0	876761.000	1.148	100	1808745.00	1.090	200	3482201.00	1.025
1,2-Dichloroethane	50.0	454799.000	0.2667	100	914928.000	0.2659	200	1820863.00	0.2513
1,3,5-Trimethylbenzene	50.0	1689693.00	2.213	100	3354498.00	2.022	200	6553352.00	1.929
1,3-Dichlorobenzene	50.0	1016005.00	1.331	100	2100374.00	1.266	200	4056478.00	1.194
1,3-Dichloropropane	50.0	426797.000	0.3329	100	893328.000	0.3343	200	1859356.00	0.3208
1,4-Dichlorobenzene	50.0	1021787.00	1.338	100	2118577.00	1.277	200	4041495.00	1.190
2,2-Dichloropropane	50.0	647976.000	0.3800	100	1293934.00	0.3761	200	2654557.00	0.3663
2-Butanone	50.0	75306.0000	0.04420	100	160037.000	0.04650	200	330981.000	0.04570
2-Chloroethyl Vinyl Ether	50.0	153179.000	0.08980	100	327262.000	0.09510	200	690059.000	0.09520
2-Chlorotoluene	50.0	1470752.00	1.926	100	3039029.00	1.832	200	5937246.00	1.748
2-Hexanone	50.0	111774.000	0.08720	100	257542.000	0.09640	200	509678.000	0.08790
4-Chlorotoluene	50.0	1425888.00	1.867	100	2838569.00	1.711	200	5646685.00	1.662
4-Methyl-2-Pentanone	50.0	65786.0000	0.03860	100	147265.000	0.04280	200	306416.000	0.04230
Acetone	50.0	53664.0000	0.03150	100	110627.000	0.03220	200	216962.000	0.02990
Benzene	50.0	1469473.00	0.8618	100	2880420.00	0.8372	200	5706567.00	0.7875
Bromobenzene	50.0	475188.000	0.6223	100	995736.000	0.6001	200	2053872.00	0.6046
Bromochloromethane	50.0	229697.000	0.1347	100	455145.000	0.1323	200	908088.000	0.1253
Bromodichloromethane	50.0	482644.000	0.2831	100	1000601.00	0.2908	200	2111408.00	0.2914
Bromomethane	50.0	316504.000	0.1856	100	641351.000	0.1864	200	1317698.00	0.1818
Carbon Disulfide	50.0	1132867.00	0.6644	100	2184073.00	0.6348	200	4263886.00	0.5884
Carbon Tetrachloride	50.0	560188.000	0.3285	100	1113583.00	0.3237	200	2296662.00	0.3169

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1010319
Report generated 02/01/2008 13:58

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	457519.000	0.04310
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	718025.000	0.09010
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	404677.000	0.03810
Acetone	300	283471.000	0.02670
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1010319
Report generated 02/01/2008 13:58

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-02			WG258140-03			WG258140-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	5661.00000	0.1666
Dibromochloromethane	NA	NA	NA	0.400	1723.00000	0.1706	1.00	4292.00000	0.1712
Dibromomethane	NA	NA	NA	0.400	925.000000	0.06750	1.00	3229.00000	0.09500
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	10186.0000	0.2997
Hexachlorobutadiene	NA	NA	NA	0.400	2405.00000	0.4290	1.00	5166.00000	0.3694
Isopropylbenzene	NA	NA	NA	0.400	14202.0000	1.406	1.00	31034.0000	1.238
Methylene Chloride	NA	NA	NA	0.400	10520.0000	0.7677	1.00	14534.0000	0.4276
Naphthalene	NA	NA	NA	0.400	8086.00000	1.443	1.00	17395.0000	1.244
Styrene	NA	NA	NA	0.400	9096.00000	0.9005	1.00	21596.0000	0.8612
Tetrachloroethene	NA	NA	NA	0.400	3439.00000	0.3405	1.00	7440.00000	0.2967
Trichloroethene	NA	NA	NA	0.400	3117.00000	0.2275	1.00	7083.00000	0.2084
Trichlorofluoromethane	NA	NA	NA	0.400	5152.00000	0.3760	1.00	14539.0000	0.4278
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3040.00000	0.2218	1.00	7512.00000	0.2210
cis-1,3-Dichloropropene	NA	NA	NA	0.400	4150.00000	0.3028	1.00	9874.00000	0.2905
m-,p-Xylene	NA	NA	NA	0.800	12332.0000	0.6104	2.00	27909.0000	0.5565
n-Butylbenzene	NA	NA	NA	0.400	12547.0000	2.238	1.00	27765.0000	1.986
n-Propylbenzene	NA	NA	NA	0.400	17278.0000	3.082	1.00	38638.0000	2.763
o-Xylene	NA	NA	NA	0.400	6067.00000	0.6006	1.00	13510.0000	0.5388
p-Isopropyltoluene	NA	NA	NA	0.400	14071.0000	2.510	1.00	30504.0000	2.181
sec-Butylbenzene	NA	NA	NA	0.400	16332.0000	2.914	1.00	33395.0000	2.388
tert-Butylbenzene	NA	NA	NA	0.400	2876.00000	0.5131	1.00	6110.00000	0.4369
trans-1,2-Dichloroethene	NA	NA	NA	0.400	3486.00000	0.2544	1.00	6699.00000	0.1971
trans-1,3-Dichloropropene	NA	NA	NA	0.400	3394.00000	0.3360	1.00	7552.00000	0.3012

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-05			WG258140-06			WG258140-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	10782.0000	0.1622	5.00	23606.0000	0.1404	20.0	112493.000	0.1675
Dibromochloromethane	2.00	9163.00000	0.1836	5.00	23910.0000	0.1892	20.0	123613.000	0.2467
Dibromomethane	2.00	6624.00000	0.09960	5.00	17156.0000	0.1021	20.0	74793.0000	0.1114
Dichlorodifluoromethane	2.00	19670.0000	0.2959	5.00	41712.0000	0.2481	20.0	198954.000	0.2963
Hexachlorobutadiene	2.00	11421.0000	0.4072	5.00	24385.0000	0.3397	20.0	133599.000	0.4607
Isopropylbenzene	2.00	66811.0000	1.339	5.00	144433.000	1.143	20.0	747564.000	1.492
Methylene Chloride	2.00	21217.0000	0.3191	5.00	38371.0000	0.2283	20.0	147621.000	0.2198
Naphthalene	2.00	36261.0000	1.293	5.00	89694.0000	1.250	20.0	401377.000	1.384
Styrene	2.00	44468.0000	0.8911	5.00	102151.000	0.8081	20.0	502986.000	1.004
Tetrachloroethene	2.00	15187.0000	0.3043	5.00	32257.0000	0.2552	20.0	173503.000	0.3463
Trichloroethene	2.00	16013.0000	0.2409	5.00	32315.0000	0.1922	20.0	167595.000	0.2496
Trichlorofluoromethane	2.00	29553.0000	0.4445	5.00	61438.0000	0.3655	20.0	301477.000	0.4490
Vinyl Acetate	2.00	13188.0000	0.1984	5.00	37132.0000	0.2209	20.0	151283.000	0.2253
cis-1,2-Dichloroethene	2.00	15357.0000	0.2310	5.00	34846.0000	0.2073	20.0	170774.000	0.2543
cis-1,3-Dichloropropene	2.00	19738.0000	0.2969	5.00	47611.0000	0.2832	20.0	231639.000	0.3450
m-,p-Xylene	4.00	56030.0000	0.5614	10.0	124614.000	0.4929	40.0	616572.000	0.6153
n-Butylbenzene	2.00	60092.0000	2.143	5.00	129795.000	1.808	20.0	693651.000	2.392
n-Propylbenzene	2.00	82124.0000	2.928	5.00	179860.000	2.506	20.0	924825.000	3.189
o-Xylene	2.00	27105.0000	0.5432	5.00	61079.0000	0.4832	20.0	302579.000	0.6040
p-Isopropyltoluene	2.00	64328.0000	2.294	5.00	143912.000	2.005	20.0	761342.000	2.626
sec-Butylbenzene	2.00	74229.0000	2.647	5.00	162475.000	2.264	20.0	864134.000	2.980
tert-Butylbenzene	2.00	13427.0000	0.4787	5.00	29121.0000	0.4057	20.0	152303.000	0.5252
trans-1,2-Dichloroethene	2.00	14830.0000	0.2231	5.00	31813.0000	0.1892	20.0	160999.000	0.2398
trans-1,3-Dichloropropene	2.00	16579.0000	0.3322	5.00	41375.0000	0.3273	20.0	199307.000	0.3978

Login Number: L08010692 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-08			WG258140-09			WG258140-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	287544.000	0.1686	100	582366.000	0.1693	200	1226976.00	0.1693
Dibromochloromethane	50.0	321330.000	0.2506	100	704750.000	0.2637	200	1515277.00	0.2614
Dibromomethane	50.0	179931.000	0.1055	100	370169.000	0.1076	200	747402.000	0.1031
Dichlorodifluoromethane	50.0	477616.000	0.2801	100	925591.000	0.2690	200	1939484.00	0.2677
Hexachlorobutadiene	50.0	330478.000	0.4328	100	672593.000	0.4053	200	1300118.00	0.3827
Isopropylbenzene	50.0	1864350.00	1.454	100	3680947.00	1.377	200	7345119.00	1.267
Methylene Chloride	50.0	367478.000	0.2155	100	711085.000	0.2067	200	1421799.00	0.1962
Naphthalene	50.0	931739.000	1.220	100	1910889.00	1.152	200	3538623.00	1.042
Styrene	50.0	1248094.00	0.9735	100	2519913.00	0.9429	200	5026206.00	0.8672
Tetrachloroethene	50.0	427600.000	0.3335	100	840009.000	0.3143	200	1730200.00	0.2985
Trichloroethene	50.0	417282.000	0.2447	100	833454.000	0.2422	200	1703115.00	0.2350
Trichlorofluoromethane	50.0	757390.000	0.4442	100	1488242.00	0.4326	200	3095726.00	0.4272
Vinyl Acetate	50.0	368954.000	0.2164	100	767506.000	0.2231	200	1562419.00	0.2156
cis-1,2-Dichloroethene	50.0	430039.000	0.2522	100	847798.000	0.2464	200	1737390.00	0.2398
cis-1,3-Dichloropropene	50.0	569610.000	0.3341	100	1163528.00	0.3382	200	2414519.00	0.3332
m-,p-Xylene	100	1499849.00	0.5849	200	2871232.00	0.5372	400	5554474.00	0.4792
n-Butylbenzene	50.0	1759252.00	2.304	100	3527443.00	2.126	200	6619809.00	1.949
n-Propylbenzene	50.0	2315444.00	3.032	100	4581905.00	2.761	200	8837594.00	2.601
o-Xylene	50.0	742313.000	0.5790	100	1461851.00	0.5470	200	2942931.00	0.5077
p-Isopropyltoluene	50.0	1933236.00	2.532	100	3879185.00	2.338	200	7354093.00	2.165
sec-Butylbenzene	50.0	2173686.00	2.847	100	4363500.00	2.630	200	8357624.00	2.460
tert-Butylbenzene	50.0	390791.000	0.5118	100	800130.000	0.4822	200	1618862.00	0.4765
trans-1,2-Dichloroethene	50.0	412757.000	0.2421	100	803074.000	0.2334	200	1629482.00	0.2249
trans-1,3-Dichloropropene	50.0	485059.000	0.3783	100	1020737.00	0.3819	200	2136081.00	0.3685

Login Number: L08010692
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 11-DEC-07 14:48
Column ID: F

Analyte	WG258140-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00080020

Login Number: L08010692 Run Date: 12/12/2007 Sample ID: WG258140-12

Instrument ID: HPMS6 Run Time: 11:56 Method: 8260B

File ID: 6M71621 Analyst: CMS QC Key: STD

ICal Workgroup: WG258140 Cal ID: HPMS6 - 11-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.7	ug/L	0.417	3.40	30	
1,1-Dichloroethene	CCC	20.0	22.1	ug/L	0.347	10.4	30	
1,2-Dichloropropane	CCC	20.0	21.1	ug/L	0.210	5.60	30	
Ethylbenzene	CCC	20.0	21.2	ug/L	0.475	6.20	30	
Toluene	CCC	20.0	21.2	ug/L	1.24	5.90	30	
Vinyl Chloride	CCC	20.0	21.5	ug/L	0.159	7.40	30	
Bromoform	SPCC	20.0	18.8	ug/L	0.135	5.80	30	
Chlorobenzene	SPCC	20.0	20.5	ug/L	0.859	2.30	30	
Chloromethane	SPCC	20.0	21.5	ug/L	0.220	7.30	30	
1,1-Dichloroethane	SPCC	20.0	20.9	ug/L	0.419	4.40	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.7	ug/L	0.363	8.50	30	
Acetone		20.0	23.1	ug/L	0.0357	15.5	30	
Benzene		20.0	21.3	ug/L	0.894	6.70	30	
Bromobenzene		20.0	20.8	ug/L	0.637	4.00	30	
Bromochloromethane		20.0	22.0	ug/L	0.140	9.90	30	
Bromodichloromethane		20.0	22.9	ug/L	0.296	14.3	30	
Bromomethane		20.0	22.9	ug/L	0.209	14.4	30	
2-Butanone		20.0	22.2	ug/L	0.0497	11.0	30	
n-Butylbenzene		20.0	22.0	ug/L	2.33	9.90	30	
sec-Butylbenzene		20.0	21.5	ug/L	2.84	7.40	30	
tert-Butylbenzene		20.0	21.1	ug/L	0.506	5.60	30	
Carbon Disulfide		20.0	18.8	ug/L	0.585	6.00	30	
Carbon Tetrachloride		20.0	20.6	ug/L	0.328	3.10	30	
Dibromochloromethane		20.0	19.7	ug/L	0.248	1.60	30	
Chloroethane		20.0	21.4	ug/L	0.175	7.00	30	
2-Chloroethyl Vinyl Ether		20.0	20.8	ug/L	0.0897	3.80	30	
2-Chlorotoluene		20.0	21.1	ug/L	1.98	5.70	30	
4-Chlorotoluene		20.0	19.9	ug/L	1.78	0.300	30	
1,2-Dibromo-3-Chloropropane		20.0	23.2	ug/L	0.0643	15.9	30	
1,2-Dibromoethane		20.0	21.4	ug/L	0.204	7.20	30	
Dibromomethane		20.0	22.8	ug/L	0.113	13.9	30	
1,2-Dichlorobenzene		20.0	20.1	ug/L	1.18	0.600	30	
1,3-Dichlorobenzene		20.0	20.4	ug/L	1.31	2.10	30	
1,4-Dichlorobenzene		20.0	19.3	ug/L	1.33	3.50	30	
Dichlorodifluoromethane		20.0	25.3	ug/L	0.353	26.3	30	
1,2-Dichloroethane		20.0	20.5	ug/L	0.272	2.70	30	
cis-1,2-Dichloroethene		20.0	21.9	ug/L	0.256	9.40	30	
trans-1,2-Dichloroethene		20.0	21.0	ug/L	0.237	5.10	30	
1,3-Dichloropropane		20.0	21.0	ug/L	0.351	5.00	30	
2,2-Dichloropropane		20.0	22.0	ug/L	0.376	10.2	30	
cis-1,3-Dichloropropene		20.0	21.5	ug/L	0.339	7.60	30	
trans-1,3-Dichloropropene		20.0	20.3	ug/L	0.358	1.40	30	

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 1010320
Report generated 02/01/2008 13:58

Login Number: L08010692 Run Date: 12/12/2007 Sample ID: WG258140-12
Instrument ID: HPMS6 Run Time: 11:56 Method: 8260B
File ID: 6M71621 Analyst: CMS QC Key: STD
ICal Workgroup: WG258140 Cal ID: HPMS6 - 11-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	21.8	ug/L	0.319	9.10	30	
2-Hexanone		20.0	21.2	ug/L	0.0957	5.90	30	
Hexachlorobutadiene		20.0	22.2	ug/L	0.448	11.1	30	
Isopropylbenzene		20.0	19.4	ug/L	1.30	3.20	30	
p-Isopropyltoluene		20.0	21.2	ug/L	2.47	6.00	30	
4-Methyl-2-Pentanone		20.0	20.8	ug/L	0.0418	4.20	30	
Methylene Chloride		20.0	20.5	ug/L	0.228	2.70	30	
Naphthalene		20.0	21.6	ug/L	1.35	8.00	30	
n-Propylbenzene		20.0	21.4	ug/L	3.06	7.10	30	
Styrene		20.0	21.4	ug/L	0.968	6.80	30	
1,1,1,2-Tetrachloroethane		20.0	22.2	ug/L	0.299	10.9	30	
Tetrachloroethene		20.0	21.2	ug/L	0.330	6.20	30	
1,2,3-Trichlorobenzene		20.0	20.8	ug/L	0.669	4.10	30	
1,2,4-Trichlorobenzene		20.0	21.1	ug/L	0.829	5.70	30	
1,1,1-Trichloroethane		20.0	21.8	ug/L	0.378	9.20	30	
1,1,2-Trichloroethane		20.0	21.0	ug/L	0.197	5.00	30	
Trichloroethene		20.0	22.0	ug/L	0.253	10.0	30	
Trichlorofluoromethane		20.0	17.5	ug/L	0.368	12.5	30	
1,2,3-Trichloropropane		20.0	21.9	ug/L	0.118	9.50	30	
1,2,4-Trimethylbenzene		20.0	21.8	ug/L	2.39	8.80	30	
1,3,5-Trimethylbenzene		20.0	21.4	ug/L	2.22	7.10	30	
Vinyl Acetate		20.0	18.4	ug/L	0.199	8.10	40	
o-Xylene		20.0	20.6	ug/L	0.567	3.10	30	
m-,p-Xylene		40.0	42.4	ug/L	0.588	6.10	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 1010320
Report generated 02/01/2008 13:58

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L08010692
Instrument ID: HPMS6
Workgroup (AAB#): WG262097

CCV Number: WG262096-02
CAL ID: HPMS6-11-DEC-07
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG262096-02	NA	NA	399684	654117	830750
Upper Limit	NA	NA	799368	1308234	1661500
Lower Limit	NA	NA	199842	327059	415375
L08010692-01	1.00	01	318198	543518	692106
WG262097-01	1.00	01	333214	579651	743574
WG262097-02	1.00	01	364320	598820	749029
WG262097-03	1.00	01	371810	619191	773503

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 1010323
Report generated 02/01/2008 13:58

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L08010692
Instrument ID: HPMS6
Workgroup (AAB#): WG262097

CCV Number: WG262096-02
CAL ID: HPMS6-11-DEC-07
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG262096-02	NA	NA	18.86	15.3	10.83
Upper Limit	NA	NA	19.36	15.8	11.33
Lower Limit	NA	NA	18.36	14.8	10.33
L08010692-01	1.00	01	18.86	15.31	10.83
WG262097-01	1.00	01	18.86	15.3	10.83
WG262097-02	1.00	01	18.86	15.31	10.82
WG262097-03	1.00	01	18.86	15.31	10.83

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 1010325
Report generated 02/01/2008 13:58

3.0 Attachments

Kemron Environmental Services
Analyst Listing
February 1, 2008

AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG
ARA – ADRIAN R. ACHTERMANN	ASP – AARON S. PETRIE	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS	CAH – CHARLES A. HALL
CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS
CM – CHARLIE MARTIN	CMS – CRYSTAL M. STEPHENS	CPD – CHAD P. DAVIS
CSH – CHRIS S. HILL	DD – DIANE M. DENNIS	DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS	DRP – DAVE R. PITZER
DSF – DEBRA S. FREDERICK	ECL – ERIC C. LAWSON	ED – EMILY E. DECKER
ERE – ERIN R. ELDER	FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR
HJR – HOLLY J. REED	JAB – JUANITA A. BECKER	JAL – JOHN A. LENT
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON	JLK – JUSTEN L. KNOPP	JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES	JYH – JI Y. HU	KCZ – KEVIN C. ZUMBRO
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KJW – KATIE J. WIEFERICH
KRA – KATHY R. ALBERTSON	LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON	MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING
MKZ – MARILYN K. ZUMBRO	MLR – MARY L. ROCHOTTE	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NJB – NATALIE J. BOOTH
NPM – NATHANIEL P. MILLER	PJM – PAUL J. MILLER	RAH – ROY A. HALSTEAD
RB – ROBERT BUCHANAN	REK – ROBERT E. KYER	RLF – RACHEL L. FRYE
RLK – ROBIN L. KLINGER	RNP – RICK N. PETTY	RWC – RODNEY W. CAMPBELL
SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE
TDH – TRICIA D. HUCK	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WFM – WALTER F. MARTIN	

KEMRON Environmental Services

List of Valid Qualifiers

February 01, 2008

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 10235

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Kemron | Address: 156 Starlite Dr. Marietta, OH | Contact: Stephanie Mossburg

Project Name: LHAAP | Project Location: Karnack, Tx.

Project No.: 117591.0009B830 | Project Contact: Allen Willmore | Project Telephone No.: 713-996-4586

Point of Contact: Allen Willmore | Telephone No.: 713-996-4586

Project Manager/Supervisor: Praveen Srivastav

Analysis and Method Desired (Indicate separate containers)

Item No.	Sample ~~Telephone~~ Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOJ						Remarks
1	LHSMW04-013008	1/30/08	2:00		✓	W	Groundwater, Site 58	3	3						
2															
3															
4															
5															
6															
7															
8															
9															
10															

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	1/30/08 3:00	Erin Elder	1-31-08 0920	24 HR. TAT
				FedEx Airbill No.:
		Laboratory		Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ✓ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

00080029

KEMRON Environmental Services

SAMPLE RECEIPT FORM

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Kemron
Workorder Number:	B —
Date Received:	1-31-08
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier Time: 0920
Opened by:	EE
IR Temp Gun:	( ) D (✓) G
Logged by:	EE/SKT/SM L 08010692

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
1732	1	1Z66V 7250 1996 1607 1		24 hr TAT

Inspection Checklist	Y	N	NA	Discrepancy ID
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)			✓	
Were VOA samples free of headspace?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of KEMRON representative	
Client/Company:	
Person Contacted:	
Date contacted:	

Resolution/other comments:

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L08010692
Account: 2773
Project: 2773.025
Samples: 1
Due Date: 01-FEB-2008

Samplenum	Container ID	Products
L08010692-01	421188	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	31-JAN-2008 10:05	ERE	
2	ANALYZ	V1	ORG4	31-JAN-2008 10:08	MRT	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	31-JAN-2008 10:05	ERE	
2	ANALYZ	V1	ORG4	31-JAN-2008 10:08	MRT	RLK

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	31-JAN-2008 10:05	ERE	
2	ANALYZ	V1	ORG4	31-JAN-2008 10:08	MRT	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L08020138

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Debra Elliott - Team Leader
delliott@kemron-lab.com

Amanda Fickiesen - Client Services Specialist
afickiesen@kemron-lab.com

Kathy Albertson - Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Annie Brown - Client Services Specialist
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Stephanie Mossburg - Team Chemist/Data Specialist
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Brenda Gregory - Client Services Specialist
bgregory@kemron-lab.com

Jacqueline Parsons - Team Assistant
jparsons@kemron-lab.com

Tony Long - Client Services Specialist
tlong@kemron-lab.com

This report was reviewed on February 08, 2008.

Stephanie Mossburg

STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on February 08, 2008.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 53 pages.

Protecting Our Environmental Future

KEMRON REPORT L08020138
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L08020138

CHAIN OF CUSTODY: The chain of custody number was 10237.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 6 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 07-FEB-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00080035

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	February 8, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08020138
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	262567
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	February 08, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		✓			1
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?		✓			2
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

#1: Trichloroethene and vinyl acetate exceeded the upper advisory limits.

#2: Vinyl acetate exceeded the upper control limit.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00080042

L08020138

02/08/08 15:52

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: GROUNDWATER TREATMENT

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
35AWW01-020608	L08020138-01	8260B	1	07-FEB-08

Report Number: **L08020138**
Report Date : **February 8, 2008**

00080043

Sample Number: **L08020138-01**
Client ID: **35AWW01-020608**
Matrix: **Water**
Workgroup Number: **WG262567**
Collect Date: **02/06/2008 04:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **02/07/2008 19:36**
Cal Date: **01/23/2008 19:57**
Run Date: **02/07/2008 19:36**
File ID: **10M62420**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L08020138**
Report Date : **February 8, 2008**

00080044

Sample Number: **L08020138-01**
Client ID: **35AWW01-020608**
Matrix: **Water**
Workgroup Number: **WG262567**
Collect Date: **02/06/2008 04:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **02/07/2008 19:36**
Cal Date: **01/23/2008 19:57**
Run Date: **02/07/2008 19:36**
File ID: **10M62420**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	107	86	118	
1,2-Dichloroethane-d4	103	80	120	
Toluene-d8	100	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 012308
Analyst1: CMS Analyst2: ASP
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10
Method: 624 SOP: MSV01 Rev: 9
Maintenance Log ID: 22685

Internal Standard: STD23847 Surrogate Standard: STD24122
CCV: NA LCS: NA MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG261315

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M62072	WG261315-01 50ng BFB STD 8260	NA	1	1	STD23959	01/23/08 08:40
2	10M62074	WG261316-01 VBLK0123 BLANK 8260	NA	1	1		01/23/08 09:35
3	10M62075	WG261315-02 50ug/L CCV STD 8260	NA	1	1	STD24101	01/23/08 10:10
4	10M62076	WG261316-01 VBLK0123 BLANK 8260	NA	1	1		01/23/08 10:41
5	10M62077	WG261316-01 VBLK0123 BLANK 8260	NA	1	1		01/23/08 11:12
6	10M62079	WG261315-01 50ng BFB STD 8260	NA	1	1	STD23959	01/23/08 11:50
7	10M62080	WG261315-02 50ug/L CCV STD 8260	NA	1	1	STD24219	01/23/08 12:21
8	10M62081	WG261315-02 50ug/L CCV STD 8260	NA	1	1	STD24219	01/23/08 13:09
9	10M62082	WG261316-01 VBLK0123 BLANK 8260	NA	1	1		01/23/08 13:44
10	10M62083	WG261351-01 50ng BFB STD 8260	NA	1	1	STD23959	01/23/08 14:46
11	10M62084	WG261351-02 0.3ug/L STD 8260	NA	1	1	STD24237	01/23/08 15:10
12	10M62085	WG261351-03 0.4ug/L STD 8260	NA	1	1	STD24237	01/23/08 15:46
13	10M62086	WG261351-04 1ug/L STD 8260	NA	1	1	STD24237	01/23/08 16:18
14	10M62087	WG261351-05 2ug/L STD 8260	NA	1	1	STD24237	01/23/08 16:49
15	10M62088	WG261351-06 5ug/L STD 8260	NA	1	1	STD24237	01/23/08 17:20
16	10M62089	WG261351-07 20ug/L STD 8260	NA	1	1	STD24237	01/23/08 17:52
17	10M62090	WG261351-08 50ug/L STD 8260	NA	1	1	STD24237	01/23/08 18:23
18	10M62091	WG261351-09 100ug/L STD 8260	NA	1	1	STD24237	01/23/08 18:55
19	10M62092	WG261351-10 200ug/L STD 8260	NA	1	1	STD24237	01/23/08 19:26
20	10M62093	WG261351-11 300ug/L STD 8260	NA	1	1	STD24237	01/23/08 19:57
21	10M62094	SYSTEM BLANK	NA	1	1		01/23/08 20:28
22	10M62095	SYSTEM BLANK	NA	1	1		01/23/08 20:59
23	10M62096	WG261351-12 20ug/L ALT SRC STD 8260	NA	1	1	STD24227	01/23/08 21:30
24	10M62097	SYSTEM BLANK	NA	1	1		01/23/08 22:02

Approved: January 30, 2008

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 020708
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 22824

Internal Standard: STD23847 Surrogate Standard: STD24412
CCV: STD24465 LCS: STD24411 MS/MSD: STD24411

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG262567

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M62400	SYSTEM CHECK	NA	1	1		02/07/08 08:27
2	10M62401	WG262566-01 50ng BFB STD 8260	NA	1	1	STD24474	02/07/08 09:39
3	10M62402	WG262566-02 50ug/L CCV STD 8260	NA	1	1	STD24465	02/07/08 10:03
4	10M62403	WG262567-01 VBLK0207 BLANK 8260	NA	1	1		02/07/08 10:37
5	10M62404	WG262567-01 VBLK0207 BLANK 8260	NA	1	1		02/07/08 11:09
6	10M62405	WG262567-02 20ug/L LCS STD 8260	NA	1	1	STD24411	02/07/08 11:40
7	10M62406	L08020091-01 A 826-SPE	<2	1	1		02/07/08 12:12
8	10M62407	L08020093-28 A 826-LOW	<2	1	1		02/07/08 12:44
9	10M62408	L08020093-27 A 826-LOW	<2	1	1		02/07/08 13:15
10	10M62409	L08020085-02 A 826-SPE	<2	1	1		02/07/08 13:47
11	10M62410	L08020085-07 A 826-SPE	<2	1	1		02/07/08 14:19
12	10M62411	L08020091-08 A 826-SPE	<2	1	1		02/07/08 14:51
13	10M62412	L08020093-23 A 2X 826-LOW	<2	1	2		02/07/08 15:22
14	10M62413	L08020093-24 A 826-LOW	<2	1	1		02/07/08 15:54
15	10M62414	L08020093-25 A 826-LOW	<2	1	1		02/07/08 16:26
16	10M62415	L08020093-26 A 826-LOW	<2	1	1		02/07/08 16:58
17	10M62416	L08020085-03 A 826-SPE	<2	1	1		02/07/08 17:29
18	10M62417	L08020085-04 A MS 826-SPE	<2	1	1	STD24411	02/07/08 18:01
19	10M62418	L08020085-05 A MS 826-SPE	<2	1	1	STD24411	02/07/08 18:32
20	10M62419	L08020085-06 A 826-SPE	<2	1	1		02/07/08 19:04
21	10M62420	L08020138-01 A 826-LOW	<2	1	1		02/07/08 19:36
22	10M62421	L08020091-02 A 826-SPE	<2	1	1		02/07/08 20:07
23	10M62422	L08020091-03 A 826-SPE	<2	1	1		02/07/08 20:39
24	10M62423	L08020091-04 A 826-SPE	<2	1	1		02/07/08 21:11
25	10M62424	L08020091-09 A 826-SPE	<2	1	1		02/07/08 21:42
26	10M62425	SYSTEM BLANK	NA	1	1		02/07/08 22:14
27	10M62426	WG262567-06 624 BLANK	NA	2	1		02/07/08 22:46
28	10M62427	L08020057-01 A 624-SPE	7	2	1		02/07/08 23:17
29	10M62428	SYSTEM BLANK	NA	1	1		02/07/08 23:49
30	10M62429	SYSTEM CHECK	NA	1	1		02/08/08 00:21
31	10M62430	SYSTEM BLANK	NA	1	1		02/08/08 00:52

Comments

Approved: February 08, 2008

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 020708

Analyst1: TMB Analyst2: NA

Method: 8260B SOP: MSV01 Rev: 10

Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 22824

Internal Standard: STD23847 Surrogate Standard: STD24412

CCV: STD24465 LCS: STD24411 MS/MSD: STD24411

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG262567

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X	1	Carry-over contamination	
File ID: 10M62403				
	Do not report.			
13	X	20	Over Calibration Range	tce
File ID: 10M62412				
14	X	1	Carry-over contamination	
File ID: 10M62413				
	Do not report.			
22	X	20	Over Calibration Range	CFORM, CAR. TET.
File ID: 10M62421				
23	X	1	Carry-over contamination	
File ID: 10M62422				
	Do not report.			
25	X	1	Missed Tune	
File ID: 10M62424				
	Do not report.			

Approved: February 08, 2008

KEMRON Environmental Services
Data Checklist

Date: 23-JAN-2008
Analyst: CMS
Analyst: ASP
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 20440
Analytical Workgroups: WG261315, WG261351

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
30-JAN-2008

Secondary Reviewer:
30-JAN-2008

Generated: JAN-30-2008 13:53:20

KEMRON Environmental Services
Data Checklist

Date: 07-FEB-2008
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 20613
Analytical Workgroups: WG262567

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
08-FEB-2008
Tiffany Bailey

Secondary Reviewer:
08-FEB-2008

Generated: FEB-08-2008 14:44:31

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B AAB#: WG262567

Login Number: L08020138

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
35AWW01-020608	02/06/08	02/07/08	02/07/08	14	1.63	02/07/08	14	1.63	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 1015554
Report generated 02/08/2008 15:23

SURROGATE STANDARDS

Login Number: L08020138
Instrument Id: HPMS10
Workgroup (AAB#): WG262567

Method: 8260
CAL ID: HPMS10-23-JAN-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08020138-01	1.00	01	103	107	102	100
WG262567-01	1.00	01	92.2	102	99.5	99.5
WG262567-02	1.00	01	92.4	103	97.2	100
WG262567-06	1.00	01	105	109	101	101

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 09/27/2006
Version 1.5 PDF File ID: 1015562
Report generated 02/08/2008 15:23

METHOD BLANK SUMMARY

Login Number: L08020138
Work Group: WG262567
Blank File ID: 10M62404
Blank Sample ID: WG262567-01
Prep Date: 02/07/08 11:09
Instrument ID: HPMS10
Analyzed Date: 02/07/08 11:09
Method: 8260B
Analyst: TMB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG262567-02	10M62405	02/07/08 11:40	01
35AWW01-020608	L08020138-01	10M62420	02/07/08 19:36	01

Login Number:L08020138 Prep Date:02/07/08 11:09 Sample ID:WG262567-01
Instrument ID:HPMS10 Run Date:02/07/08 11:09 Prep Method:5030B
File ID:10M62404 Analyst:TMB Method:8260B
Workgroup (AAB#):WG262567 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-23-JAN-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 1015556
Report generated 02/08/2008 15:23

Login Number: L08020138 Prep Date: 02/07/08 11:09 Sample ID: WG262567-01
Instrument ID: HPMS10 Run Date: 02/07/08 11:09 Prep Method: 5030B
File ID: 10M62404 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG262567 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS10-23-JAN-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.125	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	102	86 - 118	PASS
1,2-Dichloroethane-d4	92.2	80 - 120	PASS
Toluene-d8	99.5	88 - 110	PASS
4-Bromofluorobenzene	99.5	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 1015556
Report generated 02/08/2008 15:23

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L08020138 Run Date: 02/07/2008 Sample ID: WG262567-02
Instrument ID: HPMS10 Run Time: 11:40 Prep Method: 5030B
File ID: 10M62405 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG262567 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD24411 Cal ID: HPMS10-23-JAN-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	20.1	100	40 - 142	
Benzene	20.0	23.3	117	80 - 121	
Bromobenzene	20.0	24.0	120	80 - 120	
Bromochloromethane	20.0	25.3	126	65 - 130	
Bromodichloromethane	20.0	25.3	127	80 - 131	
Bromoform	20.0	20.3	101	70 - 130	
Bromomethane	20.0	23.1	115	30 - 145	
2-Butanone	20.0	21.9	109	30 - 150	
n-Butylbenzene	20.0	19.6	97.9	80 - 131	
sec-Butylbenzene	20.0	20.3	101	80 - 127	
tert-Butylbenzene	20.0	21.4	107	80 - 126	
Carbon disulfide	20.0	22.6	113	58 - 138	
Carbon tetrachloride	20.0	24.6	123	65 - 140	
Chlorobenzene	20.0	21.5	107	80 - 120	
Chlorodibromomethane	20.0	20.4	102	60 - 135	
Chloroethane	20.0	23.3	116	60 - 135	
2-Chloroethyl vinyl ether	20.0	22.7	113	58 - 151	
Chloroform	20.0	24.1	121	80 - 125	
Chloromethane	20.0	20.8	104	40 - 125	
2-Chlorotoluene	20.0	22.8	114	80 - 127	
4-Chlorotoluene	20.0	21.6	108	80 - 126	
1,2-Dibromo-3-chloropropane	20.0	20.1	100	50 - 130	
1,2-Dibromoethane	20.0	22.4	112	80 - 125	
Dibromomethane	20.0	24.2	121	75 - 125	
1,2-Dichlorobenzene	20.0	22.4	112	80 - 125	
1,3-Dichlorobenzene	20.0	22.2	111	80 - 120	
1,4-Dichlorobenzene	20.0	20.6	103	80 - 120	
Dichlorodifluoromethane	20.0	26.0	130	50 - 133	
1,1-Dichloroethane	20.0	22.6	113	80 - 125	
1,2-Dichloroethane	20.0	22.5	113	80 - 129	
1,1-Dichloroethene	20.0	23.8	119	80 - 132	
cis-1,2-Dichloroethene	20.0	24.8	124	70 - 125	
trans-1,2-Dichloroethene	20.0	24.1	121	80 - 127	
1,2-Dichloropropane	20.0	23.2	116	80 - 120	
1,3-Dichloropropane	20.0	22.0	110	80 - 120	
2,2-Dichloropropane	20.0	24.1	121	80 - 133	
cis-1,3-Dichloropropene	20.0	21.4	107	70 - 130	
trans-1,3-Dichloropropene	20.0	18.2	91.1	80 - 130	
1,1-Dichloropropene	20.0	23.3	116	75 - 130	
Ethylbenzene	20.0	23.2	116	80 - 122	
2-Hexanone	20.0	18.1	90.7	55 - 130	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 1015315
Report generated 02/08/2008 15:23

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L08020138 Run Date: 02/07/2008 Sample ID: WG262567-02
Instrument ID: HPMS10 Run Time: 11:40 Prep Method: 5030B
File ID: 10M62405 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG262567 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD24411 Cal ID: HPMS10-23-JAN-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hexachlorobutadiene	20.0	21.8	109	72 - 132	
Isopropylbenzene	20.0	19.3	96.4	80 - 122	
p-Isopropyltoluene	20.0	20.1	100	80 - 122	
4-Methyl-2-pentanone	20.0	21.6	108	64 - 140	
Methylene chloride	20.0	22.6	113	80 - 123	
Naphthalene	20.0	20.9	104	59 - 149	
n-Propylbenzene	20.0	20.1	100	80 - 129	
Styrene	20.0	20.7	104	80 - 123	
1,1,1,2-Tetrachloroethane	20.0	24.2	121	80 - 130	
1,1,2,2-Tetrachloroethane	20.0	21.1	105	79 - 125	
Tetrachloroethene	20.0	22.9	115	80 - 124	
Toluene	20.0	22.9	115	80 - 124	
1,2,3-Trichlorobenzene	20.0	23.3	116	55 - 140	
1,2,4-Trichlorobenzene	20.0	21.3	106	65 - 135	
1,1,1-Trichloroethane	20.0	24.1	120	80 - 134	
1,1,2-Trichloroethane	20.0	22.0	110	80 - 125	
Trichloroethene	20.0	25.0	125	80 - 122	*
Trichlorofluoromethane	20.0	19.8	99.0	62 - 151	
1,2,3-Trichloropropane	20.0	22.4	112	75 - 125	
1,2,4-Trimethylbenzene	20.0	20.9	104	80 - 125	
1,3,5-Trimethylbenzene	20.0	20.8	104	80 - 127	
Vinyl acetate	20.0	30.2	151	10 - 150	*
Vinyl chloride	20.0	21.9	110	65 - 140	
o-Xylene	20.0	20.9	105	80 - 122	
m-,p-Xylene	40.0	45.8	114	80 - 122	

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	103	86 - 118	PASS
1,2-Dichloroethane-d4	92.4	80 - 120	PASS
Toluene-d8	100	88 - 110	PASS
4-Bromofluorobenzene	97.2	86 - 115	PASS

* FAILS %REC LIMIT

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 1015315
Report generated 02/08/2008 15:23

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08020138 Tune ID: WG261351-01
Instrument: HPMS10 Run Date: 01/23/2008
Analyst: TMB Run Time: 14:46
Workgroup: WG261351 File ID: 10M62083
Cal ID: HPMS10-23-JAN-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	20.9	7309	PASS
75.0	95.0	30.0	60.0	50.6	17707	PASS
95.0	95.0	100	100	100	34973	PASS
96.0	95.0	5.00	9.00	7.12	2489	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	91.4	31949	PASS
175	174	5.00	9.00	7.24	2314	PASS
176	174	95.0	101	95.7	30568	PASS
177	176	5.00	9.00	6.71	2052	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG261351-02	STD	01	01/23/2008 15:10	
WG261351-03	STD	01	01/23/2008 15:46	
WG261351-04	STD	01	01/23/2008 16:18	
WG261351-05	STD	01	01/23/2008 16:49	
WG261351-06	STD	01	01/23/2008 17:20	
WG261351-07	STD	01	01/23/2008 17:52	
WG261351-08	STD-CCV	01	01/23/2008 18:23	
WG261351-09	STD	01	01/23/2008 18:55	
WG261351-10	STD	01	01/23/2008 19:26	
WG261351-11	STD	01	01/23/2008 19:57	
WG261351-12	SSCV	01	01/23/2008 21:30	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1015559
Report generated 02/08/2008 15:23

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08020138 Tune ID: WG262566-01
Instrument: HPMS10 Run Date: 02/07/2008
Analyst: TMB Run Time: 09:39
Workgroup: WG262566 File ID: 10M62401
Cal ID: HPMS10-23-JAN-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.2	7320	PASS
75.0	95.0	30.0	60.0	48.6	18559	PASS
95.0	95.0	100	100	100	38210	PASS
96.0	95.0	5.00	9.00	7.36	2813	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	85.6	32714	PASS
175	174	5.00	9.00	7.79	2548	PASS
176	174	95.0	101	97.9	32021	PASS
177	176	5.00	9.00	6.79	2174	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG262566-02	CCV	01	02/07/2008 10:03	
WG262567-01	BLANK	01	02/07/2008 11:09	
WG262567-02	LCS	01	02/07/2008 11:40	
WG262567-03	REF	01	02/07/2008 17:29	
WG262567-04	MS	01	02/07/2008 18:01	
WG262567-05	MSD	01	02/07/2008 18:32	
L08020138-01	35AWW01-020608	01	02/07/2008 19:36	
WG262567-06	BLANK2	01	02/07/2008 22:46	*

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1015559
Report generated 02/08/2008 15:23

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
ICAL Workgroup: WG261351 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.2932	10.5		
1,2-Dichloropropane	CCC	0.3245	9.56		
Chloroform	CCC	0.6438	7.11		
Ethylbenzene	CCC	0.5250	12.2		
Toluene	CCC	1.389	10.9		
Vinyl Chloride	CCC	0.2870	13.3		
1,1,2,2-Tetrachloroethane	SPCC	0.4128	11.3		
1,1-Dichloroethane	SPCC	0.6848	6.26		
Bromoform	SPCC	0.1776	23.5		1.00
Chlorobenzene	SPCC	1.053	7.86		
Chloromethane	SPCC	0.3639	11.5		
1,1,1,2-Tetrachloroethane		0.3918	11.2		
1,1,1-Trichloroethane		0.5881	8.15		
1,1,2-Trichloroethane		0.2326	13.3		
1,1-Dichloropropene		0.4591	12.4		
1,2,3-Trichlorobenzene		0.6434	13.2		
1,2,3-Trichloropropane		0.1473	14.1		
1,2,4-Trichlorobenzene		0.7580	16.7	1.00	
1,2,4-Trimethylbenzene		2.498	16.6		1.00
1,2-Dibromo-3-Chloropropane		0.07082	29.2		1.00
1,2-Dibromoethane		0.2492	13.5		
1,2-Dichlorobenzene		1.316	8.09		
1,2-Dichloroethane		0.4877	7.78		
1,3,5-Trimethylbenzene		2.248	23.4		1.00
1,3-Dichlorobenzene		1.487	8.07		
1,3-Dichloropropane		0.4243	11.9		
1,4-Dichlorobenzene		1.608	7.62		
2,2-Dichloropropane		0.5597	8.01		
2-Butanone		0.07864	6.65		
2-Chloroethyl Vinyl Ether		0.07197	10.4		
2-Chlorotoluene		2.082	11.8		
2-Hexanone		0.1182	10.8		
4-Chlorotoluene		2.116	10.0		
4-Methyl-2-Pentanone		0.06633	8.67		
Acetone		0.06120	5.52		
Benzene		1.270	6.74		
Bromobenzene		0.7285	12.4		
Bromochloromethane		0.1592	11.5		
Bromodichloromethane		0.4333	12.6		
Bromomethane		0.2811	12.4		
Carbon Disulfide		1.009	6.59		
Carbon Tetrachloride		0.5495	10.3		
Chloroethane		0.2617	3.08		
Dibromochloromethane		0.3103	21.1		1.00
Dibromomethane		0.1626	12.9		

KEMRON FORMS - Modified 01/18/2007
Version 1.5 PDF File ID: 1015557
Report generated 02/08/2008 15:23

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
ICAL Workgroup: WG261351 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.4722	9.07		
Hexachlorobutadiene		0.3629	7.91		
Isopropylbenzene		1.459	19.8		1.00
Methylene Chloride		0.4709	50.9		1.00
Naphthalene		1.082	26.9	1.00	
Styrene		0.9107	26.9		1.00
Tetrachloroethene		0.3281	8.50		
Trichloroethene		0.3525	8.90		
Trichlorofluoromethane		0.7337	6.83		
Vinyl Acetate		0.2229	3.66		
cis-1,2-Dichloroethene		0.3481	10.6		
cis-1,3-Dichloropropene		0.4407	21.2		1.00
m-,p-Xylene		0.6525	11.5		
n-Butylbenzene		2.007	18.1	1.00	
n-Propylbenzene		3.047	20.0		1.00
o-Xylene		0.5811	18.8		1.00
p-Isopropyltoluene		2.360	22.1	1.00	
sec-Butylbenzene		2.833	18.4		1.00
tert-Butylbenzene		0.5210	19.9	1.00	
trans-1,2-Dichloroethene		0.3235	12.1		
trans-1,3-Dichloropropene		0.4674	17.7		1.00

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-02			WG261351-03			WG261351-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2394.00000	0.3018	1.00	4562.00000	0.2281
1,2-Dichloropropane	NA	NA	NA	0.400	2269.00000	0.2861	1.00	5363.00000	0.2682
Chloroform	0.300	4046.00000	0.6097	0.400	4999.00000	0.6302	1.00	10847.0000	0.5424
Ethylbenzene	NA	NA	NA	0.400	2962.00000	0.4374	1.00	7183.00000	0.4200
Toluene	NA	NA	NA	0.400	8508.00000	1.256	1.00	18654.0000	1.091
Vinyl Chloride	NA	NA	NA	0.400	1896.00000	0.2390	1.00	6081.00000	0.3041
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1165.00000	0.3218	1.00	3562.00000	0.3832
1,1-Dichloroethane	NA	NA	NA	0.400	5569.00000	0.7021	1.00	11750.0000	0.5876
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1785.00000	0.1044
Chlorobenzene	NA	NA	NA	0.400	7809.00000	1.153	1.00	15513.0000	0.9071
Chloromethane	NA	NA	NA	0.400	3291.00000	0.4149	1.00	7628.00000	0.3815
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2289.00000	0.3380	1.00	5397.00000	0.3156
1,1,1-Trichloroethane	NA	NA	NA	0.400	4504.00000	0.5678	1.00	9636.00000	0.4819
1,1,2-Trichloroethane	NA	NA	NA	0.400	1279.00000	0.1889	1.00	3095.00000	0.1810
1,1-Dichloropropene	NA	NA	NA	0.400	3465.00000	0.4368	1.00	6787.00000	0.3394
1,2,3-Trichlorobenzene	NA	NA	NA	0.400	2279.00000	0.6295	1.00	4409.00000	0.4744
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	966.000000	0.1039
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	2430.00000	0.6712	1.00	5059.00000	0.5443
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	1.00	15412.0000	1.658
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	1.00	3072.00000	0.1796
1,2-Dichlorobenzene	0.300	4159.00000	1.337	0.400	5166.00000	1.427	1.00	10012.0000	1.077
1,2-Dichloroethane	NA	NA	NA	0.400	3586.00000	0.4521	1.00	8291.00000	0.4146
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	5547.00000	1.532	1.00	13476.0000	1.450
1,3-Dichlorobenzene	NA	NA	NA	0.400	5092.00000	1.407	1.00	11423.0000	1.229
1,3-Dichloropropane	NA	NA	NA	0.400	2303.00000	0.3401	1.00	6032.00000	0.3527
1,4-Dichlorobenzene	0.300	5117.00000	1.645	0.400	6745.00000	1.863	1.00	13197.0000	1.420
2,2-Dichloropropane	NA	NA	NA	0.400	4285.00000	0.5402	1.00	9426.00000	0.4714
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	6832.00000	1.887	1.00	14864.0000	1.599
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	7164.00000	1.979	1.00	15444.0000	1.662
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	10521.0000	1.326	1.00	21557.0000	1.078
Bromobenzene	0.300	1812.00000	0.5824	0.400	2309.00000	0.6378	1.00	5908.00000	0.6357
Bromochloromethane	NA	NA	NA	0.400	1215.00000	0.1532	1.00	2370.00000	0.1185
Bromodichloromethane	NA	NA	NA	0.400	2733.00000	0.3445	1.00	7215.00000	0.3608
Bromomethane	NA	NA	NA	0.400	1888.00000	0.2380	1.00	5521.00000	0.2761
Carbon Disulfide	NA	NA	NA	0.400	7295.00000	0.9197	1.00	18433.0000	0.9218
Carbon Tetrachloride	NA	NA	NA	0.400	3971.00000	0.5006	1.00	8842.00000	0.4422

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1015557
Report generated 02/08/2008 15:23

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-05			WG261351-06			WG261351-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	10671.0000	0.2721	5.00	28266.0000	0.2883	20.0	125414.000	0.3080
1,2-Dichloropropane	2.00	12779.0000	0.3258	5.00	32929.0000	0.3359	20.0	141628.000	0.3478
Chloroform	2.00	25551.0000	0.6515	5.00	65069.0000	0.6638	20.0	276903.000	0.6800
Ethylbenzene	2.00	17534.0000	0.5246	5.00	47133.0000	0.5452	20.0	207711.000	0.5746
Toluene	2.00	46301.0000	1.385	5.00	124360.000	1.438	20.0	548100.000	1.516
Vinyl Chloride	2.00	13412.0000	0.3420	5.00	30252.0000	0.3086	20.0	121988.000	0.2996
1,1,2,2-Tetrachloroethane	2.00	7510.00000	0.3943	5.00	20468.0000	0.4195	20.0	95122.0000	0.4660
1,1-Dichloroethane	2.00	26829.0000	0.6841	5.00	66325.0000	0.6766	20.0	290674.000	0.7138
Bromoform	2.00	4708.00000	0.1409	5.00	14589.0000	0.1687	20.0	72795.0000	0.2014
Chlorobenzene	2.00	37824.0000	1.132	5.00	91144.0000	1.054	20.0	393848.000	1.090
Chloromethane	2.00	16216.0000	0.4135	5.00	36851.0000	0.3759	20.0	147886.000	0.3632
1,1,1,2-Tetrachloroethane	2.00	13338.0000	0.3991	5.00	35297.0000	0.4083	20.0	157685.000	0.4362
1,1,1-Trichloroethane	2.00	23322.0000	0.5947	5.00	58243.0000	0.5941	20.0	251297.000	0.6171
1,1,2-Trichloroethane	2.00	8680.00000	0.2597	5.00	21392.0000	0.2474	20.0	91576.0000	0.2533
1,1-Dichloropropene	2.00	17008.0000	0.4337	5.00	45416.0000	0.4633	20.0	202897.000	0.4983
1,2,3-Trichlorobenzene	2.00	11203.0000	0.5882	5.00	29982.0000	0.6145	20.0	142916.000	0.7002
1,2,3-Trichloropropane	2.00	2816.00000	0.1479	5.00	6994.00000	0.1434	20.0	34108.0000	0.1671
1,2,4-Trichlorobenzene	2.00	12394.0000	0.6508	5.00	35867.0000	0.7352	20.0	171792.000	0.8417
1,2,4-Trimethylbenzene	2.00	43081.0000	2.262	5.00	125274.000	2.568	20.0	566142.000	2.774
1,2-Dibromo-3-Chloropropane	2.00	763.000000	0.04010	5.00	2554.00000	0.05240	20.0	14426.0000	0.07070
1,2-Dibromoethane	2.00	7947.00000	0.2378	5.00	21815.0000	0.2523	20.0	97620.0000	0.2700
1,2-Dichlorobenzene	2.00	23894.0000	1.255	5.00	63594.0000	1.304	20.0	284740.000	1.395
1,2-Dichloroethane	2.00	20126.0000	0.5132	5.00	49858.0000	0.5086	20.0	211144.000	0.5185
1,3,5-Trimethylbenzene	2.00	38065.0000	1.999	5.00	113698.000	2.331	20.0	543377.000	2.662
1,3-Dichlorobenzene	2.00	28933.0000	1.519	5.00	74043.0000	1.518	20.0	319902.000	1.567
1,3-Dichloropropane	2.00	14929.0000	0.4467	5.00	37690.0000	0.4359	20.0	168562.000	0.4663
1,4-Dichlorobenzene	2.00	31103.0000	1.633	5.00	77014.0000	1.579	20.0	333708.000	1.635
2,2-Dichloropropane	2.00	21612.0000	0.5511	5.00	52741.0000	0.5380	20.0	240107.000	0.5896
2-Butanone	2.00	2649.00000	0.06750	5.00	7981.00000	0.08140	20.0	33662.0000	0.08270
2-Chloroethyl Vinyl Ether	2.00	2984.00000	0.07610	5.00	7788.00000	0.07940	20.0	32579.0000	0.08000
2-Chlorotoluene	2.00	38526.0000	2.023	5.00	103945.000	2.131	20.0	466018.000	2.283
2-Hexanone	NA	NA	NA	5.00	8075.00000	0.09340	20.0	42362.0000	0.1172
4-Chlorotoluene	2.00	39586.0000	2.079	5.00	107728.000	2.208	20.0	467259.000	2.289
4-Methyl-2-Pentanone	NA	NA	NA	5.00	5420.00000	0.05530	20.0	26469.0000	0.06500
Acetone	2.00	2353.00000	0.06000	5.00	5962.00000	0.06080	20.0	26143.0000	0.06420
Benzene	2.00	49289.0000	1.257	5.00	126723.000	1.293	20.0	544012.000	1.336
Bromobenzene	2.00	13657.0000	0.7171	5.00	37059.0000	0.7596	20.0	166929.000	0.8178
Bromochloromethane	2.00	6165.00000	0.1572	5.00	16453.0000	0.1678	20.0	71272.0000	0.1750
Bromodichloromethane	2.00	16673.0000	0.4251	5.00	42460.0000	0.4331	20.0	194162.000	0.4768
Bromomethane	2.00	11735.0000	0.2992	5.00	33282.0000	0.3395	20.0	125957.000	0.3093
Carbon Disulfide	2.00	37744.0000	0.9624	5.00	101443.000	1.035	20.0	439543.000	1.079
Carbon Tetrachloride	2.00	20785.0000	0.5300	5.00	54611.0000	0.5571	20.0	242108.000	0.5946

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1015557
Report generated 02/08/2008 15:23

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-08			WG261351-09			WG261351-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	329452.000	0.3214	100	681427.000	0.3145	200	1389129.00	0.3113
1,2-Dichloropropane	50.0	365324.000	0.3564	100	739713.000	0.3414	200	1493193.00	0.3346
Chloroform	50.0	713964.000	0.6965	100	1441434.00	0.6653	200	2923272.00	0.6550
Ethylbenzene	50.0	543318.000	0.5982	100	1095923.00	0.5643	200	2141409.00	0.5354
Toluene	50.0	1415685.00	1.559	100	2834510.00	1.460	200	5631548.00	1.408
Vinyl Chloride	50.0	285689.000	0.2787	100	513536.000	0.2370	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	236601.000	0.4596	100	473012.000	0.4326	200	927515.000	0.4254
1,1-Dichloroethane	50.0	747567.000	0.7293	100	1515433.00	0.6995	200	3058251.00	0.6853
Bromoform	50.0	197164.000	0.2171	100	405297.000	0.2087	200	808668.000	0.2022
Chlorobenzene	50.0	993089.000	1.093	100	1983599.00	1.021	200	3889661.00	0.9724
Chloromethane	50.0	356995.000	0.3483	100	678823.000	0.3133	200	1340744.00	0.3004
1,1,1,2-Tetrachloroethane	50.0	397491.000	0.4376	100	801098.000	0.4125	200	1547293.00	0.3868
1,1,1-Trichloroethane	50.0	657711.000	0.6417	100	1323777.00	0.6110	200	2663135.00	0.5968
1,1,2-Trichloroethane	50.0	234640.000	0.2583	100	466389.000	0.2401	200	929458.000	0.2324
1,1-Dichloropropene	50.0	528559.000	0.5157	100	1073215.00	0.4954	200	2187716.00	0.4902
1,2,3-Trichlorobenzene	50.0	373053.000	0.7247	100	779834.000	0.7132	200	1531680.00	0.7025
1,2,3-Trichloropropane	50.0	83333.0000	0.1619	100	169501.000	0.1550	200	331131.000	0.1519
1,2,4-Trichlorobenzene	50.0	458706.000	0.8910	100	951444.000	0.8701	200	1874154.00	0.8595
1,2,4-Trimethylbenzene	50.0	1465612.00	2.847	100	2951466.00	2.699	200	5832054.00	2.675
1,2-Dibromo-3-Chloropropane	50.0	42745.0000	0.08300	100	95834.0000	0.08760	200	198685.000	0.09110
1,2-Dibromoethane	50.0	255449.000	0.2812	100	512732.000	0.2640	200	1039029.00	0.2598
1,2-Dichlorobenzene	50.0	728505.000	1.415	100	1463610.00	1.339	200	2829559.00	1.298
1,2-Dichloroethane	50.0	535192.000	0.5221	100	1076797.00	0.4970	200	2122379.00	0.4756
1,3,5-Trimethylbenzene	50.0	1417006.00	2.753	100	2880005.00	2.634	200	5722097.00	2.624
1,3-Dichlorobenzene	50.0	832221.000	1.617	100	1674950.00	1.532	200	3290719.00	1.509
1,3-Dichloropropane	50.0	431447.000	0.4750	100	872291.000	0.4491	200	1714957.00	0.4287
1,4-Dichlorobenzene	50.0	848664.000	1.649	100	1684292.00	1.540	200	3289936.00	1.509
2,2-Dichloropropane	50.0	628837.000	0.6135	100	1285028.00	0.5931	200	2590551.00	0.5805
2-Butanone	50.0	82027.0000	0.08000	100	177709.000	0.08200	200	344179.000	0.07710
2-Chloroethyl Vinyl Ether	50.0	70007.0000	0.06830	100	136434.000	0.06300	200	290035.000	0.06500
2-Chlorotoluene	50.0	1216670.00	2.363	100	2421581.00	2.215	200	4701206.00	2.156
2-Hexanone	50.0	118073.000	0.1300	100	240833.000	0.1240	200	489748.000	0.1224
4-Chlorotoluene	50.0	1182709.00	2.297	100	2403251.00	2.198	200	4837432.00	2.219
4-Methyl-2-Pentanone	50.0	72331.0000	0.07060	100	148871.000	0.06870	200	305286.000	0.06840
Acetone	50.0	66074.0000	0.06450	100	136499.000	0.06300	200	273354.000	0.06130
Benzene	50.0	1379434.00	1.346	100	2770361.00	1.279	200	5573736.00	1.249
Bromobenzene	50.0	428341.000	0.8321	100	864432.000	0.7906	200	1707360.00	0.7830
Bromochloromethane	50.0	180294.000	0.1759	100	359766.000	0.1661	200	714309.000	0.1601
Bromodichloromethane	50.0	504690.000	0.4924	100	1029230.00	0.4751	200	2046717.00	0.4586
Bromomethane	50.0	294452.000	0.2873	100	539891.000	0.2492	200	1114731.00	0.2498
Carbon Disulfide	50.0	1116316.00	1.089	100	2243491.00	1.036	200	4598165.00	1.030
Carbon Tetrachloride	50.0	628405.000	0.6131	100	1258790.00	0.5810	200	2578056.00	0.5777

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1015557
Report generated 02/08/2008 15:23

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	533312.000	0.07980
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	721008.000	0.1219
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	468072.000	0.07000
Acetone	300	364742.000	0.05460
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1015557
Report generated 02/08/2008 15:23

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-02			WG261351-03			WG261351-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	5075.00000	0.2538
Dibromochloromethane	NA	NA	NA	0.400	1387.00000	0.2048	1.00	3713.00000	0.2171
Dibromomethane	NA	NA	NA	NA	NA	NA	1.00	2356.00000	0.1178
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	9269.00000	0.4635
Hexachlorobutadiene	NA	NA	NA	0.400	1380.00000	0.3812	1.00	2870.00000	0.3088
Isopropylbenzene	NA	NA	NA	0.400	7600.00000	1.122	1.00	16852.0000	0.9853
Methylene Chloride	NA	NA	NA	0.400	8124.00000	1.024	1.00	11465.0000	0.5733
Naphthalene	NA	NA	NA	0.400	3189.00000	0.8808	1.00	6047.00000	0.6506
Styrene	NA	NA	NA	0.400	4076.00000	0.6019	1.00	8962.00000	0.5240
Tetrachloroethene	NA	NA	NA	0.400	2208.00000	0.3260	1.00	4519.00000	0.2642
Trichloroethene	NA	NA	NA	0.400	2675.00000	0.3372	1.00	5770.00000	0.2885
Trichlorofluoromethane	NA	NA	NA	NA	NA	NA	1.00	13901.0000	0.6951
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2585.00000	0.3259	1.00	5423.00000	0.2712
cis-1,3-Dichloropropene	NA	NA	NA	0.400	2625.00000	0.3309	1.00	5864.00000	0.2932
m-,p-Xylene	NA	NA	NA	0.800	8024.00000	0.5924	2.00	17058.0000	0.4987
n-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	12699.0000	1.366
n-Propylbenzene	NA	NA	NA	0.400	8108.00000	2.240	1.00	19389.0000	2.086
o-Xylene	NA	NA	NA	0.400	3223.00000	0.4759	1.00	6672.00000	0.3901
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	1.00	12984.0000	1.397
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	17156.0000	1.846
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	3018.00000	0.3247
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2154.00000	0.2716	1.00	5210.00000	0.2605
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	5209.00000	0.3046

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-05			WG261351-06			WG261351-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	10635.0000	0.2712	5.00	26058.0000	0.2658	20.0	107854.000	0.2649
Dibromochloromethane	2.00	10209.0000	0.3055	5.00	27171.0000	0.3143	20.0	128371.000	0.3551
Dibromomethane	2.00	6154.00000	0.1569	5.00	16382.0000	0.1671	20.0	71947.0000	0.1767
Dichlorodifluoromethane	2.00	20743.0000	0.5289	5.00	48525.0000	0.4950	20.0	203418.000	0.4995
Hexachlorobutadiene	2.00	6509.00000	0.3418	5.00	16924.0000	0.3469	20.0	74731.0000	0.3661
Isopropylbenzene	2.00	44166.0000	1.321	5.00	127645.000	1.476	20.0	615966.000	1.704
Methylene Chloride	2.00	17799.0000	0.4539	5.00	38099.0000	0.3887	20.0	142162.000	0.3491
Naphthalene	2.00	15751.0000	0.8270	5.00	45245.0000	0.9274	20.0	259955.000	1.274
Styrene	2.00	27069.0000	0.8099	5.00	78554.0000	0.9086	20.0	392946.000	1.087
Tetrachloroethene	2.00	11524.0000	0.3448	5.00	28356.0000	0.3280	20.0	124839.000	0.3453
Trichloroethene	2.00	13296.0000	0.3390	5.00	34829.0000	0.3553	20.0	150597.000	0.3698
Trichlorofluoromethane	2.00	31070.0000	0.7922	5.00	76347.0000	0.7788	20.0	309522.000	0.7601
Vinyl Acetate	NA	NA	NA	5.00	22764.0000	0.2322	20.0	90293.0000	0.2217
cis-1,2-Dichloroethene	2.00	13276.0000	0.3385	5.00	34273.0000	0.3496	20.0	151436.000	0.3719
cis-1,3-Dichloropropene	2.00	15422.0000	0.3932	5.00	42605.0000	0.4346	20.0	208177.000	0.5112
m-,p-Xylene	4.00	43995.0000	0.6582	10.0	116449.000	0.6734	40.0	514207.000	0.7112
n-Butylbenzene	2.00	32452.0000	1.704	5.00	93172.0000	1.910	20.0	450306.000	2.206
n-Propylbenzene	2.00	53637.0000	2.816	5.00	152502.000	3.126	20.0	723128.000	3.543
o-Xylene	2.00	17714.0000	0.5300	5.00	49536.0000	0.5729	20.0	240660.000	0.6657
p-Isopropyltoluene	2.00	37513.0000	1.970	5.00	110382.000	2.263	20.0	548380.000	2.687
sec-Butylbenzene	2.00	47057.0000	2.471	5.00	134567.000	2.758	20.0	648006.000	3.175
tert-Butylbenzene	2.00	8406.00000	0.4414	5.00	25304.0000	0.5187	20.0	119706.000	0.5865
trans-1,2-Dichloroethene	2.00	12363.0000	0.3152	5.00	31668.0000	0.3230	20.0	140986.000	0.3462
trans-1,3-Dichloropropene	2.00	14294.0000	0.4277	5.00	39297.0000	0.4545	20.0	191104.000	0.5286

Login Number: L08020138 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-08			WG261351-09			WG261351-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	276265.000	0.2695	100	554817.000	0.2561	200	1119670.00	0.2509
Dibromochloromethane	50.0	339513.000	0.3738	100	703835.000	0.3624	200	1396721.00	0.3492
Dibromomethane	50.0	183297.000	0.1788	100	375062.000	0.1731	200	747329.000	0.1675
Dichlorodifluoromethane	50.0	497150.000	0.4850	100	920189.000	0.4247	200	1824061.00	0.4087
Hexachlorobutadiene	50.0	202160.000	0.3927	100	410829.000	0.3757	200	850586.000	0.3901
Isopropylbenzene	50.0	1606768.00	1.769	100	3260801.00	1.679	200	6461962.00	1.616
Methylene Chloride	50.0	348993.000	0.3405	100	703975.000	0.3249	200	1394957.00	0.3126
Naphthalene	50.0	712168.000	1.383	100	1494559.00	1.367	200	2936558.00	1.347
Styrene	50.0	1056787.00	1.164	100	2162618.00	1.114	200	4309397.00	1.077
Tetrachloroethene	50.0	323119.000	0.3557	100	645593.000	0.3324	200	1314103.00	0.3285
Trichloroethene	50.0	400869.000	0.3911	100	804860.000	0.3715	200	1639316.00	0.3673
Trichlorofluoromethane	50.0	774773.000	0.7559	100	1500239.00	0.6925	200	2950999.00	0.6613
Vinyl Acetate	50.0	228564.000	0.2230	100	492442.000	0.2273	200	938559.000	0.2103
cis-1,2-Dichloroethene	50.0	392775.000	0.3832	100	811554.000	0.3746	200	1651718.00	0.3701
cis-1,3-Dichloropropene	50.0	551421.000	0.5380	100	1124752.00	0.5191	200	2254908.00	0.5053
m-,p-Xylene	100	1330810.00	0.7326	200	2684952.00	0.6912	400	5295169.00	0.6619
n-Butylbenzene	50.0	1209297.00	2.349	100	2458724.00	2.249	200	4937697.00	2.265
n-Propylbenzene	50.0	1890598.00	3.673	100	3784151.00	3.461	200	7476571.00	3.429
o-Xylene	50.0	633729.000	0.6977	100	1300213.00	0.6695	200	2588304.00	0.6471
p-Isopropyltoluene	50.0	1448156.00	2.813	100	2936092.00	2.685	200	5894387.00	2.703
sec-Butylbenzene	50.0	1695726.00	3.294	100	3430885.00	3.138	200	6860211.00	3.146
tert-Butylbenzene	50.0	310459.000	0.6031	100	642510.000	0.5876	200	1274995.00	0.5847
trans-1,2-Dichloroethene	50.0	372785.000	0.3637	100	769071.000	0.3550	200	1575055.00	0.3529
trans-1,3-Dichloropropene	50.0	492657.000	0.5424	100	997000.000	0.5133	200	2003865.00	0.5010

Login Number: L08020138
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 23-JAN-08 19:57
Column ID: F

Analyte	WG261351-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

Login Number: L08020138 Run Date: 01/23/2008 Sample ID: WG261351-12
Instrument ID: HPMS10 Run Time: 21:30 Method: 8260B
File ID: 10M62096 Analyst: TMB QC Key: STD
ICal Workgroup: WG261351 Cal ID: HPMS10 - 23-JAN-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.6	ug/L	0.662	2.80	30	
1,1-Dichloroethene	CCC	20.0	20.9	ug/L	0.307	4.70	30	
1,2-Dichloropropane	CCC	20.0	20.8	ug/L	0.337	4.00	30	
Ethylbenzene	CCC	20.0	21.9	ug/L	0.574	9.40	30	
Toluene	CCC	20.0	21.4	ug/L	1.49	7.00	30	
Vinyl Chloride	CCC	20.0	21.0	ug/L	0.302	5.10	30	
Bromoform	SPCC	20.0	17.7	ug/L	0.184	11.7	30	
Chlorobenzene	SPCC	20.0	20.3	ug/L	1.07	1.30	30	
Chloromethane	SPCC	20.0	21.2	ug/L	0.385	5.90	30	
1,1-Dichloroethane	SPCC	20.0	20.3	ug/L	0.694	1.30	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.6	ug/L	0.446	8.00	30	
Acetone		20.0	20.0	ug/L	0.0613	0.200	30	
Benzene		20.0	20.7	ug/L	1.31	3.30	30	
Bromobenzene		20.0	22.1	ug/L	0.804	10.3	30	
Bromochloromethane		20.0	21.7	ug/L	0.172	8.30	30	
Bromodichloromethane		20.0	21.6	ug/L	0.468	8.00	30	
Bromomethane		20.0	21.8	ug/L	0.307	9.20	30	
2-Butanone		20.0	21.6	ug/L	0.0850	8.00	30	
n-Butylbenzene		20.0	19.1	ug/L	2.14	4.60	30	
sec-Butylbenzene		20.0	19.7	ug/L	3.12	1.50	30	
tert-Butylbenzene		20.0	19.7	ug/L	0.577	1.30	30	
Carbon Disulfide		20.0	20.3	ug/L	1.02	1.30	30	
Carbon Tetrachloride		20.0	21.0	ug/L	0.578	5.20	30	
Dibromochloromethane		20.0	18.8	ug/L	0.344	6.20	30	
Chloroethane		20.0	21.9	ug/L	0.286	9.30	30	
2-Chloroethyl Vinyl Ether		20.0	19.3	ug/L	0.0695	3.40	30	
2-Chlorotoluene		20.0	21.0	ug/L	2.18	4.90	30	
4-Chlorotoluene		20.0	21.2	ug/L	2.25	6.10	30	
1,2-Dibromo-3-Chloropropane		20.0	19.2	ug/L	0.0736	4.10	30	
1,2-Dibromoethane		20.0	21.0	ug/L	0.261	4.90	30	
Dibromomethane		20.0	21.3	ug/L	0.173	6.40	30	
1,2-Dichlorobenzene		20.0	20.8	ug/L	1.37	3.80	30	
1,3-Dichlorobenzene		20.0	20.7	ug/L	1.54	3.70	30	
1,4-Dichlorobenzene		20.0	19.9	ug/L	1.60	0.500	30	
Dichlorodifluoromethane		20.0	24.5	ug/L	0.579	22.6	30	
1,2-Dichloroethane		20.0	19.9	ug/L	0.486	0.300	30	
cis-1,2-Dichloroethene		20.0	21.7	ug/L	0.377	8.40	30	
trans-1,2-Dichloroethene		20.0	21.1	ug/L	0.342	5.70	30	
1,3-Dichloropropane		20.0	21.7	ug/L	0.459	8.30	30	
2,2-Dichloropropane		20.0	18.7	ug/L	0.524	6.40	30	
cis-1,3-Dichloropropene		20.0	18.5	ug/L	0.484	7.50	30	
trans-1,3-Dichloropropene		20.0	16.8	ug/L	0.441	16.2	30	

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 1015558
Report generated 02/08/2008 15:23

Login Number: L08020138 Run Date: 01/23/2008 Sample ID: WG261351-12
Instrument ID: HPMS10 Run Time: 21:30 Method: 8260B
File ID: 10M62096 Analyst: TMB QC Key: STD
ICal Workgroup: WG261351 Cal ID: HPMS10 - 23-JAN-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	21.1	ug/L	0.483	5.30	30	
2-Hexanone		20.0	18.9	ug/L	0.112	5.30	30	
Hexachlorobutadiene		20.0	18.8	ug/L	0.342	5.90	30	
Isopropylbenzene		20.0	17.8	ug/L	1.54	10.8	30	
p-Isopropyltoluene		20.0	19.0	ug/L	2.55	5.00	30	
4-Methyl-2-Pentanone		20.0	19.4	ug/L	0.0645	2.80	30	
Methylene Chloride		20.0	19.7	ug/L	0.343	1.70	30	
Naphthalene		20.0	19.5	ug/L	1.29	2.50	30	
n-Propylbenzene		20.0	19.6	ug/L	3.47	2.00	30	
Styrene		20.0	19.2	ug/L	1.08	4.20	30	
1,1,1,2-Tetrachloroethane		20.0	21.6	ug/L	0.424	8.20	30	
Tetrachloroethene		20.0	20.6	ug/L	0.338	3.00	30	
1,2,3-Trichlorobenzene		20.0	21.9	ug/L	0.704	9.40	30	
1,2,4-Trichlorobenzene		20.0	19.5	ug/L	0.840	2.30	30	
1,1,1-Trichloroethane		20.0	20.5	ug/L	0.603	2.60	30	
1,1,2-Trichloroethane		20.0	21.8	ug/L	0.254	9.00	30	
Trichloroethene		20.0	21.5	ug/L	0.379	7.50	30	
Trichlorofluoromethane		20.0	17.6	ug/L	0.646	12.0	30	
1,2,3-Trichloropropane		20.0	21.5	ug/L	0.159	7.70	30	
1,2,4-Trimethylbenzene		20.0	19.5	ug/L	2.70	2.30	30	
1,3,5-Trimethylbenzene		20.0	19.6	ug/L	2.61	1.90	30	
Vinyl Acetate		20.0	17.7	ug/L	0.197	11.7	40	
o-Xylene		20.0	19.4	ug/L	0.661	3.00	30	
m-,p-Xylene		40.0	42.8	ug/L	0.699	7.10	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 1015558
Report generated 02/08/2008 15:23

CONTINUING CALIBRATION VERIFICATION (CCV) 00080074

Login Number: L08020138 Run Date: 02/07/2008 Sample ID: WG262566-02
Instrument ID: HPMS10 Run Time: 10:03 Method: 8260B
File ID: 10M62402 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG262567 Cal ID: HPMS10 - 23-JAN-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.4	ug/L	0.675	4.87	20	
1,1-Dichloroethene	CCC	50.0	46.0	ug/L	0.270	7.91	20	
1,2-Dichloropropane	CCC	50.0	50.9	ug/L	0.330	1.80	20	
Ethylbenzene	CCC	50.0	52.9	ug/L	0.555	5.79	20	
Toluene	CCC	50.0	50.9	ug/L	1.41	1.72	20	
Vinyl Chloride	CCC	50.0	52.8	ug/L	0.303	5.51	20	
Bromoform	SPCC	50.0	45.5	ug/L	0.193	8.93	40	
Chlorobenzene	SPCC	50.0	48.1	ug/L	1.01	3.88	40	
Chloromethane	SPCC	50.0	52.3	ug/L	0.381	4.68	40	
1,1-Dichloroethane	SPCC	50.0	48.0	ug/L	0.658	3.95	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	45.2	ug/L	0.373	9.65	40	
Acetone		50.0	46.6	ug/L	0.0571	6.75	40	
Benzene		50.0	49.8	ug/L	1.27	0.330	40	
Bromobenzene		50.0	54.2	ug/L	0.789	8.32	40	
Bromochloromethane		50.0	52.3	ug/L	0.167	4.63	40	
Bromodichloromethane		50.0	54.1	ug/L	0.469	8.25	40	
Bromomethane		50.0	58.1	ug/L	0.327	16.3	40	
2-Butanone		50.0	47.3	ug/L	0.0744	5.46	40	
n-Butylbenzene		50.0	47.8	ug/L	2.16	4.44	40	
sec-Butylbenzene		50.0	48.3	ug/L	3.08	3.40	40	
tert-Butylbenzene		50.0	49.3	ug/L	0.577	1.47	40	
Carbon Disulfide		50.0	56.1	ug/L	1.13	12.1	40	
Carbon Tetrachloride		50.0	53.0	ug/L	0.582	5.91	40	
Dibromochloromethane		50.0	44.7	ug/L	0.330	10.6	40	
Chloroethane		50.0	58.6	ug/L	0.307	17.1	40	
2-Chloroethyl Vinyl Ether		50.0	39.6	ug/L	0.0569	20.9	40	
2-Chlorotoluene		50.0	51.7	ug/L	2.15	3.36	40	
4-Chlorotoluene		50.0	51.0	ug/L	2.16	2.07	40	
1,2-Dibromo-3-Chloropropane		50.0	43.8	ug/L	0.0726	12.3	40	
1,2-Dibromoethane		50.0	47.9	ug/L	0.239	4.23	40	
Dibromomethane		50.0	50.2	ug/L	0.163	0.400	40	
1,2-Dichlorobenzene		50.0	49.4	ug/L	1.30	1.10	40	
1,3-Dichlorobenzene		50.0	51.2	ug/L	1.52	2.32	40	
1,4-Dichlorobenzene		50.0	47.0	ug/L	1.51	6.05	40	
Dichlorodifluoromethane		50.0	61.2	ug/L	0.578	22.5	40	
1,2-Dichloroethane		50.0	46.4	ug/L	0.453	7.11	40	
cis-1,2-Dichloroethene		50.0	53.0	ug/L	0.369	6.03	40	
trans-1,2-Dichloroethene		50.0	51.3	ug/L	0.332	2.63	40	
1,3-Dichloropropane		50.0	46.4	ug/L	0.394	7.23	40	
2,2-Dichloropropane		50.0	54.7	ug/L	0.613	9.44	40	
cis-1,3-Dichloropropene		50.0	48.2	ug/L	0.509	3.52	40	
trans-1,3-Dichloropropene		50.0	43.9	ug/L	0.464	12.1	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1015560
Report generated 02/08/2008 15:23

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L08020138 Run Date: 02/07/2008 Sample ID: WG262566-02
Instrument ID: HPMS10 Run Time: 10:03 Method: 8260B
File ID: 10M62402 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG262567 Cal ID: HPMS10 - 23-JAN-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	51.7	ug/L	0.475	3.35	40	
2-Hexanone		50.0	43.2	ug/L	0.102	13.7	40	
Hexachlorobutadiene		50.0	54.8	ug/L	0.398	9.62	40	
Isopropylbenzene		50.0	48.1	ug/L	1.66	3.85	40	
p-Isopropyltoluene		50.0	49.6	ug/L	2.68	0.776	40	
4-Methyl-2-Pentanone		50.0	49.7	ug/L	0.0660	0.554	40	
Methylene Chloride		50.0	45.3	ug/L	0.306	9.37	40	
Naphthalene		50.0	45.3	ug/L	1.22	9.38	40	
n-Propylbenzene		50.0	47.5	ug/L	3.37	5.01	40	
Styrene		50.0	46.8	ug/L	1.06	6.41	40	
1,1,1,2-Tetrachloroethane		50.0	51.6	ug/L	0.404	3.16	40	
Tetrachloroethene		50.0	51.5	ug/L	0.338	2.92	40	
1,2,3-Trichlorobenzene		50.0	51.8	ug/L	0.667	3.60	40	
1,2,4-Trichlorobenzene		50.0	48.5	ug/L	0.836	2.99	40	
1,1,1-Trichloroethane		50.0	52.4	ug/L	0.617	4.84	40	
1,1,2-Trichloroethane		50.0	47.3	ug/L	0.220	5.41	40	
Trichloroethene		50.0	55.7	ug/L	0.393	11.4	40	
Trichlorofluoromethane		50.0	60.2	ug/L	0.884	20.5	40	
1,2,3-Trichloropropane		50.0	45.9	ug/L	0.135	8.23	40	
1,2,4-Trimethylbenzene		50.0	48.4	ug/L	2.67	3.15	40	
1,3,5-Trimethylbenzene		50.0	49.0	ug/L	2.62	2.03	40	
Vinyl Acetate		50.0	81.1	ug/L	0.362	62.2	40	*
o-Xylene		50.0	47.6	ug/L	0.651	4.81	40	
m-,p-Xylene		100	103	ug/L	0.675	3.47	40	
1,2-Dichloroethene		100	104	ug/L	0.351	4.33	40	
Xylenes		150	151	ug/L	0.663	0.713	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1015560
Report generated 02/08/2008 15:23

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L08020138
Instrument ID: HPMS10
Workgroup (AAB#): WG262567

CCV Number: WG262566-02
CAL ID: HPMS10-23-JAN-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG262566-02	NA	NA	295008	523223	539442
Upper Limit	NA	NA	590016	1046446	1078884
Lower Limit	NA	NA	147504	261612	269721
L08020138-01	1.00	01	211584	378861	397102
WG262567-01	1.00	01	254789	455395	478715
WG262567-02	1.00	01	275569	473434	488331
WG262567-03	1.00	01	210048	375789	394070
WG262567-04	1.00	01	252028	420210	426721
WG262567-05	1.00	01	274156	462188	467481
WG262567-06	1.00	01	191962	345905	365959

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L08020138 **CCV Number:** WG262566-02
Instrument ID: HPMS10 **CAL ID:** HPMS10-23-JAN-08
Workgroup (AAB#): WG262567 **Matrix:** WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG262566-02	NA	NA	17.74	14.72	10.85
Upper Limit	NA	NA	18.24	15.22	11.35
Lower Limit	NA	NA	17.24	14.22	10.35
L08020138-01	1.00	01	17.73	14.73	10.85
WG262567-01	1.00	01	17.74	14.72	10.84
WG262567-02	1.00	01	17.74	14.72	10.85
WG262567-03	1.00	01	17.73	14.72	10.85
WG262567-04	1.00	01	17.73	14.72	10.85
WG262567-05	1.00	01	17.73	14.73	10.85
WG262567-06	1.00	01	17.74	14.72	10.85

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 1015563
Report generated 02/08/2008 15:23

3.0 Attachments

Kemron Environmental Services
Analyst Listing
February 8, 2008

AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG
ARA – ADRIAN R. ACHTERMANN	ASP – AARON S. PETRIE	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS	CAH – CHARLES A. HALL
CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS
CM – CHARLIE MARTIN	CMS – CRYSTAL M. STEPHENS	CPD – CHAD P. DAVIS
CSH – CHRIS S. HILL	DD – DIANE M. DENNIS	DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS	DRP – DAVE R. PITZER
DSF – DEBRA S. FREDERICK	ECL – ERIC C. LAWSON	ED – EMILY E. DECKER
ERE – ERIN R. ELDER	FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR
HJR – HOLLY J. REED	JAB – JUANITA A. BECKER	JAL – JOHN A. LENT
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON	JLK – JUSTEN L. KNOPP	JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES	JYH – JI Y. HU	KCZ – KEVIN C. ZUMBRO
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KJW – KATIE J. WIEFERICH
KRA – KATHY R. ALBERTSON	LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON	MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING
MKZ – MARILYN K. ZUMBRO	MLR – MARY L. ROCHOTTE	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NJB – NATALIE J. BOOTH
NPM – NATHANIEL P. MILLER	PJM – PAUL J. MILLER	RAH – ROY A. HALSTEAD
RB – ROBERT BUCHANAN	REK – ROBERT E. KYER	RLF – RACHEL L. FRYE
RLK – ROBIN L. KLINGER	RNP – RICK N. PETTY	RWC – RODNEY W. CAMPBELL
SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE
TDH – TRICIA D. HUCK	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WFM – WALTER F. MARTIN	

KEMRON Environmental Services

List of Valid Qualifiers

February 08, 2008

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 10237

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: KEMRON Address: 156 Starlite Dr. Marietta, OH Contact: Stephanie Mossburg

Project Name: LHAAP Project Location: Karnack, Tx.

Project No.: 117591.0009B830 Project Contact: Kay Everett Project Telephone No.: 713-996-4421

Point of Contact: Kay Everett Telephone No.: 713-996-4421

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	~~Telephone~~ Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOC	Analysis and Method Desired (Indicate separate containers)	Remarks
1	35AWW01-020608	02/6/08	4:30		✓	W	Groundwater, Site 35A	3	3		
2											
3											
4											
5											
6											
7											
8											
9											
10											

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
Scott Beesinger	2/6/08 5:20		
		Laboratory	2/7/08 0918

Special Instructions: 24 HR. TAT

FedEx Airbill No.:

Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ____ Seals Intact? ✓ Y ____ N Received Good Condition ✓ Y ____ N ✓ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

KEMRON Environmental Services

SAMPLE RECEIPT FORM

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Shaw - Longhorn
Workorder Number:	B 9081
Date Received:	2-7-08
Delivered by:	( ) Fedx (4 UPS ( ) Client ( ) Courier **Time:** 0918
Opened by:	RLK
IR Temp Gun:	( ) D (4 G
Logged by:	RLK L 0802 0138

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
399	6	1Z 66V 725 01 9520 3267	16237	24 hr. TAT

Inspection Checklist	**Y**	**N**	**NA**	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)			✓	
Were pH ranges acceptable? (voa's excluded)			✓	
Were VOA samples free of headspace?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L08020138
Account: 2773
Project: 2773.025
Samples: 1
Due Date: 08-FEB-2008

Samplenum	Container ID	Products
L08020138-01	423380	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-FEB-2008 10:00	JKT	
2	ANALYZ	V1	ORG4	07-FEB-2008 10:04	KJW	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-FEB-2008 10:00	JKT	
2	ANALYZ	V1	ORG4	07-FEB-2008 10:04	KJW	ERE

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-FEB-2008 10:00	JKT	
2	ANALYZ	V1	ORG4	07-FEB-2008 10:04	KJW	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L08030345

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Debra Elliott - Team Leader
delliott@kemron-lab.com

Amanda Fickiesen - Client Services Specialist
afickiesen@kemron-lab.com

Kathy Albertson - Team Chemist/Data Specialist
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bgregory@kemron-lab.com

Jacqueline Parsons - Team Assistant
jparsons@kemron-lab.com

Tony Long - Team Chemist/Data Specialist
tlong@kemron-lab.com

This report was reviewed on March 26, 2008.

Stephanie Mossburg

STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on March 26, 2008.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 90 pages.

Protecting Our Environmental Future

KEMRON REPORT L08030345
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L08030345

CHAIN OF CUSTODY: The chain of custody number was 10250.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 3 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 19-MAR-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00080088

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	March 26, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08030345
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	WG266193, WG266112
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	March 26, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?		✓			2
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		✓			1
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	Exp.(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?		✓			3
Was the ICAL curve verified for each analyte?		✓			4
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

1) 1,1,2,2-Tetrachloroethane and 1,2,3-trichloropropane exceeded the upper advisory limits in the LCS analyzed 03/22/08 on HPMS-10.
2) Dibromofluoromethane was below the lower control limit in sample 02.
3) 2-Chloroethylvinyl ether and vinyl acetate were below the lower control limits in the CCV analyzed 03/22/08 on HPMS-10.
4) Dichlorodifluoromethane exceeded the upper control limit in the alternate source analyzed 03/07/08 on HPMS-10.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00080095

L08030345

03/26/08 10:27

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: QUARTERLY EFFLUENT SAMPLES

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
LHSMW11-031508	L08030345-01	8260B	1	18-MAR-08
LHSMW09-031508	L08030345-02	8260B	1	18-MAR-08
TRIP BLANK	L08030345-03	8260B	1	18-MAR-08

Report Number: **L08030345**
Report Date : **March 26, 2008**

00080096

Sample Number: **L08030345-01**
Client ID: **LHSMW11-031508**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/15/2008 09:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/21/2008 20:27**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 20:27**
File ID: **6M73643**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

KEMRON ENVIRONMENTAL SERVICES

Sample Number: L08030345-01
Client ID: LHSMW11-031508
Matrix: Water
Workgroup Number: WG266112
Collect Date: 03/15/2008 09:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B
Analytical Method: 8260B
Analyst: CMS/ASP
Dilution: 1
Units: ug/L

Instrument: HPMS6
Prep Date: 03/21/2008 20:27
Cal Date: 03/17/2008 16:10
Run Date: 03/21/2008 20:27
File ID: 6M73643

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.6	86	118	
1,2-Dichloroethane-d4	103	80	120	
Toluene-d8	102	88	110	
4-Bromofluorobenzene	94.8	86	115	

U Not detected at or above adjusted sample detection limit

Sample Number: L08030345-02
Client ID: LHSMW09-031508
Matrix: Water
Workgroup Number: WG266193
Collect Date: 03/15/2008 11:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B
Analytical Method: 8260B
Analyst: TMB
Dilution: 1
Units: ug/L

Instrument: HPMS10
Prep Date: 03/22/2008 14:50
Cal Date: 03/06/2008 20:26
Run Date: 03/22/2008 14:50
File ID: 10M63272

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8	0.387	J	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Sample Number: L08030345-02
Client ID: LHSMW09-031508
Matrix: Water
Workgroup Number: WG266193
Collect Date: 03/15/2008 11:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B
Analytical Method: 8260B
Analyst: TMB
Dilution: 1
Units: ug/L

Instrument: HPMS10
Prep Date: 03/22/2008 14:50
Cal Date: 03/06/2008 20:26
Run Date: 03/22/2008 14:50
File ID: 10M63272

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	83.1	86	118	*
1,2-Dichloroethane-d4	84.2	80	120	
Toluene-d8	95.9	88	110	
4-Bromofluorobenzene	101	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
* Surrogate or spike compound out of range

Report Number: **L08030345**
Report Date : **March 26, 2008**

00080100

Sample Number: **L08030345-03**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/15/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/21/2008 14:01**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 14:01**
File ID: **6M73631**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	10.6		10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030345**
Report Date : **March 26, 2008**

00080101

Sample Number: **L08030345-03**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/15/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/21/2008 14:01**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 14:01**
File ID: **6M73631**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	94.3	86	118	
1,2-Dichloroethane-d4	96.1	80	120	
Toluene-d8	97.0	88	110	
4-Bromofluorobenzene	94.3	86	115	

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 030608
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 23237

Internal Standard: STD24739 Surrogate Standard: STD25019
CCV: STD25008 LCS: STD25028 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG264928

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M62851	BFB STD CHK	NA	1	1	STD24474	03/06/08 07:42
2	10M62852	BFB STD CHK	NA	1	1	STD24474	03/06/08 08:04
3	10M62853	BFB STD CHK RETUNE 0831	NA	1	1	STD24474	03/06/08 08:39
4	10M62854	BLANK IS CHK	NA	1	1		03/06/08 10:17
5	10M62855	BLANK IS CHK	NA	1	1		03/06/08 10:48
6	10M62856	BFB CHK 1894	NA	1	1		03/06/08 11:17
7	10M62857	BFB CHK 1894	NA	1	1		03/06/08 11:30
8	10M62858	SYSTEM BLANK IS CHK	NA	1	1		03/06/08 11:56
9	10M62859	SYSTEM BLANK IS CHK	NA	1	1		03/06/08 12:27
10	10M62860	RESPONSE CHK	NA	1	1		03/06/08 13:17
11	10M62861	RESPONSE CHK 1ppb	NA	1	1		03/06/08 13:52
12	10M62862	BFB STD CHK	NA	1	1		03/06/08 14:21
13	10M62863	BFB STD CHK	NA	1	1		03/06/08 14:36
14	10M62864	WG264928-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/06/08 14:50
15	10M62865	SYSTEM BLANK	NA	1	1		03/06/08 15:14
16	10M62866	WG264928-02 0.30ug/L STD 8260	NA	1	1	STD25008	03/06/08 15:45
17	10M62867	WG264928-03 0.40ug/L STD 8260	NA	1	1	STD25008	03/06/08 16:16
18	10M62868	WG264928-04 1ug/L STD 8260	NA	1	1	STD25008	03/06/08 16:47
19	10M62869	WG264928-05 2ug/L STD 8260	NA	1	1	STD25008	03/06/08 17:18
20	10M62870	WG264928-06 5ug/L STD 8260	NA	1	1	STD25008	03/06/08 17:49
21	10M62871	WG264928-07 20ug/L STD 8260	NA	1	1	STD25008	03/06/08 18:21
22	10M62872	WG264928-08 50ug/L STD 8260	NA	1	1	STD25008	03/06/08 18:52
23	10M62873	WG264928-09 100ug/L STD 8260	NA	1	1	STD25008	03/06/08 19:24
24	10M62874	WG264928-10 200ug/L STD 8260	NA	1	1	STD25008	03/06/08 19:55
25	10M62875	WG264928-11 300ug/L STD 8260	NA	1	1	STD25008	03/06/08 20:26
26	10M62876	SYSTEM BLANK	NA	1	1		03/06/08 20:57
27	10M62877	SYSTEM BLANK	NA	1	1		03/06/08 21:29
28	10M62878	WG264928-12 20ug/L ALT SRC STD 8260	NA	1	1	STD24967	03/06/08 22:00
29	10M62879	SYSTEM BLANK	NA	1	1		03/06/08 22:31

Approved: March 13, 2008

Page: 1

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 030708
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 23241

Internal Standard: STD24739 Surrogate Standard: STD25019
CCV: STD25008 LCS: STD25028 MS/MSD: STD25028

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265030, WG264928

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M62881	BLANK SS CHK	NA	1	1		03/07/08 09:32
2	10M62882	BLANK SS CHK	NA	1	1		03/07/08 10:04
3	10M62883	BLANK SS CHK	NA	1	1		03/07/08 10:39
4	10M62884	BLANK SS CHK	NA	1	1		03/07/08 11:11
5	10M62885	BLANK SS CHK NEW	NA	1	1		03/07/08 11:43
6	10M62886	WG265029-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/07/08 12:13
7	10M62887	WG265029-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/07/08 12:28
8	10M62888	WG265029-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/07/08 12:41
9	10M62889	WG265029-02 50ug/L STD 8260	NA	1	1	STD25008	03/07/08 13:04
10	10M62890	WG265030-01 VBLK0307 BLANK 8260	NA	1	1		03/07/08 13:36
11	10M62891	WG265029-02 50ug/L STD 8260	NA	1	1	STD25008	03/07/08 14:07
12	10M62892	WG265030-01 VBLK0307 BLANK 8260	NA	1	1		03/07/08 14:40
13	10M62893	WG265030-01 VBLK0307 BLANK 8260	NA	1	1		03/07/08 15:12
14	10M62894	WG265030-02 20ug/L LCS STD 8260	NA	1	1	STD25028	03/07/08 15:43
15	10M62895	WG264928-12 20ug/L ALT SRC STD 8260	NA	1	1	STD25028	03/07/08 16:15
16	10M62896	L08030046-01 A 100X 826-SPE	<2	1	100		03/07/08 16:47
17	10M62897	L08020679-18 00 B 826-SPE	<2	1	1		03/07/08 17:18
18	10M62898	L08020679-19 B 00 826-SPE	<2	1	1		03/07/08 17:49
19	10M62899	L08020679-20 A 826-SPE	<2	1	1		03/07/08 18:21
20	10M62900	L08020679-21 A 826-SPE	<2	1	1		03/07/08 18:52
21	10M62901	L08020679-22 A 826-SPE	<2	1	1		03/07/08 19:24
22	10M62902	L08030065-10 A 826-SPE	<2	1	1		03/07/08 19:56
23	10M62903	L08030065-11 MS A 826-SPE	<2	1	1	STD25028	03/07/08 20:27
24	10M62904	L08030065-12 MSD A 826-SPE	<2	1	1	STD25028	03/07/08 20:59
25	10M62905	L08030065-01 A 826-SPE	<2	1	1		03/07/08 21:31
26	10M62906	L08030065-02 A 826-SPE	<2	1	1		03/07/08 22:02
27	10M62907	L08030065-03 A 826-SPE	<2	1	1		03/07/08 22:34
28	10M62908	L08020631-03 A 826-SPE	<2	1	1		03/07/08 23:05
29	10M62909	L08020631-01 A 25X 826-SPE	<2	1	25		03/07/08 23:37
30	10M62910	L08020631-02 A 50X 826-SPE	<2	1	50		03/08/08 00:08
31	10M62911	L08020631-04 A 20X 826-SPE	<2	1	20		03/08/08 00:40
32	10M62912	SYSTEM BLANK	NA	1	1		03/08/08 01:12
33	10M62913	WG265030-06 624 BLANK	NA	1	1		03/08/08 01:43
34	10M62914	L08030066-01 A 624-SPE	7	2	1		03/08/08 02:15

Approved: March 12, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 030708
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 23241

Internal Standard: STD24739 Surrogate Standard: STD25019
CCV: STD25008 LCS: STD25028 MS/MSD: STD25028

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265030, WG264928

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	10M62915	L08020470-01 A 826-REF-BLK	<2	1	1		03/08/08 02:47
36	10M62916	L08020470-02 A 826-REF-BLK	<2	1	1		03/08/08 03:18
37	10M62917	L08020470-03 A 826-REF-BLK	<2	1	1		03/08/08 03:50
38	10M62918	L08020470-04 A 826-REF-BLK	<2	1	1		03/08/08 04:22
39	10M62919	L08020470-05 A 826-REF-BLK	<2	1	1		03/08/08 04:54

Comments

Seq.	Rerun	Dil.	Reason	Analytes
6	X			
File ID: 10M62886				
	Tune failed. Do not report.			
7	X			
File ID: 10M62887				
	Tune failed. Do not report. Retuned instrument.			
9	X			
File ID: 10M62889				
	Last P compound failed. Do not report.			
10	X	1	Carry-over contamination	
File ID: 10M62890				
	Do not report.			
12	X	1	Carry-over contamination	
File ID: 10M62892				
	Do not report.			
16	X	25	Analyzed too dilute	
File ID: 10M62896				
29	X	50	Over Calibration Range	Tol
File ID: 10M62909				
31	X	50	Over Calibration Range	Benz
File ID: 10M62911				
38	X	1		
File ID: 10M62918				
	Compounds over the MDL.			

Approved: March 12, 2008

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 031708
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 23349

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265645

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73512	SYSTEM BLANK	NA	1	1		03/17/08 08:09
2	6M73513	SYSTEM BLANK	NA	1	1		03/17/08 08:40
3	6M73514	WG265645-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/17/08 09:12
4	6M73515	WG265645-02 0.30ug/L STD 8260	NA	1	1	STD25172	03/17/08 09:45
5	6M73516	WG265645-03 0.40ug/L STD 8260	NA	1	1	STD25172	03/17/08 10:17
6	6M73517	WG265645-04 1ug/L STD 8260	NA	1	1	STD25172	03/17/08 10:49
7	6M73518	WG265645-05 2ug/L STD 8260	NA	1	1	STD25172	03/17/08 11:21
8	6M73519	WG265645-06 5ug/L STD 8260	NA	1	1	STD25172	03/17/08 11:52
9	6M73520	WG265645-07 20ug/L STD 8260	NA	1	1	STD25172	03/17/08 12:24
10	6M73521	WG265645-08 50ug/L STD 8260	NA	1	1	STD25172	03/17/08 12:57
11	6M73522	WG265645-09 100ug/L STD 8260	NA	1	1	STD25172	03/17/08 13:29
12	6M73523	WG265645-10 200ug/L STD 8260	NA	1	1	STD25172	03/17/08 14:01
13	6M73524	WG265645-11 300ug/L STD 8260	NA	1	1	STD25172	03/17/08 14:33
14	6M73525	SYSTEM BLANK	NA	1	1		03/17/08 15:05
15	6M73526	SYSTEM BLANK	NA	1	1		03/17/08 15:37
16	6M73527	WG265645-06 5ug/L STD 8260	NA	1	1	STD25172	03/17/08 16:10
17	6M73528	WG265645-12 20ug/L ALT SRC STD 8260	NA	1	1	STD25182	03/17/08 16:49
18	6M73529	SYSTEM BLANK	NA	1	1		03/17/08 17:21
19	6M73530	SYSTEM BLANK	NA	1	1		03/17/08 17:52

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X			
File ID: 6M73519				
	DNR			

Approved: March 20, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 032108
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23385

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG266112

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73620	SYSTEM BLANK	NA	1	1		03/21/08 08:44
2	6M73621	WG266110-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/21/08 09:17
3	6M73622	WG266110-02 50ug/L STD 8260	NA	1	1	STD25172	03/21/08 09:43
4	6M73624	WG266112-01 VBLK0321 BLANK 8260	NA	1	1		03/21/08 10:17
5	6M73625	WG266112-01 VBLK0321 BLANK 8260	NA	1	1		03/21/08 10:49
6	6M73626	WG266112-02 20ug/L LCS STD 8260	NA	1	1	STD25182	03/21/08 11:21
7	6M73627	WG266112-03 20ug/L LCSDUP STD 8260	NA	1	1	STD25182	03/21/08 11:53
8	6M73628	L08030381-03 A 250X 826-SPE	=5	1	250		03/21/08 12:25
9	6M73629	L08030268-01 K 10X 826-TC	NA	17	10		03/21/08 12:58
10	6M73630	L08030268-02 M 10X 826-TC	NA	17	10		03/21/08 13:29
11	6M73631	L08030345-03 A 826-LOW	<2	1	1		03/21/08 14:01
12	6M73632	L08030315-04 A 826-LOW	<2	1	1		03/21/08 14:33
13	6M73633	L08030313-01 A 826-SPE	<2	1	1		03/21/08 15:05
14	6M73634	L08030307-01 A 826-SPE1	<2	1	1		03/21/08 15:37
15	6M73635	L08030307-02 A 826-SPE1	<2	1	1		03/21/08 16:09
16	6M73636	L08030317-01 A 10X 826-TC	NA	17	10		03/21/08 16:40
17	6M73637	L08030306-01 A 826-SPE	<2	1	1		03/21/08 17:13
18	6M73638	L08030306-03 A 826-SPE	=7	1	1		03/21/08 17:45
19	6M73639	L08030306-05 A 826-SPE	<2	1	1		03/21/08 18:17
20	6M73640	L08030315-01 A 826-LOW	<2	1	1		03/21/08 18:50
21	6M73641	L08030315-02 A 25X 826-LOW	<2	1	25		03/21/08 19:22
22	6M73642	L08030315-03 A 10X 826-LOW	<2	1	10		03/21/08 19:54
23	6M73643	L08030345-01 A 826-LOW	<2	1	1		03/21/08 20:27
24	6M73644	L08030345-02 A 826-LOW	<2	1	1		03/21/08 20:59
25	6M73645	SYSTEM BLANK	NA	1	1		03/21/08 21:31
26	6M73646	L08030331-01 100X SCREEN	NA	7	1		03/21/08 22:03
27	6M73647	L08030331-03 100X SCREEN	NA	7	1		03/21/08 22:35
28	6M73648	L08030331-04 100X SCREEN	NA	1	1		03/21/08 23:07
29	6M73649	L08030331-05 100X SCREEN	NA	1	1		03/21/08 23:40
30	6M73650	L08030331-02 100X SCREEN	NA	1	1		03/22/08 00:12
31	6M73651	L08030313-02 100X SCREEN	NA	1	1		03/22/08 00:45
32	6M73652	SYSTEM BLANK	NA	1	1		03/22/08 01:17
33	6M73653	SYSTEM BLANK	NA	1	1		03/22/08 01:49

Approved: March 24, 2008

Page: 1

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 032108
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23385

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG266112

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X		Carry-over contamination	
File ID: 6M73624				
	DNR			
22	X	1	Analyzed too dilute	
File ID: 6M73642				
	DNR			
24	X		Internal standard failure	
File ID: 6M73644				
	DNR			

Approved: March 24, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 032208
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 23397

Internal Standard: STD25257 Surrogate Standard: STD25164
CCV: STD25172 LCS: STD25182 MS/MSD: STD25182

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG266193

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M63263	SYSTEM BLANK	NA	1	1		03/22/08 09:47
2	10M63264	SYSTEM BLANK	NA	1	1		03/22/08 10:30
3	10M63265	WG266192-01 50ng BFB STD 8260	NA	1	1	STD25005	03/22/08 11:17
4	10M63266	WG266192-02 50ug/L CCV STD 8260	NA	1	1	STD25172	03/22/08 11:40
5	10M63267	WG266193-01 VBLK0322 BLANK STD 826	NA	1	1		03/22/08 12:14
6	10M63268	WG266193-01 VBLK0322 BLANK STD 826	NA	1	1		03/22/08 12:46
7	10M63269	WG266193-02 20ug/L LCS STD 8260	NA	1	1	STD25182	03/22/08 13:17
8	10M63270	L08030408-03 B 826-SPE	NA	1	1		03/22/08 13:48
9	10M63271	L08030269-09 A 826-SPE	NA	1	1		03/22/08 14:19
10	10M63272	L08030345-02 B 826-LOW	NA	1	1		03/22/08 14:50
11	10M63273	L08030408-01 B 826-SPE	NA	1	1		03/22/08 15:21
12	10M63274	L08030269-02 B 2X 826-SPE	NA	1	2		03/22/08 15:52
13	10M63275	L08030269-08 B 826-SPE	NA	1	1		03/22/08 16:24
14	10M63276	L08030269-13 A 826-SPE	NA	1	1		03/22/08 16:55
15	10M63277	L08030269-14 A MS 826-SPE	NA	1	1	STD25182	03/22/08 17:26
16	10M63278	L08030269-15 A MSD 826-SPE	NA	1	1	STD25182	03/22/08 17:57
17	10M63279	L08030240-11 C 5X 826-SPE	NA	1	5		03/22/08 18:28
18	10M63280	L08030240-13 C 2X 826-SPE	NA	1	2		03/22/08 18:58
19	10M63281	L08030269-10 A 826-SPE	NA	1	1		03/22/08 19:30
20	10M63282	L08030269-11 A 826-SPE	NA	1	1		03/22/08 20:01
21	10M63283	L08030269-12 A 826-SPE	NA	1	1		03/22/08 20:32
22	10M63284	L08030344-10 A 826-SPE	NA	1	1		03/22/08 21:03
23	10M63285	L08030344-12 A 826-SPE	NA	1	1		03/22/08 21:33
24	10M63286	L08030344-13 A 826-SPE	NA	1	1		03/22/08 22:04
25	10M63287	L08030344-15 A 826-SPE	NA	1	1		03/22/08 22:35
26	10M63288	L08030344-17 A 826-SPE	NA	1	1		03/22/08 23:06
27	10M63289	SYSTEM BLANK	NA	1	1		03/22/08 23:37
28	10M63290	SYSTEM BLANK	NA	1	1		03/23/08 00:08
29	10M63291	L08030108-02 B 826-REF-BLK	NA	1	1		03/23/08 00:39
30	10M63292	L08030108-04 B 826-REF-BLK	NA	1	1		03/23/08 01:10

Approved: March 26, 2008

KEMRON ENVIRONMENTAL SERVICES

Page: 1

KEMRON Environmental Services, Inc.

Data Checklist

Date: 06-MAR-2008
Analyst: CMS
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 21088
Analytical Workgroups: WG264928

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	X
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
11-MAR-2008
Tiffany Bailey

Secondary Reviewer:
13-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-13-2008 08:56:23

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 07-MAR-2008
Analyst: CMS
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 21093
Analytical Workgroups: WG265030, WG26754

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	
Check for compliance with method and project specific requirements	
Check the completeness of reported information	
Check the information for the report narrative	
Check the reasonableness of the results	

Primary Reviewer:
18-MAR-2008

Tiffany Bailey

Secondary Reviewer:

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-19-2008 14:32:25

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 17-MAR-2008
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21215
Analytical Workgroups: WG265645

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	X
Manual Integrations	X
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
20-MAR-2008

Secondary Reviewer:
20-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-20-2008 13:28:30

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 21-MAR-2008
Analyst: CMS
Analyst: NA
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21253
Analytical Workgroups: WG266112

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	SMH
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
24-MAR-2008

Secondary Reviewer:
24-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-24-2008 14:14:40

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 22-MAR-2008
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 21270
Analytical Workgroups: WG266193

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
24-MAR-2008
Tiffany Bailey

Secondary Reviewer:
26-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-26-2008 09:10:04

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B AAB#: WG266193

Login Number: L08030345

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW09-031508	03/15/08	03/18/08	03/22/08	14	7.14	03/22/08	14	7.14	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1048084

Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B AAB#: WG266112

Login Number: L08030345

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
LHSMW11-031508	03/15/08	03/18/08	03/21/08	14	6.46	03/21/08	14	6.46	
TRIP BLANK	03/15/08	03/18/08	03/21/08	14	6.58	03/21/08	14	6.58	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1048084

Report generated 03/26/2008 09:15

KEMRON Environmental Services, Inc.
SURROGATE STANDARDS

Login Number: L08030345
Instrument Id: HPMS10
Workgroup (AAB#): WG266193

Method: 8260
CAL ID: HPMS10-06-MAR-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08030345-02	1.00	01	84.2	83.1	101	95.9
WG266193-01	1.00	01	90.4	86.1	107	101
WG266193-02	1.00	01	91.8	88.5	104	99.5

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1048091
Report generated: 03/26/2008 09:15

KEMRON Environmental Services, Inc.
SURROGATE STANDARDS

Login Number: L08030345
Instrument Id: HPMS6
Workgroup (AAB#): WG266112

Method: 8260
CAL ID: HPMS6-17-MAR-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08030345-01	1.00	01	103	99.6	94.8	102
L08030345-03	1.00	01	96.1	94.3	94.3	97.0
WG266112-01	1.00	01	97.2	99.9	99.2	103
WG266112-02	1.00	01	95.8	97.4	89.6	95.6
WG266112-03	1.00	01	96.0	98.9	94.2	97.1

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1048091
Report generated: 03/26/2008 09:15

METHOD BLANK SUMMARY

Login Number: L08030345
Blank File ID: 10M63268
Prep Date: 03/22/08 12:46
Analyzed Date: 03/22/08 12:46
Analyst: TMB

Work Group: WG266193
Blank Sample ID: WG266193-01
Instrument ID: HPMS10
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG266193-02	10M63269	03/22/08 13:17	01
LHSMW09-031508	L08030345-02	10M63272	03/22/08 14:50	01

Report Name: BLANK_SUMMARY
PDF File ID: 1048083
Report generated 03/26/2008 09:15

METHOD BLANK SUMMARY

Login Number: L08030345
Work Group: WG266112
Blank File ID: 6M73625
Blank Sample ID: WG266112-01
Prep Date: 03/21/08 10:49
Instrument ID: HPMS6
Analyzed Date: 03/21/08 10:49
Method: 8260B
Analyst: CMS/ASP

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG266112-02	6M73626	03/21/08 11:21	01
LCS2	WG266112-03	6M73627	03/21/08 11:53	01
TRIP BLANK	L08030345-03	6M73631	03/21/08 14:01	01
LHSMW11-031508	L08030345-01	6M73643	03/21/08 20:27	01

Report Name: BLANK_SUMMARY
PDF File ID: 1048083
Report generated 03/26/2008 09:15

Login Number:L08030345 Prep Date:03/22/08 12:46 Sample ID:WG266193-01
Instrument ID:HPMS10 Run Date:03/22/08 12:46 Prep Method:5030B
File ID:10M63268 Analyst:TMB Method:8260B
Workgroup (AAB#):WG266193 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-06-MAR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1048085
26-MAR-2008 09:15

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030345 Prep Date:03/22/08 12:46 Sample ID:WG266193-01
Instrument ID:HPMS10 Run Date:03/22/08 12:46 Prep Method:5030B
File ID:10M63268 Analyst:TMB Method:8260B
Workgroup (AAB#):WG266193 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-06-MAR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.125	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	86.1	86 - 118	PASS
1,2-Dichloroethane-d4	90.4	80 - 120	PASS
Toluene-d8	101	88 - 110	PASS
4-Bromofluorobenzene	107	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1048085
26-MAR-2008 09:15

Login Number:L08030345 Prep Date:03/21/08 10:49 Sample ID:WG266112-01
Instrument ID:HPMS6 Run Date:03/21/08 10:49 Prep Method:5030B
File ID:6M73625 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG266112 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-17-MAR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1048085
26-MAR-2008 09:15

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030345 Prep Date:03/21/08 10:49 Sample ID:WG266112-01
Instrument ID:HPMS6 Run Date:03/21/08 10:49 Prep Method:5030B
File ID:6M73625 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG266112 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-17-MAR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.217	1	J
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	99.9	86 - 118	PASS
1,2-Dichloroethane-d4	97.2	80 - 120	PASS
Toluene-d8	103	88 - 110	PASS
4-Bromofluorobenzene	99.2	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1048085
26-MAR-2008 09:15

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030345 Run Date:03/22/2008 Sample ID:WG266193-02
Instrument ID:HPMS10 Run Time:13:17 Prep Method:5030B
File ID:10M63269 Analyst:TMB Method:8260B
Workgroup (AAB#):WG266193 Matrix:Water Units:ug/L
QC Key:STD Lot#:STD25182 Cal ID:HPMS10-06-MAR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	19.8	98.8	40 - 142	
Benzene	20.0	19.3	96.4	80 - 121	
Bromobenzene	20.0	23.1	116	80 - 120	
Bromochloromethane	20.0	19.4	97.2	65 - 130	
Bromodichloromethane	20.0	21.9	110	80 - 131	
Bromoform	20.0	21.1	106	70 - 130	
Bromomethane	20.0	15.6	77.8	30 - 145	
2-Butanone	20.0	20.6	103	30 - 150	
n-Butylbenzene	20.0	25.7	128	80 - 131	
sec-Butylbenzene	20.0	25.1	125	80 - 127	
tert-Butylbenzene	20.0	24.3	121	80 - 126	
Carbon disulfide	20.0	18.6	93.2	58 - 138	
Carbon tetrachloride	20.0	18.2	90.8	65 - 140	
Chlorobenzene	20.0	21.9	109	80 - 120	
Chlorodibromomethane	20.0	22.1	110	60 - 135	
Chloroethane	20.0	17.4	87.2	60 - 135	
2-Chloroethyl vinyl ether	20.0	13.8	68.9	58 - 151	
Chloroform	20.0	19.9	99.4	80 - 125	
Chloromethane	20.0	15.1	75.6	40 - 125	
2-Chlorotoluene	20.0	24.5	123	80 - 127	
4-Chlorotoluene	20.0	24.7	124	80 - 126	
1,2-Dibromo-3-chloropropane	20.0	22.8	114	50 - 130	
1,2-Dibromoethane	20.0	23.0	115	80 - 125	
Dibromomethane	20.0	20.7	104	75 - 125	
1,2-Dichlorobenzene	20.0	23.1	115	80 - 125	
1,3-Dichlorobenzene	20.0	23.4	117	80 - 120	
1,4-Dichlorobenzene	20.0	22.5	113	80 - 120	
Dichlorodifluoromethane	20.0	17.3	86.3	50 - 133	
1,1-Dichloroethane	20.0	18.9	94.4	80 - 125	
1,2-Dichloroethane	20.0	19.9	99.6	80 - 129	
1,1-Dichloroethene	20.0	19.3	96.4	80 - 132	
cis-1,2-Dichloroethene	20.0	19.6	97.9	70 - 125	
trans-1,2-Dichloroethene	20.0	18.6	92.9	80 - 127	
1,2-Dichloropropane	20.0	19.0	94.8	80 - 120	
1,3-Dichloropropane	20.0	23.6	118	80 - 120	
2,2-Dichloropropane	20.0	20.1	100	80 - 133	
cis-1,3-Dichloropropene	20.0	19.0	94.9	70 - 130	
trans-1,3-Dichloropropene	20.0	21.2	106	80 - 130	
1,1-Dichloropropene	20.0	19.9	99.4	75 - 130	
Ethylbenzene	20.0	22.9	114	80 - 122	
2-Hexanone	20.0	21.4	107	55 - 130	

LCS - Modified 03/06/2008
PDF File ID: 1046993
Report generated: 03/26/2008 09:15

Login Number: L08030345 Run Date: 03/22/2008 Sample ID: WG266193-02
Instrument ID: HPMS10 Run Time: 13:17 Prep Method: 5030B
File ID: 10M63269 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG266193 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD25182 Cal ID: HPMS10-06-MAR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hexachlorobutadiene	20.0	22.8	114	72 - 132	
Isopropylbenzene	20.0	21.5	107	80 - 122	
p-Isopropyltoluene	20.0	23.3	117	80 - 122	
4-Methyl-2-pentanone	20.0	17.1	85.3	64 - 140	
Methylene chloride	20.0	19.0	94.9	80 - 123	
Naphthalene	20.0	23.4	117	59 - 149	
n-Propylbenzene	20.0	25.4	127	80 - 129	
Styrene	20.0	22.7	113	80 - 123	
1,1,1,2-Tetrachloroethane	20.0	23.7	119	80 - 130	
1,1,2,2-Tetrachloroethane	20.0	26.1	131	79 - 125	*
Tetrachloroethene	20.0	22.6	113	80 - 124	
Toluene	20.0	22.5	113	80 - 124	
1,2,3-Trichlorobenzene	20.0	22.8	114	55 - 140	
1,2,4-Trichlorobenzene	20.0	23.4	117	65 - 135	
1,1,1-Trichloroethane	20.0	20.3	102	80 - 134	
1,1,2-Trichloroethane	20.0	22.8	114	80 - 125	
Trichloroethene	20.0	19.1	95.6	80 - 122	
Trichlorofluoromethane	20.0	16.6	82.9	62 - 151	
1,2,3-Trichloropropane	20.0	25.9	129	75 - 125	*
1,2,4-Trimethylbenzene	20.0	24.7	124	80 - 125	
1,3,5-Trimethylbenzene	20.0	24.5	123	80 - 127	
Vinyl acetate	20.0	12.9	64.3	10 - 150	
Vinyl chloride	20.0	16.8	84.2	65 - 140	
o-Xylene	20.0	22.3	112	80 - 122	
m-,p-Xylene	40.0	45.4	114	80 - 122	

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	88.5	86 - 118	PASS
1,2-Dichloroethane-d4	91.8	80 - 120	PASS
Toluene-d8	99.5	88 - 110	PASS
4-Bromofluorobenzene	104	86 - 115	PASS

* FAILS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 1046993
Report generated: 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030345 Analyst:CMS/ASP Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG266112 Units:ug/L
QC Key:STD Lot #:STD25182

Sample ID:WG266112-02 LCS File ID:6M73626 Run Date:03/21/2008 11:21
Sample ID:WG266112-03 LCS2 File ID:6M73627 Run Date:03/21/2008 11:53

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	20.0	100	20.0	19.1	95.6	4.70	40 - 142	20	
Benzene	20.0	18.1	90.4	20.0	17.8	89.2	1.28	80 - 121	20	
Bromobenzene	20.0	17.8	89.0	20.0	17.6	87.9	1.19	80 - 120	20	
Bromochloromethane	20.0	18.4	92.1	20.0	18.4	92.1	0.0889	65 - 130	20	
Bromodichloromethane	20.0	19.2	96.2	20.0	18.8	93.9	2.38	80 - 131	20	
Bromoform	20.0	18.7	93.3	20.0	17.8	88.9	4.73	70 - 130	20	
Bromomethane	20.0	18.2	91.2	20.0	18.6	92.8	1.81	30 - 145	20	
2-Butanone	20.0	21.3	107	20.0	19.4	97.1	9.46	30 - 150	20	
n-Butylbenzene	20.0	18.9	94.7	20.0	19.2	96.1	1.49	80 - 131	20	
sec-Butylbenzene	20.0	19.0	94.8	20.0	19.2	96.1	1.35	80 - 127	20	
tert-Butylbenzene	20.0	18.4	91.9	20.0	19.2	95.8	4.12	80 - 126	20	
Carbon disulfide	20.0	15.1	75.7	20.0	15.1	75.7	0.0825	58 - 138	20	
Carbon tetrachloride	20.0	20.2	101	20.0	20.2	101	0.0633	65 - 140	20	
Chlorobenzene	20.0	17.3	86.7	20.0	17.2	86.1	0.602	80 - 120	20	
Chlorodibromomethane	20.0	19.4	96.9	20.0	18.7	93.5	3.50	60 - 135	20	
Chloroethane	20.0	17.6	88.2	20.0	17.7	88.6	0.529	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	18.5	92.4	20.0	17.9	89.3	3.36	58 - 151	20	
Chloroform	20.0	18.7	93.7	20.0	18.5	92.6	1.14	80 - 125	20	
Chloromethane	20.0	14.5	72.7	20.0	14.5	72.6	0.220	40 - 125	20	
2-Chlorotoluene	20.0	17.6	88.0	20.0	17.0	84.9	3.59	80 - 127	20	
4-Chlorotoluene	20.0	17.0	84.8	20.0	18.0	90.2	6.19	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	18.9	94.6	20.0	19.0	94.9	0.347	50 - 130	20	
1,2-Dibromoethane	20.0	18.8	94.1	20.0	18.0	89.9	4.57	80 - 125	20	
Dibromomethane	20.0	19.7	98.7	20.0	19.1	95.4	3.37	75 - 125	20	
1,2-Dichlorobenzene	20.0	18.0	90.1	20.0	18.2	90.9	0.943	80 - 125	20	
1,3-Dichlorobenzene	20.0	17.2	86.0	20.0	17.2	86.2	0.189	80 - 120	20	
1,4-Dichlorobenzene	20.0	18.5	92.6	20.0	18.7	93.5	0.911	80 - 120	20	
Dichlorodifluoromethane	20.0	14.0	70.2	20.0	14.5	72.3	2.94	50 - 133	20	
1,1-Dichloroethane	20.0	17.8	89.0	20.0	18.3	91.5	2.77	80 - 125	20	
1,2-Dichloroethane	20.0	18.8	93.8	20.0	17.9	89.3	4.87	80 - 129	20	
1,1-Dichloroethene	20.0	18.0	90.2	20.0	18.2	91.0	0.970	80 - 132	20	
cis-1,2-Dichloroethene	20.0	19.0	94.8	20.0	19.3	96.3	1.54	70 - 125	20	
trans-1,2-Dichloroethene	20.0	17.5	87.4	20.0	17.6	88.0	0.688	80 - 127	20	
1,2-Dichloropropane	20.0	17.6	87.8	20.0	17.7	88.3	0.594	80 - 120	20	
1,3-Dichloropropane	20.0	17.9	89.7	20.0	17.0	85.0	5.43	80 - 120	20	
2,2-Dichloropropane	20.0	18.7	93.4	20.0	18.9	94.7	1.39	80 - 133	20	
cis-1,3-Dichloropropene	20.0	18.1	90.7	20.0	18.0	89.9	0.831	70 - 130	20	
trans-1,3-Dichloropropene	20.0	17.7	88.3	20.0	16.5	82.4	6.95	80 - 130	20	
1,1-Dichloropropene	20.0	18.1	90.5	20.0	18.5	92.7	2.44	75 - 130	20	
Ethylbenzene	20.0	18.5	92.5	20.0	18.6	92.9	0.424	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1046366
Report generated: 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L08030345 Analyst: CMS/ASP Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG266112 Units: ug/L
QC Key: STD Lot #: STD25182

Sample ID: WG266112-02 LCS File ID: 6M73626 Run Date: 03/21/2008 11:21
Sample ID: WG266112-03 LCS2 File ID: 6M73627 Run Date: 03/21/2008 11:53

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	18.0	89.9	20.0	16.8	84.1	6.59	55 - 130	20	
Hexachlorobutadiene	20.0	18.8	94.2	20.0	19.5	97.6	3.55	72 - 132	20	
Isopropylbenzene	20.0	17.8	88.8	20.0	17.7	88.4	0.468	80 - 122	20	
p-Isopropyltoluene	20.0	18.2	91.2	20.0	18.5	92.6	1.57	80 - 122	20	
4-Methyl-2-pentanone	20.0	19.6	97.8	20.0	18.6	93.2	4.82	64 - 140	20	
Methylene chloride	20.0	18.4	91.8	20.0	18.7	93.4	1.71	80 - 123	20	
Naphthalene	20.0	18.6	92.9	20.0	18.5	92.5	0.430	59 - 149	20	
n-Propylbenzene	20.0	18.2	91.0	20.0	18.5	92.6	1.67	80 - 129	20	
Styrene	20.0	19.2	96.1	20.0	18.9	94.6	1.55	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	17.9	89.7	20.0	17.5	87.6	2.32	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	17.8	88.8	20.0	17.1	85.3	4.04	79 - 125	20	
Tetrachloroethene	20.0	18.2	91.1	20.0	18.0	89.9	1.29	80 - 124	20	
Toluene	20.0	18.1	90.5	20.0	18.1	90.3	0.226	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.2	91.1	20.0	18.3	91.6	0.594	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	17.9	89.5	20.0	18.2	91.2	1.93	65 - 135	20	
1,1,1-Trichloroethane	20.0	19.1	95.3	20.0	19.2	96.1	0.884	80 - 134	20	
1,1,2-Trichloroethane	20.0	17.8	89.2	20.0	17.6	87.8	1.57	80 - 125	20	
Trichloroethene	20.0	18.5	92.6	20.0	18.6	93.0	0.462	80 - 122	20	
Trichlorofluoromethane	20.0	14.6	73.1	20.0	15.0	74.8	2.25	62 - 151	20	
1,2,3-Trichloropropane	20.0	19.6	98.0	20.0	17.9	89.7	8.91	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	17.9	89.4	20.0	18.2	91.1	1.82	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	18.3	91.4	20.0	18.3	91.3	0.123	80 - 127	20	
Vinyl acetate	20.0	17.2	86.0	20.0	16.7	83.6	2.91	10 - 150	20	
Vinyl chloride	20.0	18.3	91.4	20.0	17.6	88.2	3.64	65 - 140	20	
o-Xylene	20.0	18.7	93.3	20.0	18.7	93.6	0.375	80 - 122	20	
m-,p-Xylene	40.0	36.4	91.1	40.0	36.0	90.0	1.12	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	97.4	98.9	86 - 118	PASS
1,2-Dichloroethane-d4	95.8	96.0	80 - 120	PASS
Toluene-d8	95.6	97.1	88 - 110	PASS
4-Bromofluorobenzene	89.6	94.2	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1046366
Report generated: 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

BFB

Login Number: L08030345 Tune ID: WG264928-01
Instrument: HPMS10 Run Date: 03/06/2008
Analyst: CMS Run Time: 14:50
Workgroup: WG264928 File ID: 10M62864
Cal ID: HPMS10-06-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.8	4368	PASS
75.0	95.0	30.0	60.0	43.8	9647	PASS
95.0	95.0	100	100	100	22006	PASS
96.0	95.0	5.00	9.00	6.79	1495	PASS
173	174	0	2.00	0.665	134	PASS
174	95.0	50.0	100	91.5	20146	PASS
175	174	5.00	9.00	7.57	1525	PASS
176	174	95.0	101	97.3	19595	PASS
177	176	5.00	9.00	7.59	1487	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG264928-02	STD	01	03/06/2008 15:45	
WG264928-03	STD	01	03/06/2008 16:16	
WG264928-04	STD	01	03/06/2008 16:47	
WG264928-05	STD	01	03/06/2008 17:18	
WG264928-06	STD	01	03/06/2008 17:49	
WG264928-07	STD	01	03/06/2008 18:21	
WG264928-08	STD-CCV	01	03/06/2008 18:52	
WG264928-09	STD	01	03/06/2008 19:24	
WG264928-10	STD	01	03/06/2008 19:55	
WG264928-11	STD	01	03/06/2008 20:26	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1048088
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

BFB

Login Number: L08030345
Instrument: HPMS10
Analyst: CMS
Workgroup: WG265029

Tune ID: WG265029-01
Run Date: 03/07/2008
Run Time: 12:41
File ID: 10M62888
Cal ID: HPMS10-06-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.2	7972	PASS
75.0	95.0	30.0	60.0	46.2	19206	PASS
95.0	95.0	100	100	100	41538	PASS
96.0	95.0	5.00	9.00	7.13	2963	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	84.6	35149	PASS
175	174	5.00	9.00	7.86	2764	PASS
176	174	95.0	101	97.5	34277	PASS
177	176	5.00	9.00	6.84	2346	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG264928-12	SSCV	01	03/07/2008 16:15	

* Sample past 12 hour tune limit

BFB

Login Number: L08030345 Tune ID: WG266192-01
Instrument: HPMS10 Run Date: 03/22/2008
Analyst: TMB Run Time: 11:17
Workgroup: WG266192 File ID: 10M63265
Cal ID: HPMS10-06-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.2	9961	PASS
75.0	95.0	30.0	60.0	45.9	21580	PASS
95.0	95.0	100	100	100	46989	PASS
96.0	95.0	5.00	9.00	6.51	3060	PASS
173	174	0	2.00	0.901	326	PASS
174	95.0	50.0	100	77.0	36170	PASS
175	174	5.00	9.00	7.44	2692	PASS
176	174	95.0	101	96.4	34880	PASS
177	176	5.00	9.00	6.49	2264	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG266192-02	CCV	01	03/22/2008 11:40	
WG266193-01	BLANK	01	03/22/2008 12:46	
WG266193-02	LCS	01	03/22/2008 13:17	
L08030345-02	LHSMW09-031508	01	03/22/2008 14:50	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1048088
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

BFB

Login Number: L08030345 Tune ID: WG265645-01
Instrument: HPMS6 Run Date: 03/17/2008
Analyst: CMS Run Time: 09:12
Workgroup: WG265645 File ID: 6M73514
Cal ID: HPMS6-17-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.1	6677	PASS
75.0	95.0	30.0	60.0	52.8	16743	PASS
95.0	95.0	100	100	100	31712	PASS
96.0	95.0	5.00	9.00	6.45	2046	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	83.7	26528	PASS
175	174	5.00	9.00	7.44	1974	PASS
176	174	95.0	101	95.3	25272	PASS
177	176	5.00	9.00	6.70	1692	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG265645-02	STD	01	03/17/2008 09:45	
WG265645-03	STD	01	03/17/2008 10:17	
WG265645-04	STD	01	03/17/2008 10:49	
WG265645-05	STD	01	03/17/2008 11:21	
WG265645-07	STD	01	03/17/2008 12:24	
WG265645-08	STD-CCV	01	03/17/2008 12:57	
WG265645-09	STD	01	03/17/2008 13:29	
WG265645-10	STD	01	03/17/2008 14:01	
WG265645-11	STD	01	03/17/2008 14:33	
WG265645-06	STD	01	03/17/2008 16:10	
WG265645-12	SSCV	01	03/17/2008 16:49	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1048088
Report generated 03/26/2008 09:15

BFB

Login Number: L08030345
Instrument: HPMS6
Analyst: CMS/ASP
Workgroup: WG266110

Tune ID: WG266110-01
Run Date: 03/21/2008
Run Time: 09:17
File ID: 6M73621
Cal ID: HPMS6-17-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	22.6	8112	PASS
75.0	95.0	30.0	60.0	54.1	19442	PASS
95.0	95.0	100	100	100	35904	PASS
96.0	95.0	5.00	9.00	6.94	2492	PASS
173	174	0	2.00	0.367	100	PASS
174	95.0	50.0	100	76.0	27274	PASS
175	174	5.00	9.00	8.05	2195	PASS
176	174	95.0	101	99.3	27080	PASS
177	176	5.00	9.00	6.81	1844	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG266110-02	CCV	01	03/21/2008 09:43	
WG266112-01	BLANK	01	03/21/2008 10:49	
WG266112-02	LCS	01	03/21/2008 11:21	
WG266112-03	LCS2	01	03/21/2008 11:53	
L08030345-03	TRIP BLANK	01	03/21/2008 14:01	
L08030345-01	LHSMW11-031508	01	03/21/2008 20:27	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1048088
Report generated 03/26/2008 09:15

INITIAL CALIBRATION SUMMARY

Login Number: L08030345
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 06-MAR-08 20:26
ICAL Workgroup: WG264928
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.2219	14.3		
1,2-Dichloropropane	CCC	0.2610	5.02		
Chloroform	CCC	0.4525	6.72		
Ethylbenzene	CCC	0.4289	9.19		
Toluene	CCC	1.207	4.44		
Vinyl Chloride	CCC	0.1830	16.8		1.00
1,1,2,2-Tetrachloroethane	SPCC	0.3231	5.51		
1,1-Dichloroethane	SPCC	0.5014	6.94		
Bromoform	SPCC	0.1150	23.1		
Chlorobenzene	SPCC	0.8185	7.76		
Chloromethane	SPCC	0.2514	13.3		
1,1,1,2-Tetrachloroethane		0.2725	8.57		
1,1,1-Trichloroethane		0.3792	13.3		
1,1,2-Trichloroethane		0.1952	4.10		
1,1-Dichloropropene		0.3327	13.0		
1,2,3-Trichlorobenzene		0.5870	10.2		
1,2,3-Trichloropropane		0.1042	9.98		
1,2,4-Trichlorobenzene		0.7089	3.80		
1,2,4-Trimethylbenzene		1.955	6.78		
1,2-Dibromo-3-Chloropropane		0.06233	12.7		
1,2-Dibromoethane		0.1928	6.17		
1,2-Dichlorobenzene		1.073	6.12		
1,2-Dichloroethane		0.3287	4.51		
1,3,5-Trimethylbenzene		1.894	7.89		
1,3-Dichlorobenzene		1.211	4.26		
1,3-Dichloropropane		0.3425	3.78		
1,4-Dichlorobenzene		1.252	7.64		
2,2-Dichloropropane		0.3735	12.3		
2-Butanone		0.06027	7.98		
2-Chloroethyl Vinyl Ether		0.1042	8.38		
2-Chlorotoluene		1.759	7.32		
2-Hexanone		0.09618	4.58		
4-Chlorotoluene		1.652	5.13		
4-Methyl-2-Pentanone		0.05520	5.30		
Acetone		0.04237	10.2		
Benzene		0.9732	5.94		
Bromobenzene		0.6299	4.23		
Bromochloromethane		0.1162	7.77		
Bromodichloromethane		0.2897	10.8		
Bromomethane		0.2372	6.79		
Carbon Disulfide		0.7391	10.6		
Carbon Tetrachloride		0.3068	20.1	1.00	
Chloroethane		0.2092	5.80		
Dibromochloromethane		0.2124	16.7		1.00
Dibromomethane		0.1151	9.07		

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION SUMMARY

Login Number: L08030345
Analytical Method: 8260B
ICAL Workgroup: WG264928

Instrument ID: HPMS10
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.3004	11.8		
Hexachlorobutadiene		0.2838	7.79		
Isopropylbenzene		1.240	9.28		
Methylene Chloride		0.3116	36.5		1.00
Naphthalene		1.067	2.53		
Styrene		0.8274	7.93		
Tetrachloroethene		0.2578	12.1		
Trichloroethene		0.2694	8.76		
Trichlorofluoromethane		0.4598	9.80		
Vinyl Acetate		0.3681	7.92		
cis-1,2-Dichloroethene		0.2730	6.54		
cis-1,3-Dichloropropene		0.3593	7.84		
m-,p-Xylene		0.5259	8.54		
n-Butylbenzene		1.729	9.10		
n-Propylbenzene		2.623	9.56		
o-Xylene		0.5197	5.80		
p-Isopropyltoluene		2.008	9.35		
sec-Butylbenzene		2.301	9.90		
tert-Butylbenzene		0.4391	11.1		
trans-1,2-Dichloroethene		0.2572	9.19		
trans-1,3-Dichloropropene		0.3605	7.33		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION SUMMARY

Login Number: L08030345 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 17-MAR-08 16:10
ICAL Workgroup: WG265645 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4470	10.7		
1,2-Dichloropropane	CCC	0.2244	5.94		
Chloroform	CCC	0.5321	6.21		
Ethylbenzene	CCC	0.4929	5.79		
Toluene	CCC	1.276	5.36		
Vinyl Chloride	CCC	0.3600	15.8		1.00
1,1,2,2-Tetrachloroethane	SPCC	0.3487	10.8		
1,1-Dichloroethane	SPCC	0.5127	3.80		
Bromoform	SPCC	0.1658	16.7		1.00
Chlorobenzene	SPCC	0.9552	13.2		
Chloromethane	SPCC	0.3987	10.0		
1,1,1,2-Tetrachloroethane		0.3589	14.4		
1,1,1-Trichloroethane		0.4921	6.74		
1,1,2-Trichloroethane		0.2072	9.88		
1,1-Dichloropropene		0.3539	6.21		
1,2,3-Trichlorobenzene		0.7075	10.2		
1,2,3-Trichloropropane		0.1157	6.20		
1,2,4-Trichlorobenzene		0.8789	6.58		
1,2,4-Trimethylbenzene		2.461	5.99		
1,2-Dibromo-3-Chloropropane		0.06048	20.5		1.00
1,2-Dibromoethane		0.2054	7.49		
1,2-Dichlorobenzene		1.217	13.2		
1,2-Dichloroethane		0.3554	8.02		
1,3,5-Trimethylbenzene		2.286	4.33		
1,3-Dichlorobenzene		1.436	12.7		
1,3-Dichloropropane		0.3695	11.4		
1,4-Dichlorobenzene		1.495	15.2		1.00
2,2-Dichloropropane		0.4692	6.32		
2-Butanone		0.05233	11.3		
2-Chloroethyl Vinyl Ether		0.08830	14.1		
2-Chlorotoluene		2.109	11.9		
2-Hexanone		0.09682	12.7		
4-Chlorotoluene		2.020	10.4		
4-Methyl-2-Pentanone		0.04170	15.3		0.999
Acetone		0.03833	7.60		
Benzene		0.9259	4.61		
Bromobenzene		0.6658	11.4		
Bromochloromethane		0.1527	4.07		
Bromodichloromethane		0.3611	6.93		
Bromomethane		0.1753	27.8		1.00
Carbon Disulfide		0.7865	5.44		
Carbon Tetrachloride		0.4400	9.80		
Chloroethane		0.2139	9.90		
Dibromochloromethane		0.2966	8.55		
Dibromomethane		0.1209	7.83		

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION SUMMARY

Login Number: L08030345 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 17-MAR-08 16:10
ICAL Workgroup: WG265645 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.5110	12.7		
Hexachlorobutadiene		0.4834	6.12		
Isopropylbenzene		1.523	2.36		
Methylene Chloride		0.3048	36.2		1.00
Naphthalene		1.278	8.44		
Styrene		0.9688	4.30		
Tetrachloroethene		0.3635	2.18		
Trichloroethene		0.2699	5.00		
Trichlorofluoromethane		0.6467	12.2		
Vinyl Acetate		0.2539	7.63		
cis-1,2-Dichloroethene		0.2694	4.53		
cis-1,3-Dichloropropene		0.3590	8.88		
m-,p-Xylene		0.6352	5.55		
n-Butylbenzene		2.345	3.84		
n-Propylbenzene		3.122	2.86		
o-Xylene		0.5945	3.73		
p-Isopropyltoluene		2.508	4.61		
sec-Butylbenzene		2.820	3.59		
tert-Butylbenzene		0.4712	8.55		
trans-1,2-Dichloroethene		0.2686	4.57		
trans-1,3-Dichloropropene		0.4125	4.53		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte	WG264928-02			WG264928-03			WG264928-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	3061.00000	0.2095	1.00	5511.00000	0.1532
1,2-Dichloropropane	NA	NA	NA	0.400	3697.00000	0.2531	1.00	8531.00000	0.2372
Chloroform	0.300	5518.00000	0.5012	0.400	6552.00000	0.4485	1.00	14083.0000	0.3915
Ethylbenzene	NA	NA	NA	0.400	5308.00000	0.4365	1.00	10749.0000	0.3601
Toluene	NA	NA	NA	0.400	14869.0000	1.223	1.00	34791.0000	1.166
Vinyl Chloride	NA	NA	NA	0.400	3565.00000	0.2440	1.00	6429.00000	0.1787
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1953.00000	0.2842	1.00	5372.00000	0.3168
1,1-Dichloroethane	NA	NA	NA	0.400	7291.00000	0.4991	1.00	15390.0000	0.4279
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2372.00000	0.07950
Chlorobenzene	NA	NA	NA	0.400	11047.0000	0.9084	1.00	23018.0000	0.7711
Chloromethane	NA	NA	NA	0.400	4602.00000	0.3150	1.00	9834.00000	0.2734
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	3067.00000	0.2522	1.00	7272.00000	0.2436
1,1,1-Trichloroethane	NA	NA	NA	0.400	4931.00000	0.3376	1.00	10031.0000	0.2789
1,1,2-Trichloroethane	NA	NA	NA	0.400	2284.00000	0.1878	1.00	6110.00000	0.2047
1,1-Dichloropropene	NA	NA	NA	0.400	4536.00000	0.3105	1.00	8701.00000	0.2419
1,2,3-Trichlorobenzene	0.300	3895.00000	0.7371	0.400	3732.00000	0.5431	1.00	8969.00000	0.5290
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1382.00000	0.08150
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	4805.00000	0.6992	1.00	11211.0000	0.6612
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	13543.0000	1.971	1.00	28901.0000	1.705
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	2016.00000	0.1658	1.00	5692.00000	0.1907
1,2-Dichlorobenzene	0.300	6286.00000	1.190	0.400	7851.00000	1.143	1.00	17150.0000	1.012
1,2-Dichloroethane	NA	NA	NA	0.400	4445.00000	0.3043	1.00	11081.0000	0.3081
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	12846.0000	1.869	1.00	27282.0000	1.609
1,3-Dichlorobenzene	NA	NA	NA	0.400	8510.00000	1.238	1.00	20069.0000	1.184
1,3-Dichloropropane	NA	NA	NA	0.400	3930.00000	0.3232	1.00	9971.00000	0.3340
1,4-Dichlorobenzene	0.300	7609.00000	1.440	0.400	9214.00000	1.341	1.00	20205.0000	1.192
2,2-Dichloropropane	NA	NA	NA	0.400	4942.00000	0.3383	1.00	10106.0000	0.2810
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	1.00	3199.00000	0.08890
2-Chlorotoluene	NA	NA	NA	0.400	13428.0000	1.954	1.00	26331.0000	1.553
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	11303.0000	1.645	1.00	26177.0000	1.544
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	14755.0000	1.010	1.00	30963.0000	0.8609
Bromobenzene	0.300	3480.00000	0.6586	0.400	4485.00000	0.6527	1.00	10107.0000	0.5961
Bromochloromethane	NA	NA	NA	0.400	1427.00000	0.09770	1.00	3970.00000	0.1104
Bromodichloromethane	NA	NA	NA	0.400	3588.00000	0.2456	1.00	9148.00000	0.2543
Bromomethane	NA	NA	NA	0.400	3921.00000	0.2684	1.00	8781.00000	0.2441
Carbon Disulfide	NA	NA	NA	0.400	10601.0000	0.7257	1.00	20083.0000	0.5584
Carbon Tetrachloride	NA	NA	NA	0.400	3975.00000	0.2721	1.00	6631.00000	0.1844

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 06-MAR-08 20:26

Column ID: F

Analyte	WG264928-05			WG264928-06			WG264928-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	16335.0000	0.2238	5.00	39275.0000	0.2175	20.0	182690.000	0.2550
1,2-Dichloropropane	2.00	18741.0000	0.2568	5.00	47824.0000	0.2649	20.0	200746.000	0.2802
Chloroform	2.00	32217.0000	0.4414	5.00	79792.0000	0.4419	20.0	342897.000	0.4787
Ethylbenzene	2.00	27532.0000	0.4492	5.00	66613.0000	0.4418	20.0	287981.000	0.4777
Toluene	2.00	75605.0000	1.234	5.00	182019.000	1.207	20.0	771884.000	1.280
Vinyl Chloride	2.00	14001.0000	0.1918	5.00	33364.0000	0.1848	20.0	122059.000	0.1704
1,1,2,2-Tetrachloroethane	2.00	11156.0000	0.3180	5.00	28908.0000	0.3346	20.0	116666.000	0.3421
1,1-Dichloroethane	2.00	37273.0000	0.5107	5.00	89913.0000	0.4980	20.0	391407.000	0.5464
Bromoform	2.00	5337.00000	0.08710	5.00	14621.0000	0.09700	20.0	74349.0000	0.1233
Chlorobenzene	2.00	51830.0000	0.8457	5.00	126569.000	0.8394	20.0	522009.000	0.8659
Chloromethane	2.00	19385.0000	0.2656	5.00	45733.0000	0.2533	20.0	171369.000	0.2392
1,1,1,2-Tetrachloroethane	2.00	15789.0000	0.2576	5.00	41832.0000	0.2774	20.0	184370.000	0.3058
1,1,1-Trichloroethane	2.00	27734.0000	0.3800	5.00	67847.0000	0.3758	20.0	307414.000	0.4291
1,1,2-Trichloroethane	2.00	12392.0000	0.2022	5.00	30003.0000	0.1990	20.0	121352.000	0.2013
1,1-Dichloropropene	2.00	24187.0000	0.3314	5.00	59626.0000	0.3303	20.0	272146.000	0.3799
1,2,3-Trichlorobenzene	2.00	20420.0000	0.5822	5.00	49417.0000	0.5720	20.0	202230.000	0.5930
1,2,3-Trichloropropane	2.00	3683.00000	0.1050	5.00	9723.00000	0.1125	20.0	37854.0000	0.1110
1,2,4-Trichlorobenzene	2.00	25009.0000	0.7130	5.00	62188.0000	0.7198	20.0	256028.000	0.7508
1,2,4-Trimethylbenzene	2.00	67395.0000	1.921	5.00	169008.000	1.956	20.0	731631.000	2.145
1,2-Dibromo-3-Chloropropane	2.00	1949.00000	0.05560	5.00	4511.00000	0.05220	20.0	20260.0000	0.05940
1,2-Dibromoethane	2.00	11855.0000	0.1934	5.00	29815.0000	0.1977	20.0	121804.000	0.2020
1,2-Dichlorobenzene	2.00	37205.0000	1.061	5.00	92553.0000	1.071	20.0	377927.000	1.108
1,2-Dichloroethane	2.00	24881.0000	0.3409	5.00	59764.0000	0.3310	20.0	245552.000	0.3428
1,3,5-Trimethylbenzene	2.00	64918.0000	1.851	5.00	160470.000	1.857	20.0	716741.000	2.102
1,3-Dichlorobenzene	2.00	42528.0000	1.212	5.00	105724.000	1.224	20.0	440781.000	1.293
1,3-Dichloropropane	2.00	20895.0000	0.3409	5.00	53258.0000	0.3532	20.0	218519.000	0.3625
1,4-Dichlorobenzene	2.00	44194.0000	1.260	5.00	105658.000	1.223	20.0	439327.000	1.288
2,2-Dichloropropane	2.00	27750.0000	0.3802	5.00	66441.0000	0.3680	20.0	304379.000	0.4249
2-Butanone	NA	NA	NA	5.00	12430.0000	0.06880	20.0	43737.0000	0.06110
2-Chloroethyl Vinyl Ether	2.00	6780.00000	0.09290	5.00	19334.0000	0.1071	20.0	77846.0000	0.1087
2-Chlorotoluene	2.00	61759.0000	1.761	5.00	149914.000	1.735	20.0	642435.000	1.884
2-Hexanone	NA	NA	NA	5.00	14406.0000	0.09550	20.0	58920.0000	0.09770
4-Chlorotoluene	2.00	56256.0000	1.604	5.00	146365.000	1.694	20.0	607566.000	1.782
4-Methyl-2-Pentanone	NA	NA	NA	5.00	10688.0000	0.05920	20.0	39891.0000	0.05570
Acetone	NA	NA	NA	5.00	8652.00000	0.04790	20.0	29736.0000	0.04150
Benzene	2.00	72622.0000	0.9950	5.00	174580.000	0.9669	20.0	746019.000	1.041
Bromobenzene	2.00	21936.0000	0.6254	5.00	54977.0000	0.6363	20.0	225427.000	0.6610
Bromochloromethane	2.00	8614.00000	0.1180	5.00	21859.0000	0.1211	20.0	90594.0000	0.1265
Bromodichloromethane	2.00	19536.0000	0.2677	5.00	50503.0000	0.2797	20.0	229172.000	0.3199
Bromomethane	2.00	17590.0000	0.2410	5.00	43617.0000	0.2416	20.0	167668.000	0.2341
Carbon Disulfide	2.00	54433.0000	0.7458	5.00	138890.000	0.7693	20.0	582313.000	0.8129
Carbon Tetrachloride	2.00	21663.0000	0.2968	5.00	50546.0000	0.2800	20.0	254412.000	0.3552

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte	WG264928-08			WG264928-09			WG264928-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	443337.000	0.2496	100	845502.000	0.2352	200	1595648.00	0.2310
1,2-Dichloropropane	50.0	485930.000	0.2736	100	947544.000	0.2636	200	1787376.00	0.2587
Chloroform	50.0	836676.000	0.4711	100	1623951.00	0.4518	200	3086140.00	0.4468
Ethylbenzene	50.0	687134.000	0.4626	100	1262204.00	0.4176	200	2239259.00	0.3857
Toluene	50.0	1867971.00	1.258	100	3540773.00	1.172	200	6479533.00	1.116
Vinyl Chloride	50.0	293271.000	0.1651	100	524497.000	0.1459	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	281622.000	0.3325	100	569464.000	0.3303	200	1037498.00	0.3265
1,1-Dichloroethane	50.0	941796.000	0.5303	100	1819564.00	0.5062	200	3400927.00	0.4923
Bromoform	50.0	201541.000	0.1357	100	430248.000	0.1424	200	811263.000	0.1397
Chlorobenzene	50.0	1243647.00	0.8372	100	2328499.00	0.7704	200	4120946.00	0.7099
Chloromethane	50.0	414220.000	0.2332	100	761367.000	0.2118	200	1516945.00	0.2196
1,1,1,2-Tetrachloroethane	50.0	449152.000	0.3024	100	855599.000	0.2831	200	1498003.00	0.2580
1,1,1-Trichloroethane	50.0	763842.000	0.4301	100	1460298.00	0.4063	200	2735574.00	0.3960
1,1,2-Trichloroethane	50.0	289348.000	0.1948	100	574970.000	0.1902	200	1055694.00	0.1819
1,1-Dichloropropene	50.0	663925.000	0.3738	100	1264702.00	0.3519	200	2359745.00	0.3416
1,2,3-Trichlorobenzene	50.0	496483.000	0.5861	100	1000402.00	0.5802	200	1779698.00	0.5602
1,2,3-Trichloropropane	50.0	90991.0000	0.1074	100	183734.000	0.1066	200	334120.000	0.1052
1,2,4-Trichlorobenzene	50.0	618051.000	0.7296	100	1221897.00	0.7086	200	2188300.00	0.6888
1,2,4-Trimethylbenzene	50.0	1774901.00	2.095	100	3353260.00	1.945	200	6039638.00	1.901
1,2-Dibromo-3-Chloropropane	50.0	54867.0000	0.06480	100	120758.000	0.07000	200	228764.000	0.07200
1,2-Dibromoethane	50.0	300586.000	0.2024	100	603964.000	0.1998	200	1107052.00	0.1907
1,2-Dichlorobenzene	50.0	905635.000	1.069	100	1752340.00	1.016	200	3131638.00	0.9857
1,2-Dichloroethane	50.0	603766.000	0.3399	100	1203881.00	0.3349	200	2261911.00	0.3274
1,3,5-Trimethylbenzene	50.0	1744603.00	2.060	100	3302201.00	1.915	200	5990839.00	1.886
1,3-Dichlorobenzene	50.0	1055193.00	1.246	100	2000499.00	1.160	200	3591024.00	1.130
1,3-Dichloropropane	50.0	522946.000	0.3520	100	1034538.00	0.3423	200	1924231.00	0.3315
1,4-Dichlorobenzene	50.0	1050400.00	1.240	100	2007468.00	1.164	200	3571662.00	1.124
2,2-Dichloropropane	50.0	735455.000	0.4141	100	1413425.00	0.3933	200	2681591.00	0.3882
2-Butanone	50.0	102632.000	0.05780	100	219762.000	0.06110	200	399948.000	0.05790
2-Chloroethyl Vinyl Ether	50.0	193053.000	0.1087	100	405440.000	0.1128	200	768761.000	0.1113
2-Chlorotoluene	50.0	1554417.00	1.835	100	2899253.00	1.681	200	5312659.00	1.672
2-Hexanone	50.0	144695.000	0.09740	100	305978.000	0.1012	200	564609.000	0.09730
4-Chlorotoluene	50.0	1477895.00	1.745	100	2842201.00	1.648	200	4945068.00	1.556
4-Methyl-2-Pentanone	50.0	97183.0000	0.05470	100	204790.000	0.05700	200	373819.000	0.05410
Acetone	50.0	74300.0000	0.04180	100	164520.000	0.04580	200	289604.000	0.04190
Benzene	50.0	1811254.00	1.020	100	3461272.00	0.9630	200	6414668.00	0.9286
Bromobenzene	50.0	543396.000	0.6415	100	1045422.00	0.6063	200	1879081.00	0.5914
Bromochloromethane	50.0	219826.000	0.1238	100	422738.000	0.1176	200	793030.000	0.1148
Bromodichloromethane	50.0	569483.000	0.3206	100	1136312.00	0.3162	200	2165200.00	0.3134
Bromomethane	50.0	410899.000	0.2314	100	784327.000	0.2182	200	1508368.00	0.2184
Carbon Disulfide	50.0	1421395.00	0.8003	100	2721319.00	0.7571	200	5132491.00	0.7430
Carbon Tetrachloride	50.0	648977.000	0.3654	100	1251666.00	0.3482	200	2435230.00	0.3525

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

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Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte	WG264928-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	575137.000	0.05490
2-Chloroethyl Vinyl Ether	300	1083695.00	0.1034
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	773607.000	0.08800
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	529098.000	0.05050
Acetone	300	370301.000	0.03530
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

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Login Number: L08030345
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Instrument ID: HPMS10
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte	WG264928-02			WG264928-03			WG264928-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	0.400	3382.00000	0.2315	1.00	7053.00000	0.1961
Dibromochloromethane	NA	NA	NA	0.400	2074.00000	0.1706	1.00	5180.00000	0.1735
Dibromomethane	NA	NA	NA	0.400	1371.00000	0.09390	1.00	3783.00000	0.1052
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	8195.00000	0.2278
Hexachlorobutadiene	NA	NA	NA	0.400	1865.00000	0.2714	1.00	4135.00000	0.2439
Isopropylbenzene	NA	NA	NA	0.400	15387.0000	1.265	1.00	30120.0000	1.009
Methylene Chloride	NA	NA	NA	0.400	8364.00000	0.5726	1.00	12955.0000	0.3602
Naphthalene	NA	NA	NA	0.400	7621.00000	1.109	1.00	17556.0000	1.035
Styrene	NA	NA	NA	0.400	8867.00000	0.7292	1.00	22620.0000	0.7578
Tetrachloroethene	NA	NA	NA	0.400	2651.00000	0.2180	1.00	6193.00000	0.2075
Trichloroethene	NA	NA	NA	0.400	3719.00000	0.2546	1.00	8004.00000	0.2225
Trichlorofluoromethane	NA	NA	NA	0.400	6475.00000	0.4433	1.00	13142.0000	0.3654
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3867.00000	0.2647	1.00	8557.00000	0.2379
cis-1,3-Dichloropropene	NA	NA	NA	0.400	4745.00000	0.3248	1.00	11652.0000	0.3240
m-,p-Xylene	NA	NA	NA	0.800	13283.0000	0.5462	2.00	27350.0000	0.4581
n-Butylbenzene	NA	NA	NA	0.400	11597.0000	1.688	1.00	24217.0000	1.428
n-Propylbenzene	NA	NA	NA	0.400	17707.0000	2.577	1.00	35598.0000	2.100
o-Xylene	NA	NA	NA	0.400	6150.00000	0.5057	1.00	14298.0000	0.4790
p-Isopropyltoluene	NA	NA	NA	0.400	13483.0000	1.962	1.00	27637.0000	1.630
sec-Butylbenzene	NA	NA	NA	0.400	15440.0000	2.247	1.00	31059.0000	1.832
tert-Butylbenzene	NA	NA	NA	0.400	2810.00000	0.4089	1.00	5876.00000	0.3465
trans-1,2-Dichloroethene	NA	NA	NA	0.400	3572.00000	0.2445	1.00	7465.00000	0.2075
trans-1,3-Dichloropropene	NA	NA	NA	0.400	3897.00000	0.3205	1.00	10173.0000	0.3408

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte	WG264928-05			WG264928-06			WG264928-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	15639.0000	0.2143	5.00	39456.0000	0.2185	20.0	150375.000	0.2099
Dibromochloromethane	2.00	10941.0000	0.1785	5.00	29957.0000	0.1987	20.0	141852.000	0.2353
Dibromomethane	2.00	8495.00000	0.1164	5.00	21435.0000	0.1187	20.0	89730.0000	0.1253
Dichlorodifluoromethane	2.00	23238.0000	0.3184	5.00	60126.0000	0.3330	20.0	229867.000	0.3209
Hexachlorobutadiene	2.00	9875.00000	0.2815	5.00	23400.0000	0.2708	20.0	105370.000	0.3090
Isopropylbenzene	2.00	76040.0000	1.241	5.00	189074.000	1.254	20.0	834124.000	1.384
Methylene Chloride	2.00	22613.0000	0.3098	5.00	48608.0000	0.2692	20.0	185625.000	0.2591
Naphthalene	2.00	36378.0000	1.037	5.00	91857.0000	1.063	20.0	368693.000	1.081
Styrene	2.00	50725.0000	0.8276	5.00	128149.000	0.8499	20.0	552748.000	0.9169
Tetrachloroethene	2.00	16211.0000	0.2645	5.00	39581.0000	0.2625	20.0	177342.000	0.2942
Trichloroethene	2.00	20244.0000	0.2774	5.00	49331.0000	0.2732	20.0	213371.000	0.2979
Trichlorofluoromethane	2.00	34910.0000	0.4783	5.00	92177.0000	0.5105	20.0	353189.000	0.4930
Vinyl Acetate	NA	NA	NA	5.00	66674.0000	0.3693	20.0	285378.000	0.3984
cis-1,2-Dichloroethene	2.00	19591.0000	0.2684	5.00	49666.0000	0.2751	20.0	213074.000	0.2974
cis-1,3-Dichloropropene	2.00	24468.0000	0.3353	5.00	64823.0000	0.3590	20.0	281023.000	0.3923
m-,p-Xylene	4.00	66262.0000	0.5406	10.0	163307.000	0.5415	40.0	700717.000	0.5812
n-Butylbenzene	2.00	58656.0000	1.672	5.00	145934.000	1.689	20.0	659499.000	1.934
n-Propylbenzene	2.00	90950.0000	2.593	5.00	227780.000	2.636	20.0	1001671.00	2.937
o-Xylene	2.00	33178.0000	0.5413	5.00	79228.0000	0.5254	20.0	336407.000	0.5580
p-Isopropyltoluene	2.00	70232.0000	2.002	5.00	172301.000	1.994	20.0	767887.000	2.252
sec-Butylbenzene	2.00	81030.0000	2.310	5.00	197249.000	2.283	20.0	883814.000	2.592
tert-Butylbenzene	2.00	14894.0000	0.4246	5.00	37828.0000	0.4378	20.0	170395.000	0.4997
trans-1,2-Dichloroethene	2.00	19135.0000	0.2622	5.00	45856.0000	0.2540	20.0	202516.000	0.2827
trans-1,3-Dichloropropene	2.00	20520.0000	0.3348	5.00	53984.0000	0.3580	20.0	234802.000	0.3895

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

INITIAL CALIBRATION DATA

Login Number: L08030345
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte	WG264928-08			WG264928-09			WG264928-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	366447.000	0.2063	100	710532.000	0.1977	200	1373845.00	0.1989
Dibromochloromethane	50.0	367165.000	0.2472	100	758020.000	0.2508	200	1419348.00	0.2445
Dibromomethane	50.0	216842.000	0.1221	100	436310.000	0.1214	200	812022.000	0.1176
Dichlorodifluoromethane	50.0	566087.000	0.3187	100	1055244.00	0.2936	200	2005039.00	0.2903
Hexachlorobutadiene	50.0	263201.000	0.3107	100	497600.000	0.2886	200	936161.000	0.2947
Isopropylbenzene	50.0	2009992.00	1.353	100	3763331.00	1.245	200	6786583.00	1.169
Methylene Chloride	50.0	447413.000	0.2519	100	851143.000	0.2368	200	1609466.00	0.2330
Naphthalene	50.0	895917.000	1.058	100	1895382.00	1.099	200	3354364.00	1.056
Styrene	50.0	1338285.00	0.9009	100	2558725.00	0.8466	200	4588936.00	0.7905
Tetrachloroethene	50.0	433210.000	0.2916	100	810928.000	0.2683	200	1484876.00	0.2558
Trichloroethene	50.0	519811.000	0.2927	100	983509.000	0.2736	200	1820862.00	0.2636
Trichlorofluoromethane	50.0	866370.000	0.4878	100	1633744.00	0.4545	200	3077698.00	0.4455
Vinyl Acetate	50.0	653430.000	0.3679	100	1392847.00	0.3875	200	2567405.00	0.3717
cis-1,2-Dichloroethene	50.0	515459.000	0.2902	100	994136.000	0.2766	200	1889214.00	0.2735
cis-1,3-Dichloropropene	50.0	692084.000	0.3897	100	1365920.00	0.3800	200	2552124.00	0.3695
m-,p-Xylene	100	1677945.00	0.5648	200	3089326.00	0.5111	400	5382722.00	0.4636
n-Butylbenzene	50.0	1618017.00	1.910	100	3047904.00	1.768	200	5526456.00	1.739
n-Propylbenzene	50.0	2432772.00	2.872	100	4596337.00	2.666	200	8275572.00	2.605
o-Xylene	50.0	821197.000	0.5528	100	1550003.00	0.5129	200	2800844.00	0.4825
p-Isopropyltoluene	50.0	1872498.00	2.211	100	3502218.00	2.031	200	6303609.00	1.984
sec-Butylbenzene	50.0	2144984.00	2.532	100	4031434.00	2.338	200	7237814.00	2.278
tert-Butylbenzene	50.0	418120.000	0.4936	100	787858.000	0.4569	200	1412107.00	0.4445
trans-1,2-Dichloroethene	50.0	496607.000	0.2796	100	957838.000	0.2665	200	1797804.00	0.2603
trans-1,3-Dichloropropene	50.0	578086.000	0.3892	100	1157374.00	0.3829	200	2139247.00	0.3685

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B

Instrument ID: HPMS10
Initial Calibration Date: 06-MAR-08 20:26
Column ID: F

Analyte	WG264928-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	3288202.00	0.3139
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

INITIAL CALIBRATION DATA

Login Number: L08030345
Instrument ID: HPMS6
Analytical Method: 8260B
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-02			WG265645-03			WG265645-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2396.00000	0.3290	1.00	8929.00000	0.4642
1,2-Dichloropropane	NA	NA	NA	0.400	1748.00000	0.2400	1.00	4740.00000	0.2464
Chloroform	0.300	3700.00000	0.5133	0.400	4472.00000	0.6140	1.00	10364.0000	0.5388
Ethylbenzene	NA	NA	NA	0.400	3090.00000	0.5488	1.00	7152.00000	0.4792
Toluene	NA	NA	NA	0.400	7795.00000	1.385	1.00	20140.0000	1.350
Vinyl Chloride	NA	NA	NA	0.400	3332.00000	0.4575	1.00	6085.00000	0.3164
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1174.00000	0.3469	1.00	3984.00000	0.4353
1,1-Dichloroethane	NA	NA	NA	0.400	3990.00000	0.5478	1.00	10235.0000	0.5321
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2423.00000	0.1624
Chlorobenzene	NA	NA	NA	0.400	6934.00000	1.232	1.00	15771.0000	1.057
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	8301.00000	0.4316
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2672.00000	0.4746	1.00	5162.00000	0.3459
1,1,1-Trichloroethane	NA	NA	NA	0.400	3067.00000	0.4211	1.00	9747.00000	0.5067
1,1,2-Trichloroethane	NA	NA	NA	0.400	1387.00000	0.2464	1.00	3482.00000	0.2333
1,1-Dichloropropene	NA	NA	NA	0.400	2210.00000	0.3034	1.00	6901.00000	0.3588
1,2,3-Trichlorobenzene	0.300	1681.00000	0.5701	0.400	2770.00000	0.8186	1.00	7257.00000	0.7929
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1120.00000	0.1224
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3271.00000	0.9666	1.00	8705.00000	0.9511
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	9362.00000	2.767	1.00	23483.0000	2.566
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1338.00000	0.2377	1.00	2898.00000	0.1942
1,2-Dichlorobenzene	0.300	2939.00000	0.9968	0.400	5308.00000	1.569	1.00	12441.0000	1.359
1,2-Dichloroethane	NA	NA	NA	0.400	2891.00000	0.3969	1.00	7775.00000	0.4042
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	8110.00000	2.397	1.00	20772.0000	2.270
1,3-Dichlorobenzene	NA	NA	NA	0.400	6295.00000	1.860	1.00	13941.0000	1.523
1,3-Dichloropropane	NA	NA	NA	0.400	2638.00000	0.4686	1.00	5731.00000	0.3840
1,4-Dichlorobenzene	0.300	4724.00000	1.602	0.400	6844.00000	2.022	1.00	14971.0000	1.636
2,2-Dichloropropane	NA	NA	NA	0.400	3078.00000	0.4226	1.00	9018.00000	0.4688
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	8773.00000	2.593	1.00	21182.0000	2.314
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	8461.00000	2.500	1.00	19559.0000	2.137
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	7360.00000	1.011	1.00	18591.0000	0.9665
Bromobenzene	0.300	1691.00000	0.5735	0.400	2767.00000	0.8177	1.00	6961.00000	0.7606
Bromochloromethane	NA	NA	NA	0.400	1070.00000	0.1469	1.00	3087.00000	0.1605
Bromodichloromethane	NA	NA	NA	0.400	2943.00000	0.4041	1.00	6916.00000	0.3596
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	1905.00000	0.09900
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	13310.0000	0.6920
Carbon Tetrachloride	NA	NA	NA	0.400	2541.00000	0.3489	1.00	7835.00000	0.4073

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-05			WG265645-06			WG265645-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	17821.0000	0.4635	5.00	49216.0000	0.4636	20.0	185634.000	0.4675
1,2-Dichloropropane	2.00	8544.00000	0.2222	5.00	21695.0000	0.2044	20.0	87105.0000	0.2194
Chloroform	2.00	20215.0000	0.5257	5.00	54415.0000	0.5126	20.0	201843.000	0.5084
Ethylbenzene	2.00	13539.0000	0.4600	5.00	39686.0000	0.4932	20.0	148146.000	0.4711
Toluene	2.00	37048.0000	1.259	5.00	105421.000	1.310	20.0	394709.000	1.255
Vinyl Chloride	2.00	15532.0000	0.4039	5.00	35611.0000	0.3354	20.0	150308.000	0.3786
1,1,2,2-Tetrachloroethane	2.00	5799.00000	0.3254	5.00	15132.0000	0.3140	20.0	63512.0000	0.3294
1,1-Dichloroethane	2.00	19602.0000	0.5098	5.00	51796.0000	0.4879	20.0	199489.000	0.5024
Bromoform	2.00	3529.00000	0.1199	5.00	11238.0000	0.1397	20.0	53475.0000	0.1701
Chlorobenzene	2.00	26280.0000	0.8929	5.00	73549.0000	0.9140	20.0	274593.000	0.8733
Chloromethane	2.00	17536.0000	0.4560	5.00	42845.0000	0.4036	20.0	165846.000	0.4177
1,1,1,2-Tetrachloroethane	2.00	9248.00000	0.3142	5.00	25394.0000	0.3156	20.0	104462.000	0.3322
1,1,1-Trichloroethane	2.00	18603.0000	0.4838	5.00	51869.0000	0.4886	20.0	197807.000	0.4982
1,1,2-Trichloroethane	2.00	5770.00000	0.1960	5.00	15899.0000	0.1976	20.0	61076.0000	0.1942
1,1-Dichloropropene	2.00	13398.0000	0.3484	5.00	37809.0000	0.3561	20.0	143530.000	0.3615
1,2,3-Trichlorobenzene	2.00	12151.0000	0.6819	5.00	35552.0000	0.7377	20.0	133586.000	0.6929
1,2,3-Trichloropropane	2.00	1869.00000	0.1049	5.00	5191.00000	0.1077	20.0	22655.0000	0.1175
1,2,4-Trichlorobenzene	2.00	14265.0000	0.8005	5.00	42299.0000	0.8777	20.0	160353.000	0.8318
1,2,4-Trimethylbenzene	2.00	42134.0000	2.365	5.00	119946.000	2.489	20.0	459013.000	2.381
1,2-Dibromo-3-Chloropropane	2.00	691.000000	0.03880	5.00	2536.00000	0.05260	20.0	12800.0000	0.06640
1,2-Dibromoethane	2.00	5565.00000	0.1891	5.00	15496.0000	0.1926	20.0	64288.0000	0.2044
1,2-Dichlorobenzene	2.00	20386.0000	1.144	5.00	57371.0000	1.190	20.0	226230.000	1.174
1,2-Dichloroethane	2.00	13273.0000	0.3452	5.00	35453.0000	0.3340	20.0	139524.000	0.3514
1,3,5-Trimethylbenzene	2.00	37382.0000	2.098	5.00	114141.000	2.368	20.0	432627.000	2.244
1,3-Dichlorobenzene	2.00	23688.0000	1.329	5.00	66695.0000	1.384	20.0	258779.000	1.342
1,3-Dichloropropane	2.00	10036.0000	0.3410	5.00	27347.0000	0.3398	20.0	111656.000	0.3551
1,4-Dichlorobenzene	2.00	24078.0000	1.351	5.00	68505.0000	1.421	20.0	262146.000	1.360
2,2-Dichloropropane	2.00	16979.0000	0.4416	5.00	47901.0000	0.4512	20.0	189401.000	0.4770
2-Butanone	NA	NA	NA	5.00	4475.00000	0.04220	20.0	20462.0000	0.05150
2-Chloroethyl Vinyl Ether	2.00	2725.00000	0.07090	5.00	8099.00000	0.07630	20.0	35465.0000	0.08930
2-Chlorotoluene	2.00	36429.0000	2.044	5.00	104190.000	2.162	20.0	383958.000	1.992
2-Hexanone	NA	NA	NA	5.00	5873.00000	0.07300	20.0	30233.0000	0.09610
4-Chlorotoluene	2.00	33580.0000	1.885	5.00	93562.0000	1.941	20.0	359613.000	1.865
4-Methyl-2-Pentanone	NA	NA	NA	5.00	3213.00000	0.03030	20.0	15695.0000	0.03950
Acetone	NA	NA	NA	5.00	3646.00000	0.03430	20.0	15422.0000	0.03880
Benzene	2.00	35854.0000	0.9324	5.00	95924.0000	0.9036	20.0	363286.000	0.9150
Bromobenzene	2.00	11127.0000	0.6244	5.00	30722.0000	0.6375	20.0	121381.000	0.6296
Bromochloromethane	2.00	5557.00000	0.1445	5.00	15424.0000	0.1453	20.0	62683.0000	0.1579
Bromodichloromethane	2.00	13213.0000	0.3436	5.00	34625.0000	0.3262	20.0	138473.000	0.3488
Bromomethane	2.00	5362.00000	0.1394	5.00	17955.0000	0.1691	20.0	63512.0000	0.1600
Carbon Disulfide	2.00	30735.0000	0.7993	5.00	83134.0000	0.7831	20.0	319368.000	0.8044
Carbon Tetrachloride	2.00	17069.0000	0.4439	5.00	46853.0000	0.4413	20.0	184780.000	0.4654

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-08			WG265645-09			WG265645-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	497125.000	0.4648	100	1071083.00	0.4566	200	2287579.00	0.4671
1,2-Dichloropropane	50.0	231517.000	0.2165	100	516656.000	0.2202	200	1107660.00	0.2262
Chloroform	50.0	548682.000	0.5130	100	1219441.00	0.5198	200	2659639.00	0.5430
Ethylbenzene	50.0	410293.000	0.4899	100	914918.000	0.4819	200	2138737.00	0.5192
Toluene	50.0	1058274.00	1.264	100	2290968.00	1.207	200	4871242.00	1.183
Vinyl Chloride	50.0	358771.000	0.3355	100	687346.000	0.2930	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	176013.000	0.3356	100	405777.000	0.3466	200	855263.000	0.3561
1,1-Dichloroethane	50.0	535778.000	0.5010	100	1174876.00	0.5008	200	2544366.00	0.5195
Bromoform	50.0	152544.000	0.1821	100	364480.000	0.1920	200	800190.000	0.1943
Chlorobenzene	50.0	741321.000	0.8852	100	1666776.00	0.8779	200	3749166.00	0.9102
Chloromethane	50.0	392589.000	0.3671	100	802920.000	0.3423	200	1826071.00	0.3728
1,1,1,2-Tetrachloroethane	50.0	292061.000	0.3487	100	679578.000	0.3580	200	1574815.00	0.3823
1,1,1-Trichloroethane	50.0	531947.000	0.4974	100	1176715.00	0.5016	200	2639702.00	0.5390
1,1,2-Trichloroethane	50.0	162723.000	0.1943	100	373912.000	0.1970	200	820241.000	0.1991
1,1-Dichloropropene	50.0	387429.000	0.3623	100	851640.000	0.3631	200	1850001.00	0.3777
1,2,3-Trichlorobenzene	50.0	351898.000	0.6710	100	812474.000	0.6940	200	1702338.00	0.7087
1,2,3-Trichloropropane	50.0	60770.0000	0.1159	100	136711.000	0.1168	200	299290.000	0.1246
1,2,4-Trichlorobenzene	50.0	440626.000	0.8402	100	1011834.00	0.8643	200	2159161.00	0.8989
1,2,4-Trimethylbenzene	50.0	1242523.00	2.369	100	2707380.00	2.313	200	5850452.00	2.436
1,2-Dibromo-3-Chloropropane	50.0	34452.0000	0.06570	100	80909.0000	0.06910	200	168964.000	0.07030
1,2-Dibromoethane	50.0	171046.000	0.2042	100	395820.000	0.2085	200	874069.000	0.2122
1,2-Dichlorobenzene	50.0	612066.000	1.167	100	1357705.00	1.160	200	2864478.00	1.193
1,2-Dichloroethane	50.0	358188.000	0.3349	100	790654.000	0.3371	200	1664453.00	0.3398
1,3,5-Trimethylbenzene	50.0	1193900.00	2.277	100	2629745.00	2.246	200	5736993.00	2.388
1,3-Dichlorobenzene	50.0	708815.000	1.352	100	1545233.00	1.320	200	3318406.00	1.382
1,3-Dichloropropane	50.0	295842.000	0.3533	100	673899.000	0.3550	200	1478587.00	0.3590
1,4-Dichlorobenzene	50.0	707755.000	1.350	100	1559503.00	1.332	200	3317538.00	1.381
2,2-Dichloropropane	50.0	523567.000	0.4896	100	1143863.00	0.4876	200	2521831.00	0.5149
2-Butanone	50.0	53918.0000	0.05040	100	135064.000	0.05760	200	286860.000	0.05860
2-Chloroethyl Vinyl Ether	50.0	98131.0000	0.09180	100	232842.000	0.09930	200	500470.000	0.1022
2-Chlorotoluene	50.0	985774.000	1.880	100	2122388.00	1.813	200	4976640.00	2.072
2-Hexanone	50.0	82105.0000	0.09800	100	199432.000	0.1050	200	422100.000	0.1025
4-Chlorotoluene	50.0	1026331.00	1.957	100	2255698.00	1.927	200	4679809.00	1.948
4-Methyl-2-Pentanone	50.0	45185.0000	0.04230	100	109653.000	0.04670	200	234673.000	0.04790
Acetone	50.0	41367.0000	0.03870	100	97380.0000	0.04150	200	201840.000	0.04120
Benzene	50.0	960493.000	0.8981	100	2084163.00	0.8885	200	4371346.00	0.8925
Bromobenzene	50.0	331804.000	0.6327	100	747769.000	0.6387	200	1628235.00	0.6778
Bromochloromethane	50.0	164660.000	0.1540	100	365362.000	0.1558	200	767885.000	0.1568
Bromodichloromethane	50.0	375918.000	0.3515	100	860389.000	0.3668	200	1901141.00	0.3882
Bromomethane	50.0	211665.000	0.1979	100	515947.000	0.2199	200	1183663.00	0.2417
Carbon Disulfide	50.0	867958.000	0.8116	100	1884335.00	0.8033	200	3976950.00	0.8120
Carbon Tetrachloride	50.0	500167.000	0.4677	100	1093700.00	0.4662	200	2346675.00	0.4791

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	432050.000	0.05370
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	659321.000	0.1063
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	350109.000	0.04350
Acetone	300	286077.000	0.03550
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-02			WG265645-03			WG265645-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	3299.00000	0.1715
Dibromochloromethane	NA	NA	NA	0.400	1810.00000	0.3215	1.00	4328.00000	0.2900
Dibromomethane	NA	NA	NA	0.400	724.000000	0.09940	1.00	2445.00000	0.1271
Dichlorodifluoromethane	NA	NA	NA	0.400	4325.00000	0.5938	1.00	7202.00000	0.3744
Hexachlorobutadiene	NA	NA	NA	0.400	1529.00000	0.4518	1.00	4367.00000	0.4772
Isopropylbenzene	NA	NA	NA	0.400	8487.00000	1.507	1.00	22171.0000	1.486
Methylene Chloride	NA	NA	NA	0.400	4103.00000	0.5633	1.00	6741.00000	0.3505
Naphthalene	NA	NA	NA	0.400	4997.00000	1.477	1.00	12111.0000	1.323
Styrene	NA	NA	NA	0.400	5610.00000	0.9964	1.00	14296.0000	0.9579
Tetrachloroethene	NA	NA	NA	0.400	2100.00000	0.3730	1.00	5342.00000	0.3580
Trichloroethene	NA	NA	NA	0.400	1815.00000	0.2492	1.00	5400.00000	0.2807
Trichlorofluoromethane	NA	NA	NA	0.400	4745.00000	0.6515	1.00	8814.00000	0.4582
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	1813.00000	0.2489	1.00	5153.00000	0.2679
cis-1,3-Dichloropropene	NA	NA	NA	0.400	2714.00000	0.3726	1.00	6059.00000	0.3150
m-,p-Xylene	NA	NA	NA	0.800	8066.00000	0.7163	2.00	18662.0000	0.6253
n-Butylbenzene	NA	NA	NA	0.400	7803.00000	2.306	1.00	20471.0000	2.237
n-Propylbenzene	NA	NA	NA	0.400	10435.0000	3.084	1.00	27752.0000	3.032
o-Xylene	NA	NA	NA	0.400	3555.00000	0.6314	1.00	8924.00000	0.5980
p-Isopropyltoluene	NA	NA	NA	0.400	7943.00000	2.347	1.00	22028.0000	2.407
sec-Butylbenzene	NA	NA	NA	0.400	9016.00000	2.664	1.00	25195.0000	2.753
tert-Butylbenzene	NA	NA	NA	0.400	1284.00000	0.3794	1.00	4340.00000	0.4742
trans-1,2-Dichloroethene	NA	NA	NA	0.400	1777.00000	0.2440	1.00	5097.00000	0.2650
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	5941.00000	0.3981

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Instrument ID: HPMS6
Analytical Method: 8260B
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-05			WG265645-06			WG265645-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	7789.00000	0.2026	5.00	22642.0000	0.2133	20.0	91610.0000	0.2307
Dibromochloromethane	2.00	7445.00000	0.2530	5.00	21763.0000	0.2704	20.0	92006.0000	0.2926
Dibromomethane	2.00	4694.00000	0.1221	5.00	12425.0000	0.1170	20.0	49657.0000	0.1251
Dichlorodifluoromethane	2.00	21004.0000	0.5462	5.00	56212.0000	0.5295	20.0	219381.000	0.5525
Hexachlorobutadiene	2.00	8075.00000	0.4532	5.00	24415.0000	0.5066	20.0	89412.0000	0.4638
Isopropylbenzene	2.00	43233.0000	1.469	5.00	122545.000	1.523	20.0	479768.000	1.526
Methylene Chloride	2.00	10542.0000	0.2742	5.00	26678.0000	0.2513	20.0	98113.0000	0.2471
Naphthalene	2.00	19332.0000	1.085	5.00	60058.0000	1.246	20.0	247413.000	1.283
Styrene	2.00	26081.0000	0.8862	5.00	75679.0000	0.9404	20.0	304623.000	0.9688
Tetrachloroethene	2.00	10974.0000	0.3729	5.00	29853.0000	0.3710	20.0	112274.000	0.3571
Trichloroethene	2.00	10215.0000	0.2656	5.00	27749.0000	0.2614	20.0	104837.000	0.2640
Trichlorofluoromethane	2.00	27247.0000	0.7086	5.00	69781.0000	0.6573	20.0	277361.000	0.6986
Vinyl Acetate	NA	NA	NA	5.00	23364.0000	0.2201	20.0	102097.000	0.2571
cis-1,2-Dichloroethene	2.00	9892.00000	0.2572	5.00	28186.0000	0.2655	20.0	109828.000	0.2766
cis-1,3-Dichloropropene	2.00	12286.0000	0.3195	5.00	35558.0000	0.3349	20.0	147407.000	0.3713
m-,p-Xylene	4.00	36334.0000	0.6173	10.0	100239.000	0.6228	40.0	384460.000	0.6113
n-Butylbenzene	2.00	39489.0000	2.216	5.00	119333.000	2.476	20.0	458107.000	2.376
n-Propylbenzene	2.00	54063.0000	3.034	5.00	157968.000	3.278	20.0	608623.000	3.157
o-Xylene	2.00	16557.0000	0.5626	5.00	46128.0000	0.5732	20.0	183219.000	0.5827
p-Isopropyltoluene	2.00	42408.0000	2.380	5.00	124627.000	2.586	20.0	491048.000	2.547
sec-Butylbenzene	2.00	48661.0000	2.731	5.00	141188.000	2.930	20.0	546766.000	2.836
tert-Butylbenzene	2.00	8385.00000	0.4706	5.00	24405.0000	0.5064	20.0	91382.0000	0.4740
trans-1,2-Dichloroethene	2.00	10372.0000	0.2697	5.00	27990.0000	0.2637	20.0	107510.000	0.2708
trans-1,3-Dichloropropene	2.00	11823.0000	0.4017	5.00	30727.0000	0.3818	20.0	132422.000	0.4211

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-08			WG265645-09			WG265645-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	240579.000	0.2250	100	527865.000	0.2250	200	1122394.00	0.2292
Dibromochloromethane	50.0	254860.000	0.3043	100	601517.000	0.3168	200	1336042.00	0.3244
Dibromomethane	50.0	129741.000	0.1213	100	295601.000	0.1260	200	632045.000	0.1291
Dichlorodifluoromethane	50.0	542701.000	0.5075	100	1133606.00	0.4833	200	2453204.00	0.5009
Hexachlorobutadiene	50.0	251673.000	0.4799	100	580603.000	0.4960	200	1294533.00	0.5389
Isopropylbenzene	50.0	1319267.00	1.575	100	2918625.00	1.537	200	6433552.00	1.562
Methylene Chloride	50.0	259872.000	0.2430	100	582192.000	0.2482	200	1275977.00	0.2605
Naphthalene	50.0	650008.000	1.239	100	1508691.00	1.289	200	3084342.00	1.284
Styrene	50.0	836376.000	0.9987	100	1865365.00	0.9825	200	4198676.00	1.019
Tetrachloroethene	50.0	305565.000	0.3649	100	676196.000	0.3562	200	1460492.00	0.3546
Trichloroethene	50.0	287224.000	0.2686	100	647236.000	0.2759	200	1438622.00	0.2937
Trichlorofluoromethane	50.0	713375.000	0.6670	100	1531225.00	0.6528	200	3327067.00	0.6793
Vinyl Acetate	50.0	282599.000	0.2642	100	629224.000	0.2682	200	1272480.00	0.2598
cis-1,2-Dichloroethene	50.0	293965.000	0.2749	100	650595.000	0.2773	200	1406107.00	0.2871
cis-1,3-Dichloropropene	50.0	396320.000	0.3706	100	904621.000	0.3856	200	1969577.00	0.4022
m-,p-Xylene	100	1039051.00	0.6203	200	2334548.00	0.6148	400	5381520.00	0.6532
n-Butylbenzene	50.0	1253900.00	2.391	100	2731310.00	2.333	200	5828322.00	2.426
n-Propylbenzene	50.0	1654899.00	3.156	100	3558820.00	3.040	200	7673598.00	3.195
o-Xylene	50.0	504335.000	0.6022	100	1123368.00	0.5917	200	2529529.00	0.6141
p-Isopropyltoluene	50.0	1355096.00	2.584	100	2981446.00	2.547	200	6414192.00	2.670
sec-Butylbenzene	50.0	1520147.00	2.899	100	3281669.00	2.803	200	7080671.00	2.948
tert-Butylbenzene	50.0	251006.000	0.4786	100	556240.000	0.4751	200	1228553.00	0.5115
trans-1,2-Dichloroethene	50.0	293145.000	0.2741	100	644502.000	0.2747	200	1405585.00	0.2870
trans-1,3-Dichloropropene	50.0	355994.000	0.4251	100	814024.000	0.4288	200	1774773.00	0.4309

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

Login Number: L08030345
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1048086
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08030345 Run Date: 03/07/2008 Sample ID: WG264928-12
Instrument ID: HPMS10 Run Time: 16:15 Method: 8260B
File ID: 10M62895 Analyst: CMS QC Key: STD
ICal Workgroup: WG264928 Cal ID: HPMS10 - 06-MAR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	21.4	ug/L	0.484	6.90	30	
1,1-Dichloroethene	CCC	20.0	22.8	ug/L	0.253	13.9	30	
1,2-Dichloropropane	CCC	20.0	21.6	ug/L	0.282	8.00	30	
Ethylbenzene	CCC	20.0	22.6	ug/L	0.485	13.0	30	
Toluene	CCC	20.0	21.4	ug/L	1.29	7.00	30	
Vinyl Chloride	CCC	20.0	20.6	ug/L	0.180	3.00	30	
Bromoform	SPCC	20.0	18.5	ug/L	0.123	7.40	30	
Chlorobenzene	SPCC	20.0	21.2	ug/L	0.867	6.00	30	
Chloromethane	SPCC	20.0	20.4	ug/L	0.256	1.90	30	
1,1-Dichloroethane	SPCC	20.0	21.2	ug/L	0.532	6.20	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	22.3	ug/L	0.361	11.6	30	
Acetone		20.0	21.2	ug/L	0.0449	6.00	30	
Benzene		20.0	21.9	ug/L	1.06	9.40	30	
Bromobenzene		20.0	21.2	ug/L	0.668	6.00	30	
Bromochloromethane		20.0	22.2	ug/L	0.129	10.9	30	
Bromodichloromethane		20.0	22.8	ug/L	0.331	14.1	30	
Bromomethane		20.0	20.9	ug/L	0.248	4.40	30	
2-Butanone		20.0	23.0	ug/L	0.0694	15.1	30	
n-Butylbenzene		20.0	22.7	ug/L	1.96	13.6	30	
sec-Butylbenzene		20.0	22.5	ug/L	2.59	12.7	30	
tert-Butylbenzene		20.0	22.7	ug/L	0.498	13.5	30	
Carbon Disulfide		20.0	20.1	ug/L	0.744	0.700	30	
Carbon Tetrachloride		20.0	20.4	ug/L	0.356	1.80	30	
Dibromochloromethane		20.0	19.4	ug/L	0.235	3.20	30	
Chloroethane		20.0	21.2	ug/L	0.222	6.20	30	
2-Chloroethyl Vinyl Ether		20.0	20.5	ug/L	0.107	2.60	30	
2-Chlorotoluene		20.0	22.4	ug/L	1.97	11.8	30	
4-Chlorotoluene		20.0	20.7	ug/L	1.71	3.30	30	
1,2-Dibromo-3-Chloropropane		20.0	20.3	ug/L	0.0633	1.50	30	
1,2-Dibromoethane		20.0	21.8	ug/L	0.211	9.20	30	
Dibromomethane		20.0	22.2	ug/L	0.128	11.2	30	
1,2-Dichlorobenzene		20.0	21.0	ug/L	1.13	5.00	30	
1,3-Dichlorobenzene		20.0	21.0	ug/L	1.27	5.20	30	
1,4-Dichlorobenzene		20.0	20.3	ug/L	1.27	1.40	30	
Dichlorodifluoromethane		20.0	26.4	ug/L	0.396	31.9	30	*
1,2-Dichloroethane		20.0	21.3	ug/L	0.350	6.30	30	
cis-1,2-Dichloroethene		20.0	22.2	ug/L	0.304	11.2	30	
trans-1,2-Dichloroethene		20.0	21.5	ug/L	0.277	7.50	30	
1,3-Dichloropropane		20.0	22.1	ug/L	0.378	10.4	30	
2,2-Dichloropropane		20.0	23.3	ug/L	0.435	16.4	30	
cis-1,3-Dichloropropene		20.0	21.5	ug/L	0.386	7.40	30	
trans-1,3-Dichloropropene		20.0	20.2	ug/L	0.364	1.00	30	

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KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08030345 Run Date: 03/07/2008 Sample ID: WG264928-12
Instrument ID: HPMS10 Run Time: 16:15 Method: 8260B
File ID: 10M62895 Analyst: CMS QC Key: STD
ICal Workgroup: WG264928 Cal ID: HPMS10 - 06-MAR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	22.5	ug/L	0.374	12.4	30	
2-Hexanone		20.0	20.5	ug/L	0.0988	2.70	30	
Hexachlorobutadiene		20.0	21.9	ug/L	0.311	9.50	30	
Isopropylbenzene		20.0	20.6	ug/L	1.28	3.10	30	
p-Isopropyltoluene		20.0	21.4	ug/L	2.15	7.20	30	
4-Methyl-2-Pentanone		20.0	20.4	ug/L	0.0563	2.10	30	
Methylene Chloride		20.0	21.5	ug/L	0.271	7.60	30	
Naphthalene		20.0	21.1	ug/L	1.13	5.60	30	
n-Propylbenzene		20.0	22.4	ug/L	2.94	12.0	30	
Styrene		20.0	22.5	ug/L	0.931	12.5	30	
1,1,1,2-Tetrachloroethane		20.0	22.5	ug/L	0.307	12.6	30	
Tetrachloroethene		20.0	22.6	ug/L	0.291	12.8	30	
1,2,3-Trichlorobenzene		20.0	21.0	ug/L	0.616	4.90	30	
1,2,4-Trichlorobenzene		20.0	21.6	ug/L	0.764	7.80	30	
1,1,1-Trichloroethane		20.0	22.6	ug/L	0.429	13.1	30	
1,1,2-Trichloroethane		20.0	21.1	ug/L	0.206	5.30	30	
Trichloroethene		20.0	22.0	ug/L	0.296	9.80	30	
Trichlorofluoromethane		20.0	18.0	ug/L	0.415	9.80	30	
1,2,3-Trichloropropane		20.0	22.4	ug/L	0.117	12.0	30	
1,2,4-Trimethylbenzene		20.0	22.1	ug/L	2.16	10.4	30	
1,3,5-Trimethylbenzene		20.0	22.1	ug/L	2.10	10.7	30	
Vinyl Acetate		20.0	16.3	ug/L	0.300	18.6	40	
o-Xylene		20.0	21.9	ug/L	0.569	9.50	30	
m-,p-Xylene		40.0	44.4	ug/L	0.584	11.0	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08030345 Run Date: 03/17/2008 Sample ID: WG265645-12
Instrument ID: HPMS6 Run Time: 16:49 Method: 8260B
File ID: 6M73528 Analyst: CMS QC Key: STD
ICal Workgroup: WG265645 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	19.0	ug/L	0.505	5.00	30	
1,1-Dichloroethene	CCC	20.0	19.8	ug/L	0.443	1.00	30	
1,2-Dichloropropane	CCC	20.0	18.7	ug/L	0.210	6.30	30	
Ethylbenzene	CCC	20.0	19.8	ug/L	0.489	0.800	30	
Toluene	CCC	20.0	20.0	ug/L	1.28	0	30	
Vinyl Chloride	CCC	20.0	17.1	ug/L	0.314	14.5	30	
Bromoform	SPCC	20.0	17.7	ug/L	0.158	11.3	30	
Chlorobenzene	SPCC	20.0	18.8	ug/L	0.897	6.10	30	
Chloromethane	SPCC	20.0	18.0	ug/L	0.358	10.2	30	
1,1-Dichloroethane	SPCC	20.0	19.0	ug/L	0.487	5.00	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	19.2	ug/L	0.335	4.00	30	
Acetone		20.0	22.1	ug/L	0.0424	10.5	30	
Benzene		20.0	19.4	ug/L	0.900	2.80	30	
Bromobenzene		20.0	19.5	ug/L	0.649	2.50	30	
Bromochloromethane		20.0	19.1	ug/L	0.146	4.30	30	
Bromodichloromethane		20.0	19.3	ug/L	0.348	3.70	30	
Bromomethane		20.0	20.7	ug/L	0.194	3.60	30	
2-Butanone		20.0	20.6	ug/L	0.0539	3.10	30	
n-Butylbenzene		20.0	21.2	ug/L	2.49	6.00	30	
sec-Butylbenzene		20.0	21.2	ug/L	2.98	5.80	30	
tert-Butylbenzene		20.0	20.7	ug/L	0.489	3.70	30	
Carbon Disulfide		20.0	19.5	ug/L	0.767	2.40	30	
Carbon Tetrachloride		20.0	20.1	ug/L	0.443	0.600	30	
Dibromochloromethane		20.0	19.5	ug/L	0.289	2.60	30	
Chloroethane		20.0	21.1	ug/L	0.226	5.40	30	
2-Chloroethyl Vinyl Ether		20.0	19.2	ug/L	0.0849	3.80	30	
2-Chlorotoluene		20.0	18.7	ug/L	1.97	6.40	30	
4-Chlorotoluene		20.0	19.8	ug/L	2.00	1.00	30	
1,2-Dibromo-3-Chloropropane		20.0	19.1	ug/L	0.0616	4.50	30	
1,2-Dibromoethane		20.0	19.1	ug/L	0.196	4.40	30	
Dibromomethane		20.0	19.4	ug/L	0.117	3.10	30	
1,2-Dichlorobenzene		20.0	19.3	ug/L	1.18	3.40	30	
1,3-Dichlorobenzene		20.0	18.8	ug/L	1.35	5.80	30	
1,4-Dichlorobenzene		20.0	20.3	ug/L	1.35	1.50	30	
Dichlorodifluoromethane		20.0	19.8	ug/L	0.507	0.800	30	
1,2-Dichloroethane		20.0	17.7	ug/L	0.315	11.5	30	
cis-1,2-Dichloroethene		20.0	20.6	ug/L	0.278	3.00	30	
trans-1,2-Dichloroethene		20.0	19.4	ug/L	0.260	3.10	30	
1,3-Dichloropropane		20.0	19.1	ug/L	0.352	4.70	30	
2,2-Dichloropropane		20.0	19.5	ug/L	0.458	2.30	30	
cis-1,3-Dichloropropene		20.0	18.9	ug/L	0.339	5.70	30	
trans-1,3-Dichloropropene		20.0	18.0	ug/L	0.372	9.80	30	

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KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08030345 Run Date: 03/17/2008 Sample ID: WG265645-12
Instrument ID: HPMS6 Run Time: 16:49 Method: 8260B
File ID: 6M73528 Analyst: CMS QC Key: STD
ICal Workgroup: WG265645 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	19.8	ug/L	0.350	1.00	30	
2-Hexanone		20.0	18.6	ug/L	0.0900	7.00	30	
Hexachlorobutadiene		20.0	20.4	ug/L	0.492	1.80	30	
Isopropylbenzene		20.0	18.9	ug/L	1.44	5.40	30	
p-Isopropyltoluene		20.0	20.4	ug/L	2.56	2.00	30	
4-Methyl-2-Pentanone		20.0	19.7	ug/L	0.0378	1.40	30	
Methylene Chloride		20.0	20.3	ug/L	0.246	1.50	30	
Naphthalene		20.0	19.5	ug/L	1.24	2.70	30	
n-Propylbenzene		20.0	20.7	ug/L	3.24	3.70	30	
Styrene		20.0	20.7	ug/L	1.00	3.40	30	
1,1,1,2-Tetrachloroethane		20.0	18.6	ug/L	0.334	7.00	30	
Tetrachloroethene		20.0	20.3	ug/L	0.368	1.30	30	
1,2,3-Trichlorobenzene		20.0	19.2	ug/L	0.681	3.80	30	
1,2,4-Trichlorobenzene		20.0	19.4	ug/L	0.854	2.90	30	
1,1,1-Trichloroethane		20.0	19.4	ug/L	0.478	2.80	30	
1,1,2-Trichloroethane		20.0	19.2	ug/L	0.199	3.80	30	
Trichloroethene		20.0	19.7	ug/L	0.265	1.70	30	
Trichlorofluoromethane		20.0	16.6	ug/L	0.536	17.1	30	
1,2,3-Trichloropropane		20.0	19.8	ug/L	0.115	0.800	30	
1,2,4-Trimethylbenzene		20.0	20.0	ug/L	2.47	0.200	30	
1,3,5-Trimethylbenzene		20.0	20.6	ug/L	2.35	2.90	30	
Vinyl Acetate		20.0	23.3	ug/L	0.296	16.5	40	
o-Xylene		20.0	20.4	ug/L	0.606	2.00	30	
m-,p-Xylene		40.0	39.8	ug/L	0.632	0.500	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1048087
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

Login Number: L08030345 Run Date: 03/22/2008 Sample ID: WG266192-02
Instrument ID: HPMS10 Run Time: 11:40 Method: 8260B
File ID: 10M63266 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG266193 Cal ID: HPMS10 - 06-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	48.9	ug/L	0.443	2.23	20	
1,1-Dichloroethene	CCC	50.0	52.1	ug/L	0.231	4.28	20	
1,2-Dichloropropane	CCC	50.0	45.0	ug/L	0.235	9.93	20	
Ethylbenzene	CCC	50.0	54.8	ug/L	0.470	9.56	20	
Toluene	CCC	50.0	54.6	ug/L	1.32	9.17	20	
Vinyl Chloride	CCC	50.0	45.8	ug/L	0.152	8.33	20	
Bromoform	SPCC	50.0	53.6	ug/L	0.148	7.11	40	
Chlorobenzene	SPCC	50.0	52.0	ug/L	0.851	3.97	40	
Chloromethane	SPCC	50.0	40.8	ug/L	0.205	18.4	40	
1,1-Dichloroethane	SPCC	50.0	47.9	ug/L	0.481	4.16	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	57.4	ug/L	0.371	14.7	40	
Acetone		50.0	43.5	ug/L	0.0369	12.9	40	
Benzene		50.0	46.3	ug/L	0.901	7.38	40	
Bromobenzene		50.0	54.3	ug/L	0.684	8.57	40	
Bromochloromethane		50.0	45.9	ug/L	0.107	8.11	40	
Bromodichloromethane		50.0	51.1	ug/L	0.296	2.29	40	
Bromomethane		50.0	42.5	ug/L	0.202	14.9	40	
2-Butanone		50.0	39.3	ug/L	0.0474	21.4	40	
n-Butylbenzene		50.0	62.7	ug/L	2.17	25.4	40	
sec-Butylbenzene		50.0	60.8	ug/L	2.80	21.7	40	
tert-Butylbenzene		50.0	58.7	ug/L	0.516	17.5	40	
Carbon Disulfide		50.0	49.2	ug/L	0.728	1.53	40	
Carbon Tetrachloride		50.0	47.7	ug/L	0.335	4.69	40	
Dibromochloromethane		50.0	53.4	ug/L	0.262	6.76	40	
Chloroethane		50.0	44.6	ug/L	0.187	10.8	40	
2-Chloroethyl Vinyl Ether		50.0	26.0	ug/L	0.0543	47.9	40	*
2-Chlorotoluene		50.0	60.7	ug/L	2.13	21.3	40	
4-Chlorotoluene		50.0	56.7	ug/L	1.87	13.4	40	
1,2-Dibromo-3-Chloropropane		50.0	56.1	ug/L	0.0700	12.3	40	
1,2-Dibromoethane		50.0	53.0	ug/L	0.204	5.91	40	
Dibromomethane		50.0	47.4	ug/L	0.109	5.13	40	
1,2-Dichlorobenzene		50.0	53.5	ug/L	1.15	6.99	40	
1,3-Dichlorobenzene		50.0	55.2	ug/L	1.34	10.3	40	
1,4-Dichlorobenzene		50.0	53.1	ug/L	1.33	6.28	40	
Dichlorodifluoromethane		50.0	54.3	ug/L	0.327	8.68	40	
1,2-Dichloroethane		50.0	47.5	ug/L	0.313	4.92	40	
cis-1,2-Dichloroethene		50.0	47.6	ug/L	0.260	4.80	40	
trans-1,2-Dichloroethene		50.0	49.4	ug/L	0.254	1.23	40	
1,3-Dichloropropane		50.0	54.0	ug/L	0.370	8.00	40	
2,2-Dichloropropane		50.0	52.4	ug/L	0.391	4.78	40	
cis-1,3-Dichloropropene		50.0	46.8	ug/L	0.337	6.34	40	
trans-1,3-Dichloropropene		50.0	56.9	ug/L	0.410	13.8	40	

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KEMRON ENVIRONMENTAL SERVICES

Login Number: L08030345 Run Date: 03/22/2008 Sample ID: WG266192-02
Instrument ID: HPMS10 Run Time: 11:40 Method: 8260B
File ID: 10M63266 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG266193 Cal ID: HPMS10 - 06-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	51.0	ug/L	0.339	2.00	40	
2-Hexanone		50.0	48.4	ug/L	0.0932	3.14	40	
Hexachlorobutadiene		50.0	57.3	ug/L	0.325	14.6	40	
Isopropylbenzene		50.0	56.1	ug/L	1.39	12.3	40	
p-Isopropyltoluene		50.0	58.6	ug/L	2.35	17.2	40	
4-Methyl-2-Pentanone		50.0	38.0	ug/L	0.0420	23.9	40	
Methylene Chloride		50.0	46.0	ug/L	0.226	7.97	40	
Naphthalene		50.0	52.7	ug/L	1.12	5.34	40	
n-Propylbenzene		50.0	61.9	ug/L	3.25	23.8	40	
Styrene		50.0	55.6	ug/L	0.920	11.2	40	
1,1,1,2-Tetrachloroethane		50.0	56.9	ug/L	0.310	13.7	40	
Tetrachloroethene		50.0	56.1	ug/L	0.289	12.2	40	
1,2,3-Trichlorobenzene		50.0	52.2	ug/L	0.612	4.31	40	
1,2,4-Trichlorobenzene		50.0	54.3	ug/L	0.770	8.56	40	
1,1,1-Trichloroethane		50.0	52.6	ug/L	0.399	5.27	40	
1,1,2-Trichloroethane		50.0	52.5	ug/L	0.205	5.01	40	
Trichloroethene		50.0	45.8	ug/L	0.247	8.38	40	
Trichlorofluoromethane		50.0	50.9	ug/L	0.469	1.88	40	
1,2,3-Trichloropropane		50.0	56.7	ug/L	0.118	13.4	40	
1,2,4-Trimethylbenzene		50.0	58.7	ug/L	2.30	17.5	40	
1,3,5-Trimethylbenzene		50.0	59.0	ug/L	2.24	18.1	40	
Vinyl Acetate		50.0	27.0	ug/L	0.199	46.1	40	*
o-Xylene		50.0	53.7	ug/L	0.558	7.39	40	
m-,p-Xylene		100	108	ug/L	0.566	7.65	40	
1,2-Dichloroethene		100	97.0	ug/L	0.257	3.01	40	
Xylenes		150	161	ug/L	0.562	7.56	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
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Login Number: L08030345 Run Date: 03/21/2008 Sample ID: WG266110-02
Instrument ID: HPMS6 Run Time: 09:43 Method: 8260B
File ID: 6M73622 Analyst: CMS/ASP QC Key: STD
Workgroup (AAB#): WG266112 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.1	ug/L	0.543	2.13	20	
1,1-Dichloroethene	CCC	50.0	58.3	ug/L	0.521	16.6	20	
1,2-Dichloropropane	CCC	50.0	48.4	ug/L	0.217	3.24	20	
Ethylbenzene	CCC	50.0	49.9	ug/L	0.492	0.247	20	
Toluene	CCC	50.0	49.0	ug/L	1.25	2.01	20	
Vinyl Chloride	CCC	50.0	51.2	ug/L	0.346	2.49	20	
Bromoform	SPCC	50.0	49.1	ug/L	0.182	1.90	40	
Chlorobenzene	SPCC	50.0	46.0	ug/L	0.879	8.04	40	
Chloromethane	SPCC	50.0	42.6	ug/L	0.340	14.8	40	
1,1-Dichloroethane	SPCC	50.0	52.4	ug/L	0.537	4.77	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	43.4	ug/L	0.303	13.1	40	
Acetone		50.0	51.6	ug/L	0.0396	3.17	40	
Benzene		50.0	50.0	ug/L	0.925	0.0872	40	
Bromobenzene		50.0	46.1	ug/L	0.614	7.84	40	
Bromochloromethane		50.0	50.5	ug/L	0.154	1.04	40	
Bromodichloromethane		50.0	50.1	ug/L	0.362	0.179	40	
Bromomethane		50.0	54.4	ug/L	0.222	8.81	40	
2-Butanone		50.0	48.0	ug/L	0.0502	4.02	40	
n-Butylbenzene		50.0	52.6	ug/L	2.47	5.20	40	
sec-Butylbenzene		50.0	52.4	ug/L	2.96	4.80	40	
tert-Butylbenzene		50.0	51.6	ug/L	0.486	3.20	40	
Carbon Disulfide		50.0	52.9	ug/L	0.832	5.78	40	
Carbon Tetrachloride		50.0	58.6	ug/L	0.516	17.2	40	
Dibromochloromethane		50.0	51.6	ug/L	0.306	3.16	40	
Chloroethane		50.0	55.0	ug/L	0.235	9.94	40	
2-Chloroethyl Vinyl Ether		50.0	48.6	ug/L	0.0857	2.89	40	
2-Chlorotoluene		50.0	47.8	ug/L	2.01	4.49	40	
4-Chlorotoluene		50.0	46.5	ug/L	1.88	7.03	40	
1,2-Dibromo-3-Chloropropane		50.0	46.5	ug/L	0.0624	6.98	40	
1,2-Dibromoethane		50.0	47.4	ug/L	0.195	5.15	40	
Dibromomethane		50.0	49.8	ug/L	0.120	0.365	40	
1,2-Dichlorobenzene		50.0	47.8	ug/L	1.16	4.35	40	
1,3-Dichlorobenzene		50.0	47.1	ug/L	1.35	5.84	40	
1,4-Dichlorobenzene		50.0	51.0	ug/L	1.36	2.08	40	
Dichlorodifluoromethane		50.0	47.4	ug/L	0.484	5.21	40	
1,2-Dichloroethane		50.0	49.4	ug/L	0.351	1.24	40	
cis-1,2-Dichloroethene		50.0	53.5	ug/L	0.288	6.93	40	
trans-1,2-Dichloroethene		50.0	53.9	ug/L	0.289	7.75	40	
1,3-Dichloropropane		50.0	45.8	ug/L	0.339	8.32	40	
2,2-Dichloropropane		50.0	56.4	ug/L	0.529	12.7	40	
cis-1,3-Dichloropropene		50.0	50.8	ug/L	0.365	1.64	40	
trans-1,3-Dichloropropene		50.0	50.9	ug/L	0.420	1.86	40	

CCV - Modified 03/05/2008
PDF File ID: 1048089
Report generated 03/26/2008 09:15

KEMRON ENVIRONMENTAL SERVICES

Login Number: L08030345 Run Date: 03/21/2008 Sample ID: WG266110-02
Instrument ID: HPMS6 Run Time: 09:43 Method: 8260B
File ID: 6M73622 Analyst: CMS/ASP QC Key: STD
Workgroup (AAB#): WG266112 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	53.7	ug/L	0.380	7.37	40	
2-Hexanone		50.0	44.4	ug/L	0.0859	11.3	40	
Hexachlorobutadiene		50.0	53.1	ug/L	0.514	6.22	40	
Isopropylbenzene		50.0	53.9	ug/L	1.64	7.82	40	
p-Isopropyltoluene		50.0	53.5	ug/L	2.68	6.99	40	
4-Methyl-2-Pentanone		50.0	38.9	ug/L	0.0353	22.2	40	
Methylene Chloride		50.0	51.3	ug/L	0.249	2.50	40	
Naphthalene		50.0	46.1	ug/L	1.18	7.86	40	
n-Propylbenzene		50.0	50.4	ug/L	3.15	0.817	40	
Styrene		50.0	52.1	ug/L	1.01	4.14	40	
1,1,1,2-Tetrachloroethane		50.0	49.7	ug/L	0.357	0.586	40	
Tetrachloroethene		50.0	50.6	ug/L	0.368	1.16	40	
1,2,3-Trichlorobenzene		50.0	45.9	ug/L	0.649	8.25	40	
1,2,4-Trichlorobenzene		50.0	47.1	ug/L	0.827	5.90	40	
1,1,1-Trichloroethane		50.0	54.7	ug/L	0.538	9.32	40	
1,1,2-Trichloroethane		50.0	45.7	ug/L	0.189	8.64	40	
Trichloroethene		50.0	52.5	ug/L	0.283	4.98	40	
Trichlorofluoromethane		50.0	55.2	ug/L	0.714	10.4	40	
1,2,3-Trichloropropane		50.0	46.9	ug/L	0.109	6.16	40	
1,2,4-Trimethylbenzene		50.0	49.4	ug/L	2.43	1.17	40	
1,3,5-Trimethylbenzene		50.0	50.8	ug/L	2.32	1.68	40	
Vinyl Acetate		50.0	39.4	ug/L	0.200	21.2	40	
o-Xylene		50.0	51.9	ug/L	0.617	3.71	40	
m-,p-Xylene		100	101	ug/L	0.644	1.38	40	
1,2-Dichloroethene		100	107	ug/L	0.289	7.34	40	
Xylenes		150	153	ug/L	0.630	2.16	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1048089
Report generated 03/26/2008 09:15

Login Number:L08030345
Instrument ID:HPMS6
Workgroup (AAB#):WG266112

CCV Number:WG266110-02
CAL ID: HPMS6-17-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266110-02	NA	NA	225233	346135	441961
Upper Limit	NA	NA	450466	692270	883922
Lower Limit	NA	NA	112617	173068	220981
L08030345-01	1.00	01	113185	184653	235947
L08030345-03	1.00	01	161722	268826	343065
WG266112-01	1.00	01	164121	276691	358746
WG266112-02	1.00	01	206647	316123	398031
WG266112-03	1.00	01	208603	328364	406397

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1048090
Report generated 03/26/2008 09:15

Login Number: L08030345
Instrument ID: HPMS10
Workgroup (AAB#): WG266193

CCV Number: WG266192-02
CAL ID: HPMS10-06-MAR-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266192-02	NA	NA	355357	661148	952544
Upper Limit	NA	NA	710714	1322296	1905088
Lower Limit	NA	NA	177679	330574	476272
L08030345-02	1.00	01	338700	649990	922851
WG266193-01	1.00	01	332929	634610	900987
WG266193-02	1.00	01	351447	651913	907007

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1048090
Report generated 03/26/2008 09:15

Login Number:L08030345
Instrument ID:HPMS6
Workgroup (AAB#):WG266112

CCV Number:WG266110-02
CAL ID: HPMS6-17-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266110-02	NA	NA	18.86	15.31	10.83
Upper Limit	NA	NA	19.36	15.81	11.33
Lower Limit	NA	NA	18.36	14.81	10.33
L08030345-01	1.00	01	18.86	15.3	10.83
L08030345-03	1.00	01	18.86	15.3	10.83
WG266112-01	1.00	01	18.86	15.31	10.83
WG266112-02	1.00	01	18.86	15.3	10.83
WG266112-03	1.00	01	18.86	15.3	10.82

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1048092
Report generated 03/26/2008 09:15

Login Number:L08030345
Instrument ID:HPMS10
Workgroup (AAB#):WG266193

CCV Number:WG266192-02
CAL ID: HPMS10-06-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266192-02	NA	NA	17.73	14.72	10.84
Upper Limit	NA	NA	18.23	15.22	11.34
Lower Limit	NA	NA	17.23	14.22	10.34
L08030345-02	1.00	01	17.73	14.71	10.85
WG266193-01	1.00	01	17.73	14.71	10.85
WG266193-02	1.00	01	17.73	14.71	10.85

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1048092
Report generated 03/26/2008 09:15

3.0 Attachments

Kemron Environmental Services
Analyst Listing
March 26, 2008

AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG
ASP – AARON S. PETRIE	BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN
CAF – CHERYL A. FLOWERS	CAH – CHARLES A. HALL	CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS	CMS – CRYSTAL M. STEPHENS
CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL	DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS	DSF – DEBRA S. FREDERICK
ECL – ERIC C. LAWSON	ED – EMILY E. DECKER	ERE – ERIN R. ELDER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JAB – JUANITA A. BECKER	JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON
JKP – JACQUELINE K. PARSONS	JKT – JANE K. THOMPSON	JLK – JUSTEN L. KNOPP
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KJW – KATIE J. WIEFERICH
KRA – KATHY R. ALBERTSON	LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON	MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING
MMB – MAREN M. BEERY	MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON
NJB – NATALIE J. BOOTH	NPM – NATHANIEL P. MILLER	RAH – ROY A. HALSTEAD
RB – ROBERT BUCHANAN	REK – ROBERT E. KYER	RLF – RACHEL L. FRYE
RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL	SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE	TDH – TRICIA D. HUCK
TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS	VC – VICKI COLLIER

KEMRON Environmental Services, Inc.
List of Valid Qualifiers
March 26, 2008

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

KEMRON ENVIRONMENTAL SERVICES

Chain of Custody

NO. 10250

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: KEMRON Address: 156 STARLITE DR - MARIETTA, OH Contact: STEPHANIE MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX

Project No.: 117591.0009B830 Project Contact: KAY EVERETT Project Telephone No.: 713-996-4421

Point of Contact: KAY EVERETT Telephone No. 713-996-4421

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Analysis and Method Desired (Indicate separate containers)

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA							Remarks
1	LHSMW11-031508	3/15/08	9:30		✓	W	Groundwater, Site 46	2	2							
2	LHSMW09-031508	3/15/08	11:30		✓	W	Groundwater, Site 46	2	2							
3	TRIP BLANK				✓	W		2	2							
4																
5																
6																
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesley	3/15/08 12:30	Erin Elder 3-18-08	0925	7 DAY TAT
				FedEx Airbill No.:
		Laboratory		Sampler's Signature: Scott Beesley

TAT: _____ Standard _____ Rush Date _____ Seals Intact? _____ Y _____ N Received Good Condition _____ Y _____ N _____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

00080172

KEMRON Environmental Services

SAMPLE RECEIPT FORM

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	SHAW Longhorn
Workorder Number:	B 9190
Date Received:	3-14-08
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 0925
Opened by:	EC
IR Temp Gun:	( ) D (✓)
Logged by:	EC/JKT/SM L08030345

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
891	3	5204778155 1		7D TAT

Inspection Checklist	Y	N	NA	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)			✓	
Were VOA samples free of headspace (< 6mm)?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

~~Move~~ ~~samples the 13th~~ JKT 3/18/08

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services, Inc.

Internal Chain of Custody Report

Login: L08030345
Account: 2773
Project: 2773.025
Samples: 3
Due Date: 24-MAR-2008

Samplenum	Container ID	Products
L08030345-03	436698	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	18-MAR-2008 15:56	ERE	
2	ANALYZ	V1	ORG4	19-MAR-2008 09:58	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	18-MAR-2008 15:56	ERE	
2	ANALYZ	V1	ORG4	19-MAR-2008 09:58	KJW	RLK

Samplenum	Container ID	Products
L08030345-01	436696	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	18-MAR-2008 15:56	ERE	
2	ANALYZ	V1	ORG4	19-MAR-2008 09:58	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	18-MAR-2008 15:56	ERE	
2	ANALYZ	V1	ORG4	19-MAR-2008 09:58	KJW	RLK

Samplenum	Container ID	Products
L08030345-02	436697	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	18-MAR-2008 15:56	ERE	
2	ANALYZ	V1	ORG4	19-MAR-2008 09:58	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	18-MAR-2008 15:56	ERE	
2	ANALYZ	V1	ORG4	19-MAR-2008 09:58	KJW	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON ENVIRONMENTAL SERVICES