

**LONGHORN ARMY
AMMUNITION PLANT
KARNACK, TEXAS**

**ADMINISTRATIVE
RECORD**

Volume 2

2014

Bate Stamp Numbers

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Longhorn Army Ammunition Plant

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

VOLUME 2

2014

- A. Title: Meeting Minutes – Longhorn Army Ammunition Plant Monthly Managers’ Meeting Minutes
Author(s): AECOM Technical Services
Recipient: All Stakeholders
Date: April 15, 2014
Bate Stamp: 00190189 - 00190208
- B. Title: Meeting Minutes – Longhorn Army Ammunition Plant Monthly Managers’ Meeting Minutes
Author(s): AECOM Technical Services
Recipient: All Stakeholders
Date: May 15, 2014
Bate Stamp: 00190209 - 00190246
- C. Title: Report – LHAAP-35B(37) In Situ Microbial Bioreactor (Bio Plug) Field Test Interim Report No. 3, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): U.S. Army Aberdeen Test Center, Gene L. Fabian
Recipient: U.S. Army Environmental Command
Date: May 20, 2014
Bate Stamp: 00190247 - 00190261
- D. Title: Report - Final Post-Screening Investigation Work Plan Addendum, LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): AECOM Technical Services
Recipient: U.S. Army Corps of Engineers
Date: June 10, 2014
Bate Stamp: 00190262 - 00190277
- E. Title: Meeting Minutes – Longhorn Army Ammunition Plant Monthly Managers’ Meeting Minutes
Author(s): AECOM Technical Services
Recipient: All Stakeholders
Date: June 12, 2014
Bate Stamp: 00190278 - 00190282

Subject: Army Draft Minutes, Monthly Managers Meeting,
Longhorn Army Ammunition Plant (LHAAP)

Location of Meeting: Teleconference – 866-203-6896, passcode 1759304791

Date of Meeting: April 15, 2014 – 10:00 AM

Attendees:

Army BRAC: Rose Zeiler
 EPA: Rich Mayer, Janetta Coats, Kent Becher (USGS Liaison)
 TCEQ: Dale Vodak
 USACE: Aaron Williams
 AECOM: Dave Wacker, Gretchen McDonnell
 AEC: Marilyn Plitnik, Robin Paul
 USFWS: Paul Bruckwicki

Welcome

RMZ

Action Items

AECOM

- Provide a summary of nutrient data following fluidized bed reactor optimization. **Pending.**
- Provide hard copy of the LHAAP-29 RI/FS Addendum Work Plan to Mr. Becher, who stated he had not received a hard copy. **Complete**
- Modify GWTP Air Monitoring Memo as requested by TCEQ. **Pending.**
- Provide analytical results from March 18th GWTP effluent sampling to Army for subsequent submittal to agencies. **Complete.** Discharge criteria for perchlorate were met.
- Add the GWTP sampling locations to the quarterly GWTP report Appendix A schematic, as well as adding the recycle line that allows retreatment through the FBR. **Complete.** Will be included in the next quarterly report.
- Consolidate RACRs into one item on the Document and Issue Tracking table. **Complete**
- Add discussion of groundwater monitoring optimization plans for MNA sites to the agenda for next MMM. **Complete**
- Plan 1,4-dioxane sampling. **Pending**
- Resend the most recent Surface Water/Perimeter Well Tech Memo to Ms. Palmie. **Complete**

Army

- Send agencies an email providing the anticipated date the BERA will be submitted. **Complete.** BERA is being shipped to the agencies today.
- Develop new LHAAP-18/24 FS Addendum submittal schedule. **Pending.** An interim schedule will be submitted to agencies by April 24th. A final schedule should be in place by the May MMM, with the understanding that the length of microcosm testing may be extended based on initial results.
- Determine whether Surface Water/Perimeter Well data will be added to the Administrative Record in quarterly updates or in an annual update. **Complete.** Data will be submitted quarterly. A cover letter will be added to the reports assembled for RAB, and that will constitute the submittal to the Administrative Record.

EPA

- Develop a list of wells/sites for upcoming EPA split sampling and advise Army. **Pending.** Event will likely be scheduled for June.
- Develop/coordinate with Army on a schedule for surface water drainage sampling. **Pending**

TCEQ**AEC****USFWS**

- Mr. Bruckwicki will provide Dr. Zeiler with the location of the vault he recently discovered, and Army will visit the site of the LHAAP-67 and LHAAP-47 vault during site visit planned in conjunction with May RAB. **Complete.**

Defense Environmental Restoration Program (DERP) PBR Update**AECOM**

- Upcoming document submissions to regulators (see Document and Issue Tracking table)

Item 1 (5-Year Review) – Redline document and RTCs planned for submittal to agencies by end of this month.

Item 2 (IWWP, QAPP, SOPs, and HASP) – Document and RTCs planned for submittal to agencies by April 18th.

Item 3 (LHAAP-18/24 – Explanation of Significant Differences) – TCEQ’s concurrence letter is with the Executive Director for signature. EPA is waiting for TCEQ’s concurrence letter before signing on their end. EPA discovered a citation error in a footnote in the document. Army Legal agrees that this is an error but has advised Dr. Zeiler that perhaps nothing needs to be revised in the document because the intent is clear. Mr. Mayer will identify how EPA recommends handling this issue to proceed with signature.

Item 4 (GWTP Quarterly Report) – Air data is being added to the report format for the first time, so taking a bit longer to prepare. Planned for submittal to agencies by April 25th.

Item 5 (LHAAP-18/24-Revised FS and PSI WP Addenda) – An interim schedule for submittal of the Revised FS will be submitted to agencies by April 24th. A final schedule should be in place by the May MMM, with the understanding that the length of microcosm testing may be extended based on initial results. On the PSI WP Addenda, TCEQ had no comments, and the primary EPA comment requested more wells and sampling. Army RTCs to EPA comments were submitted to EPA on April 14th.

Item 6 (Completion Reports) – RACRs for LHAAP-46, LHAAP-37 and LHAAP-50 are on hold until additional wells are installed during upcoming field work. Responses to agency comments are being developed for the LHAAP-67 RACR.

Item 7 (Monthly Managers’ Meeting) – Next Monthly Managers’ Meeting scheduled for May 15th at 9AM at the LHAAP Army Trailer. The group will break for lunch after the meeting and then return for the RAB tour at 3PM.

Item 8 (GW Network Optimization Memos) – LHAAP-50 memo is in agencies hands and will be reviewed when the LHAAP-50 RACR is submitted. The LHAAP-67 memo will be submitted to agencies this week.

Item 9 (LHAAP-29 RI/FS Addenda) – Army responses to EPA comments were submitted to EPA this morning. Mr. Mayer stated he would try to review and communicate with Army by Monday April 21st. Unresolved issues include: 1) EPA believes explosive plumes are not delineated and delineation should be part of the upcoming work. Information was provided in the latest responses to show the plumes are delineated, with the only inferred area of characterization in the far southwest corner, not viewed as a data gap at this time due to its location up-gradient from the explosives pipeline footprint and the easterly groundwater flow direction. 2) EPA is concerned that existing groundwater data from LHAAP-29 wells is old, and suggests a new round of sampling is required. While Army agrees that the existing monitoring well data is old, that data is not needed to move forward at this time, and it would be advisable to wait until such time that the dispute between Army-EPA has been resolved to avoid aging of any collected data before it is needed as input for the work. This may be overcome by events as EPA has stated they will collect samples and Army has stated they will collect split samples if EPA collects samples. 3) EPA feels sampling for 1,4-dioxane should be conducted at well 29WW15. Mr. Mayer stated that EPA will likely be doing 1,4-dioxane sampling through their upcoming contractor event in June.

Item 10 (LHAAP-17 PDI WP, LHAAP-16 RD WP, LHAAP-03 RD/RAWP, LHAAP-04 ROD, LHAAP-47 RD) – Placeholder for documents on hold due to Army-EPA dispute.

Item 11 (May RAB) – Next RAB meeting is scheduled for May 15th at 6PM at the Karnack Community Center. The RAB Tour will start at 3PM on the 15th.

Item 12 (GWTP O&M/Air Monitoring) – No significant issues/updates. See related discussion under AECOM action items, above.

Item 13 (Admin Record Update) – The 4th quarter 2013 update is planned for submittal to the agencies by the end of April.

Item 14 (BERA Addendum) – BERA Addendum is being shipped to agencies today.

Item 15 (Nutrient Issue for HB and INF) – Discussed earlier in the meeting.

Item 16 (Website) – Website should be available for agency review by the end of April.

Item 17 (CRP/CIP) – Placeholder maintained in the tracker as a reminder that these requirements and recommendations are applicable to our work going forward.

Item 18 (Field Work Planning LHAAP 18/24, LHAAP-29) – Field event scheduled to begin April 28th and will begin with LHAAP-29 soil gas sampling, LHAAP-18/24 collection of microcosm study materials, and installation of wells at MNA (LHAAP-37, LHAAP-46, LHAAP-50) sites. AECOM will be working 10-day work cycles with 4-day breaks, and anticipate four work cycles will be required to complete the work. Mr. Bruckwicki commented that ground conditions are very saturated. Mr. Wacker stated that an excavator will be available for clearing to allow earthwork to be done to promote drainage. Gravel or other stabilizing material may be needed for some locations that will be traveled often.

Item 19 (LHAAP-12 RAO Report) – Currently being prepared.

Defense Environmental Restoration Program (DERP) PBR Update (continued) AECOM

- Upcoming field work – previously discussed. Potential for review of field activities on Wednesday afternoon and Friday morning around the Thursday RAB meeting. Review of MNA sites with respect to RACR issues (e.g., surface water sampling locations) was suggested by Mr. Wacker. AECOM will create a map(s) for the sites showing surface water sampling locations for MNA sites and basewide to support this evaluation.
- Monthly data – provided with April MMM agenda
- Groundwater Treatment Plant – previously discussed

MMRP Update Army

- Update – Mr. Wacker stated that some maintenance will be performed to address fading portions of signs at the MMRP sites.

Other Environmental Restoration Army

- Vault at LHAAP-67 – Mr. Williams suggested holding off on technical direction to address the LHAAP-67 vault until the additional vault discovered by USFWS has been evaluated for a potential combined technical directive. Army will examine the additional vault during the visit for May meetings and make a decision on technical direction at that time.
- Discuss MNA site groundwater monitoring network optimization efforts – discussed earlier in meeting
- Decision Documents for multiple sites – status update – TCEQ’s concurrence letter was redirected to Division Director for signature
- Site 37 Bioplug – Dr. Zeiler stated that some wells at LHAAP-37 are apparently doing better than others, leading ATC to request additional information from Army on some of the wells. ATC has offered to participate in the RAB tour ; Dr. Zeiler will follow-up to coordinate.
- Quarterly Reporting and Requirements
 - GWTP Evaluation with air monitoring data – discussed earlier in meeting
 - Surface Water/Perimeter Well Quarterly Update - discussed earlier in meeting
 - Administrative Record Update – discussed earlier in meeting
- Annual Reporting
 - LUC Management Plan Update (due September 2015) – placeholder, no update at this time
 - CRP/CIP Revision (Biennial) and questionnaire October 2015 – placeholder, no update at this time

Programmatic Issues RMZ/RM/AP

- Status of Dispute – Army is waiting to hear EPA Administrator’s decision after the March 25th meeting between Army and EPA.

USFWS Update RMZ/PB

- Environmental Restoration Issues with Transfer Schedule Impact - none
- USFWS Comments on Documents - none
- Army would like to schedule time with USFWS to discuss details of LHAAP-12 protocols and to look at the additional vault observed by USFWS, while Army is on-site for May MMM and RAB meetings.

- At LHAAP-46, Mr. Bruckwicki discovered some potential fill necks on the western side of the horseshoe area, in the apparent sump 37 and 18 area. The group will take a look at them next month when on-site for meetings.
- Environmental Condition of Property-6 transfer documents are in progress.

Schedule Next Managers' Meeting - May 15th at 9:00AM, at the LHAAP Army Trailer.

New Action Items

AECOM

- AECOM will create maps for the sites showing surface water sampling locations for MNA sites and basewide to support this evaluation.

Army

- Schedule time with USFWS to discuss details of LHAAP-12 protocols and to examine the additional vault observed by USFWS while Army is on-site for May MMM and RAB meetings.

EPA

- Mr. Mayer will consult with EPA legal to obtain ESD signature.

TCEQ

AEC

USFWS

Adjourn

Attachments: LHAAP Data Validated March 2014

- GWTP Influent and Effluent**
- LHAAP-16 Extraction Well Field Sampling**
- LHAAP-46 Quarterly MNA Groundwater Event**
- LHAAP-58 Baseline MNA Groundwater Event**
- Surface Water Quarterly Sampling**

ACRONYM LIST

AEC	United States Army Environmental Command
AECOM	AECOM Technology Services, Inc.
AP	April Palmie
ATC	Aberdeen Test Center
BERA	Baseline Ecological Risk Assessment
BRAC	Base Realignment and Closure
CPT/MIP	Cone Penetration Testing / Membrane Interface Probe
CRP/CIP	Community Relations Plan/Community Involvement Plan
DERP	Defense Environmental Restoration Program
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FBR	Fluidized Bed Reactor
FS	Feasibility Study
GWTP	Ground Water Treatment Plant
HASP	Health and Safety Plan
HB	Harrison Bayou
INF	Intermediate-Range Nuclear Forces
IWWP	Installation-Wide Work Plan
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MMM	Monthly Managers' Meeting
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
O&M	Operation and Maintenance
PB	Paul Bruckwicki
PBR	Performance-Based Remediation
PDI	Pre-Design Investigation
PSI	Post-Screening Investigation
QAPP	Quality Assurance Project Plan
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RAO	Remedial Action Operation
RAWP	Remedial Action Work Plan
RD	Remedial Design
RI	Remedial Investigation
RM	Rich Mayer
RMZ	Rose M. Zeiler
ROD	Record of Decision
RTC	Response to Comments
SOP	Standard Operating Procedure
TCEQ	Texas Commission on Environmental Quality
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
WP	Work Plan

LHAAP Data Validated
March 2014

GWTP Influent and Effluent	<i>Bi-weekly, Weekly, and Monthly</i>	
	<i>February 2014</i>	
Ammonia (350.1)		Perchlorate (6850)
Ortho-Phosphate (365.2)		Hexavalent Chromium (7196A)
Total Organic Carbon (415.1)		VOC (8260B)
Metals (6010C)		Inorganic Anions (9056)
Metals (6020A)		
Site 16	<i>Extraction Well Field Sampling</i>	
	<i>February 2014</i>	
		VOC (8260B)
		Perchlorate (6850)
		Inorganic Anions (9056)
Site 46	<i>Quarterly MNA Sampling</i>	
	<i>January 2014</i>	
Total Alkalinity (310.2)		Metals (6020A)
Phosphorus (365.4)		VOC (8260B)
Sulfide (376.1)		Inorganic Anions (9056)
Total Organic Carbon (415.1)		Dissolved Gasses (RSK-175)
Metals (6010C)		
Site 58	<i>Quarterly MNA Sampling</i>	
	<i>January - February 2014</i>	
Total Alkalinity (310.2)		Metals (6020A)
Phosphorus (365.4)		VOC (8260B)
Sulfide (376.1)		Inorganic Anions (9056)
Total Organic Carbon (415.1)		Dissolved Gasses (RSK-175)
Metals (6010C)		Volatile Fatty Acids (830-MBA)
Surface Water	<i>Quarterly Sampling</i>	
	<i>February 2014</i>	
		Perchlorate (6850)

LHAAP GWTP INFLUENT
February 2014

Location ID: Sample Date:	Units	LH18/24- SP140-7151- GRAB 2/10/2014
ID Location:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly
Ammonia as Nitrogen (350.1)		
AMMONIA AS N	mg/L	N/A
Ortho-Phosphate (365.2)		
ORTHO-PHOSPHATE	mg/L	N/A
Total Organic Carbon (415.1)		
TOTAL ORGANIC CARBON (TOC)	mg/L	N/A
Metals (6010C)		
ALUMINUM	mg/L	N/A
IRON	mg/L	N/A
Metals (6020A)		
ANTIMONY	mg/L	N/A
ARSENIC	mg/L	N/A
BARIUM	mg/L	N/A
CADMIUM	mg/L	N/A
CHROMIUM	mg/L	N/A
COBALT	mg/L	N/A
LEAD	mg/L	N/A
MANGANESE	mg/L	N/A
NICKEL	mg/L	N/A
SELENIUM	mg/L	N/A
SILVER	mg/L	N/A
THALLIUM	mg/L	N/A
VANADIUM	mg/L	N/A
ZINC	mg/L	N/A
Perchlorate (6850)		
PERCHLORATE	ug/L	21300
Hexavalent Chromium/ CR-6 (7196A)		
HEXAVALENT CHROMIUM	mg/L	N/A
Volatile Organic Compounds (8260B)		
1,1,1,2-TETRACHLOROETHANE	ug/L	<25 U
1,1,1-TRICHLOROETHANE	ug/L	<25 U
1,1,2,2-TETRACHLOROETHANE	ug/L	<20 U
1,1,2-TRICHLOROETHANE	ug/L	<25 U
1,1-DICHLOROETHANE	ug/L	<12.5 U
1,1-DICHLOROETHENE	ug/L	69.2 J
1,1-DICHLOROPROPENE	ug/L	<25 U
1,2,3-TRICHLOROBENZENE	ug/L	<15 U
1,2,3-TRICHLOROPROPANE	ug/L	<50 U
1,2,4-TRICHLOROBENZENE	ug/L	<20 U
1,2,4-TRIMETHYLBENZENE	ug/L	<25 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	<100 U
1,2-DIBROMOETHANE	ug/L	<25 U
1,2-DICHLOROBENZENE	ug/L	<12.5 U
1,2-DICHLOROETHANE	ug/L	64.9
1,2-DICHLOROPROPANE	ug/L	<20 U
1,3,5-TRIMETHYLBENZENE	ug/L	<25 U
1,3-DICHLOROBENZENE	ug/L	<25 U
1,3-DICHLOROPROPANE	ug/L	<20 U
1,4-DICHLOROBENZENE	ug/L	<12.5 U
2,2-DICHLOROPROPANE	ug/L	<25 U
2-BUTANONE	ug/L	<250 U
2-CHLOROTOLUENE	ug/L	<12.5 U
2-HEXANONE	ug/L	<250 U

LHAAP GWTP INFLUENT
February 2014

Location ID: Sample Date:	Units	LH18/24- SP140-7151- GRAB 2/10/2014
ID Location:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly
4-CHLOROTOLUENE	ug/L	<25 U
4-METHYL-2-PENTANONE	ug/L	<250 U
ACETONE	ug/L	<250 U
BENZENE	ug/L	<12.5 U
BROMOBENZENE	ug/L	<12.5 U
BROMOCHLOROMETHANE	ug/L	<20 U
BROMODICHLOROMETHANE	ug/L	<25 U
BROMOFORM	ug/L	<50 U
BROMOMETHANE	ug/L	<50 U
CARBON DISULFIDE	ug/L	<50 U
CARBON TETRACHLORIDE	ug/L	<25 U
CHLOROBENZENE	ug/L	<12.5 U
CHLOROETHANE	ug/L	<50 U
CHLOROFORM	ug/L	16.6 J
CHLOROMETHANE	ug/L	<50 U
CIS-1,2-DICHLOROETHENE	ug/L	3610
CIS-1,3-DICHLOROPROPENE	ug/L	<25 U
DIBROMOCHLOROMETHANE	ug/L	<25 U
DIBROMOMETHANE	ug/L	<25 U
DICHLORODIFLUOROMETHANE	ug/L	<25 UJ
ETHYLBENZENE	ug/L	<25 U
HEXACHLOROBUTADIENE	ug/L	<25 U
ISOPROPYLBENZENE	ug/L	<25 U
m,p-Xylene	ug/L	<50 U
METHYLENE CHLORIDE	ug/L	5880
NAPHTHALENE	ug/L	<20 U
N-BUTYLBENZENE	ug/L	<25 U
N-PROPYLBENZENE	ug/L	<12.5 U
O-XYLENE	ug/L	<25 U
P-ISOPROPYLTOLUENE	ug/L	<25 U
SEC-BUTYLBENZENE	ug/L	<25 U
STYRENE	ug/L	<12.5 U
TERT-BUTYLBENZENE	ug/L	<25 U
TETRACHLOROETHENE	ug/L	39.6 J
TOLUENE	ug/L	<25 U
TRANS-1,2-DICHLOROETHENE	ug/L	<25 U
TRANS-1,3-DICHLOROPROPENE	ug/L	<50 U
TRICHLOROETHENE	ug/L	9510
TRICHLOROFLUOROMETHANE	ug/L	<25 U
VINYL CHLORIDE	ug/L	36.8 J
Inorganic Anions (9056)		
CHLORIDE	mg/L	N/A
SULFATE	mg/L	N/A

LHAAP GWTP Effluent
February 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24- SP650-6150- COMP 2/3/2014	LH18/24- SP650-6150- GRAB 2/3/2014	LH18/24- SP650-6151- GRAB 2/10/2014	LH18/24- SP650-6152- GRAB 2/10/2014
ID Location:			GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK- 650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK- 650 Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Monthly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Weekly
Ammonia as Nitrogen (350.1)						
AMMONIA AS N	mg/L		N/A	N/A	N/A	6.17
Ortho-Phosphate (365.2)						
ORTHO-PHOSPHATE	mg/L		N/A	N/A	N/A	0.891
Total Organic Carbon (415.1)						
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	27.3
Metals (6010C)						
ALUMINUM	mg/L	1.644	N/A	N/A	<0.1 U	N/A
IRON	mg/L	2.395	N/A	N/A	0.143 J	N/A
Metals (6020A)						
ANTIMONY	mg/L		N/A	N/A	<0.001 U	N/A
ARSENIC	mg/L	0.772	N/A	N/A	0.00424	N/A
BARIUM	mg/L	2	N/A	N/A	0.457	N/A
CADMIUM	mg/L	0.0034	N/A	N/A	<0.0006 U	N/A
CHROMIUM	mg/L	0.752	N/A	N/A	0.00267 J	N/A
COBALT	mg/L	11.495	N/A	N/A	0.0014 J	N/A
LEAD	mg/L	0.0046	<0.001 U	<0.001 U	<0.001 U	N/A
MANGANESE	mg/L	15.494	N/A	N/A	0.26	N/A
NICKEL	mg/L	0.184	N/A	N/A	0.00681 J	N/A
SELENIUM	mg/L	0.012	0.0109	0.0119	0.016	N/A
SILVER	mg/L	0.003	<0.001 U	<0.001 U	<0.001 U	N/A
THALLIUM	mg/L		N/A	N/A	<0.0002 U	N/A
VANADIUM	mg/L	3.592	N/A	N/A	<0.001 U	N/A
ZINC	mg/L	0.31	N/A	N/A	<0.025 U	N/A
Perchlorate (6850)						
PERCHLORATE	ug/L	13	<0.2 U	<0.2 U	N/A	<0.2 U
Hexavalent Chromium/ CR-6 (7196A)						
HEXAVALENT CHROMIUM	mg/L	0.124	<0.01 U	<0.01 U	N/A	N/A
Volatile Organic Compounds (8260B)						
1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	<0.5 U	N/A	N/A
1,1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	<0.5 U	N/A	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	<0.4 U	N/A	N/A
1,1,2-TRICHLOROETHANE	ug/L	217	N/A	<0.5 U	N/A	N/A
1,1-DICHLOROETHANE	ug/L	14032	N/A	<0.25 U	N/A	N/A
1,1-DICHLOROETHENE	ug/L	253	N/A	<1 U	N/A	N/A
1,1-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A
1,2,3-TRICHLOROBENZENE	ug/L		N/A	<0.3 U	N/A	N/A
1,2,3-TRICHLOROPROPANE	ug/L		N/A	<1 U	N/A	N/A
1,2,4-TRICHLOROBENZENE	ug/L		N/A	<0.4 U	N/A	N/A
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		N/A	<2 U	N/A	N/A
1,2-DIBROMOETHANE	ug/L		N/A	<0.5 U	N/A	N/A
1,2-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A
1,2-DICHLOROETHANE	ug/L	181	N/A	<0.5 U	N/A	N/A
1,2-DICHLOROPROPANE	ug/L		N/A	<0.4 U	N/A	N/A
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A
1,3-DICHLOROBENZENE	ug/L		N/A	<0.5 U	N/A	N/A
1,3-DICHLOROPROPANE	ug/L		N/A	<0.4 U	N/A	N/A
1,4-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A	N/A
2,2-DICHLOROPROPANE	ug/L		N/A	<0.5 U	N/A	N/A
2-BUTANONE	ug/L		N/A	<5 U	N/A	N/A
2-CHLOROTOLUENE	ug/L		N/A	<0.25 U	N/A	N/A
2-HEXANONE	ug/L		N/A	<5 U	N/A	N/A
4-CHLOROTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A
4-METHYL-2-PENTANONE	ug/L		N/A	<5 U	N/A	N/A

LHAAP GWTP Effluent
February 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24- SP650-6150- COMP 2/3/2014	LH18/24- SP650-6150- GRAB 2/3/2014	LH18/24- SP650-6151- GRAB 2/10/2014	LH18/24- SP650-6152- GRAB 2/10/2014
ID Location:			GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK- 650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK- 650 Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Monthly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Weekly
ACETONE	ug/L	181	N/A	31.4	N/A	N/A
BENZENE	ug/L	181	N/A	<0.25 U	N/A	N/A
BROMOBENZENE	ug/L		N/A	<0.25 U	N/A	N/A
BROMOCHLOROMETHANE	ug/L		N/A	<0.4 U	N/A	N/A
BROMODICHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A
BROMOFORM	ug/L		N/A	<1 U	N/A	N/A
BROMOMETHANE	ug/L		N/A	<1 U	N/A	N/A
CARBON DISULFIDE	ug/L		N/A	<1 U	N/A	N/A
CARBON TETRACHLORIDE	ug/L	3615	N/A	<0.5 U	N/A	N/A
CHLOROBENZENE	ug/L	47180	N/A	<0.25 U	N/A	N/A
CHLOROETHANE	ug/L		N/A	<1 U	N/A	N/A
CHLOROFORM	ug/L	57025	N/A	<0.25 U	N/A	N/A
CHLOROMETHANE	ug/L		N/A	<1 U	N/A	N/A
CIS-1,2-DICHLOROETHENE	ug/L		N/A	0.661 J	N/A	N/A
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A	N/A
DIBROMOCHLOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A
DIBROMOMETHANE	ug/L		N/A	<0.5 U	N/A	N/A
DICHLORODIFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A
ETHYLBENZENE	ug/L	84	N/A	<0.5 U	N/A	N/A
HEXACHLOROBUTADIENE	ug/L		N/A	<0.5 U	N/A	N/A
ISOPROPYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A
m,p-Xylene	ug/L	1699	N/A	<1 U	N/A	N/A
METHYLENE CHLORIDE	ug/L	84	N/A	<0.5 U	N/A	N/A
NAPHTHALENE	ug/L		N/A	<0.4 U	N/A	N/A
N-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A
N-PROPYLBENZENE	ug/L		N/A	<0.25 U	N/A	N/A
O-XYLENE	ug/L	2395	N/A	<0.5 U	N/A	N/A
P-ISOPROPYLTOLUENE	ug/L		N/A	<0.5 U	N/A	N/A
SEC-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A
STYRENE	ug/L	5987	N/A	<0.25 U	N/A	N/A
TERT-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A	N/A
TETRACHLOROETHENE	ug/L	181	N/A	<0.5 U	N/A	N/A
TOLUENE	ug/L	4189	N/A	<0.5 U	N/A	N/A
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	<0.5 U	N/A	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	<1 U	N/A	N/A
TRICHLOROETHENE	ug/L	181	N/A	0.9 J	N/A	N/A
TRICHLOROFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A	N/A
VINYL CHLORIDE	ug/L	72	N/A	<0.5 U	N/A	N/A
Inorganic Anions (9056)						
CHLORIDE	mg/L		775	776	N/A	N/A
SULFATE	mg/L		184	183	N/A	N/A

LHAAP-16
Extraction Well Monitoring
February 2014

Location ID: Sample Date:	Units	MCL/MSC	16EW01-020514 2/5/2014	16EW01FD-020514 2/5/2014	16EW02-020514 2/5/2014	16EW03-020514 2/5/2014	16EW04-020514 2/5/2014	16EW05-020514 2/5/2014	16EW06-020514 2/5/2014
ID Location:			Site 16 – NE, middle region Sampled Annually	Site 16 – NE, middle region Sampled Annually	Site 16 – NE, middle region Sampled Annually	Site 16 – NE, middle region Sampled Annually	Site 16 – ENE, middle region Sampled Annually	Site 16 – NE, middle region Sampled Annually	Site 16 – NE, middle region Sampled Annually
Perchlorate (6850)									
PERCHLORATE	ug/L	72	245	250	2.28	1.83	12.7	334	190
Volatile Organic Compounds (8260B)									
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,1,1-TRICHLOROETHANE	ug/L	200	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<2 U	<2 U	<100 U	<20 U	<40 U	<2 U	<8 U
1,1,2-TRICHLOROETHANE	ug/L	5	2.17 J	2.62 J	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,1-DICHLOROETHANE	ug/L	10000	2.61 J	2.47 J	<62.6 U	<12.5 U	<25 U	2.21 J	<5 U
1,1-DICHLOROETHENE	ug/L	7	35.7	35.2	258 J	<50 U	61.2 J	35.1	<20 U
1,1-DICHLOROPROPENE	ug/L	2.9	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<1.5 U	<1.5 U	<75 U	<15 U	<30 U	<1.5 U	<6 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<2 U	<2 U	<100 U	<20 U	<40 U	<2 U	<8 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<10 U	<10 U	<500 U	<100 U	<200 U	<10 U	<40 U
1,2-DIBROMOETHANE	ug/L	0.005	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,2-DICHLOROBENZENE	ug/L	600	<1.25 U	<1.25 U	<62.6 U	<12.5 U	<25 U	<1.25 U	<5 U
1,2-DICHLOROETHANE	ug/L	5	44.9	44.1	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,2-DICHLOROPROPANE	ug/L	5	<2 U	<2 U	<100 U	<20 U	<40 U	<2 U	<8 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,3-DICHLOROBENZENE	ug/L	3100	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
1,3-DICHLOROPROPANE	ug/L	29	<2 U	<2 U	<100 U	<20 U	<40 U	<2 U	<8 U
1,4-DICHLOROBENZENE	ug/L	75	<1.25 U	<1.25 U	<62.6 U	<12.5 U	<25 U	<1.25 U	<5 U
2,2-DICHLOROPROPANE	ug/L	42	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
2-BUTANONE	ug/L	61000	<25 U	<25 U	<1250 U	<250 U	<500 U	<25 U	<100 U
2-CHLOROTOLUENE	ug/L	2000	<1.25 U	<1.25 U	<62.6 U	<12.5 U	<25 U	<1.25 U	<5 U
2-HEXANONE	ug/L	6100	<25 U	<25 U	<1250 U	<250 U	<500 U	<25 U	<100 U
4-CHLOROTOLUENE	ug/L	2000	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
4-METHYL-2-PENTANONE	ug/L	8200	<25 U	<25 U	<1250 U	<250 U	<500 U	<25 U	<100 U
ACETONE	ug/L	92000	<25 U	<25 U	<1250 U	<250 U	<500 U	<25 U	<100 U
BENZENE	ug/L	5	0.677 J	0.698 J	<62.6 U	<12.5 U	<25 U	1.13 J	<5 U
BROMOBENZENE	ug/L	2000	<1.25 U	<1.25 U	<62.6 U	<12.5 U	<25 U	<1.25 U	<5 U
BROMOCHLOROMETHANE	ug/L	4100	<2 U	<2 U	<100 U	<20 U	<40 U	<2 U	<8 U
BROMODICHLOROMETHANE	ug/L	4.6	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
BROMOFORM	ug/L	36	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
BROMOMETHANE	ug/L	140	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
CARBON DISULFIDE	ug/L	10000	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
CARBON TETRACHLORIDE	ug/L	5	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
CHLOROBENZENE	ug/L	100	<1.25 U	<1.25 U	<62.6 U	<12.5 U	<25 U	<1.25 U	<5 U
CHLOROETHANE	ug/L	41000	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
CHLOROFORM	ug/L	1000	2.17 J	2.17 J	<62.6 U	<12.5 U	<25 U	1.18 J	<5 U
CHLOROMETHANE	ug/L	220	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
CIS-1,2-DICHLOROETHENE	ug/L	70	13000	11900	31900	2580	13000	8240	1680
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
DIBROMOCHLOROMETHANE	ug/L	34	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
DIBROMOMETHANE	ug/L	380	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
ETHYLBENZENE	ug/L	700	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
HEXACHLOROBUTADIENE	ug/L	20	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
ISOPROPYLBENZENE	ug/L	1000	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
m,p-Xylene	ug/L	10000	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
METHYLENE CHLORIDE	ug/L	5	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
NAPHTHALENE	ug/L	2000	<2 U	<2 U	<100 U	<20 U	<40 U	<2 U	<8 U
N-BUTYLBENZENE	ug/L	4100	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
N-PROPYLBENZENE	ug/L	4100	<1.25 U	<1.25 U	<62.6 U	<12.5 U	<25 U	<1.25 U	<5 U
O-XYLENE	ug/L	10000	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
P-ISOPROPYLTOLUENE	ug/L	10000	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
SEC-BUTYLBENZENE	ug/L	4100	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
STYRENE	ug/L	100	<1.25 U	<1.25 U	<62.6 U	<12.5 U	<25 U	<1.25 U	<5 U
TERT-BUTYLBENZENE	ug/L	4100	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
TETRACHLOROETHENE	ug/L	5	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
TOLUENE	ug/L	1000	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	44.6	24	<125 U	<25 U	<50 U	26.8	<10 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<5 U	<5 U	<250 U	<50 U	<100 U	<5 U	<20 U
TRICHLOROETHENE	ug/L	5	8470	7970	34900	5800	31000	7410	2710
TRICHLOROFLUOROMETHANE	ug/L	31000	<2.5 U	<2.5 U	<125 U	<25 U	<50 U	<2.5 U	<10 U
VINYL CHLORIDE	ug/L	2	58.6	47.6	380	<25 U	<50 U	260	<10 U
Inorganic Anions (9056)									
CHLORIDE	mg/L		945	962	643	496	742	717	830

LHAAP-16
Extraction Well Monitoring
February 2014

Location ID: Sample Date:	Units	MCL/MSL	16EW07- 020514 2/5/2014	16EW08- 020514 2/5/2014
ID Location:			Site 16 – NE, middle region Sampled Annually	Site 16 – ENE, middle region Sampled Annually
Perchlorate (6850)				
PERCHLORATE	ug/L	72	<0.2 U	0.823
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<1.25 U	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<1.25 U	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<1 U	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<1.25 U	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.626 U	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	4 J	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<1.25 U	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.75 U	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<2.5 U	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<1 U	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<1.25 U	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<5 U	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<1.25 U	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.626 U	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<1.25 U	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	<1 U	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<1.25 U	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<1.25 U	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<1 U	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.626 U	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<1.25 U	<0.5 U
2-BUTANONE	ug/L	61000	<12.5 U	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.626 U	<0.25 U
2-HEXANONE	ug/L	6100	<12.5 U	<5 U
4-CHLOROTOLUENE	ug/L	2000	<1.25 U	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<12.5 U	<5 U
ACETONE	ug/L	92000	<12.5 U	<5 U
BENZENE	ug/L	5	<0.626 U	<0.25 U
BROMOBENZENE	ug/L	2000	<0.626 U	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<1 U	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<1.25 U	<0.5 U
BROMOFORM	ug/L	36	<2.5 U	<1 U
BROMOMETHANE	ug/L	140	<2.5 U	<1 U
CARBON DISULFIDE	ug/L	10000	<2.5 U	<1 U
CARBON TETRACHLORIDE	ug/L	5	<1.25 U	<0.5 U
CHLOROBENZENE	ug/L	100	<0.626 U	<0.25 U
CHLOROETHANE	ug/L	41000	<2.5 U	<1 U
CHLOROFORM	ug/L	1000	<0.626 U	<0.25 U
CHLOROMETHANE	ug/L	220	<2.5 U	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	2180	67.1
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<1.25 U	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<1.25 U	<0.5 U
DIBROMOMETHANE	ug/L	380	<1.25 U	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<1.25 U	<0.5 U
ETHYLBENZENE	ug/L	700	<1.25 U	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<1.25 U	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<1.25 U	<0.5 U
m,p-Xylene	ug/L	10000	<2.5 U	<1 U
METHYLENE CHLORIDE	ug/L	5	<1.25 U	<0.5 U
NAPHTHALENE	ug/L	2000	<1 U	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<1.25 U	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.626 U	<0.25 U
O-XYLENE	ug/L	10000	<1.25 U	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<1.25 U	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<1.25 U	<0.5 U
STYRENE	ug/L	100	<0.626 U	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<1.25 U	<0.5 U
TETRACHLOROETHENE	ug/L	5	<1.25 U	<0.5 U
TOLUENE	ug/L	1000	<1.25 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	5.03	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<2.5 U	<1 U
TRICHLOROETHENE	ug/L	5	573	53.9
TRICHLOROFLUOROMETHANE	ug/L	31000	<1.25 U	<0.5 U
VINYL CHLORIDE	ug/L	2	2.86	<0.5 U
Inorganic Anions (9056)				
CHLORIDE	mg/L		489	166

LHAAP-46
 Quarterly MNA Groundwater Monitoring
 January 2014

Location ID: Sample Date:	Units	MCL/MSC	46WW02-012714 1/27/2014	46WW02F-012714 1/27/2014	46WW03-012514 1/25/2014	46WW03FD-012514 1/25/2014	46WW04-012514 1/25/2014	46WW06-012514 1/25/2014	46WW07-012714 1/27/2014	46WW09-012714 1/27/2014	46WW09F-012714 1/27/2014	46WW10-012514 1/25/2014	46WW14-012714 1/27/2014	
ID Location:			Site 46 - NNW, inside the fence line, middle region. Sampled quarterly	Site 46 - NNW, inside the fence line, middle region. Sampled quarterly	Site 46 - NNW, inside the fence line, middle region. Sampled quarterly	Site 46 - NNW, inside the fence line, middle region. Sampled quarterly	Site 46 - NNW, inside the fence line, middle region. Sampled quarterly	Site 46 - NNW, inside the fence line, middle region. Sampled quarterly	Site 46 - N, inside the fence line, outer region. Sampled quarterly	Site 46 - N, within the site boundary, middle region. Sampled quarterly	Site 46 - N, within the site boundary, middle region. Sampled quarterly	Site 46 - NW, inside the fence line, middle region. Sampled quarterly	Site 46 - N, within the site boundary, outer region. Sampled quarterly	
Alkalinity (310.2)														
ALKALINITY, TOTAL	mg/L		29.1	N/A	N/A	N/A	N/A	N/A	N/A	158	N/A	N/A	214	
Phosphorus (365.4)														
PHOSPHORUS	mg/L		0.114 J	N/A	N/A	N/A	N/A	N/A	N/A	0.409	N/A	N/A	0.109 J	
Sulfide (376.1)														
SULFIDE	mg/L		<1 U	N/A	N/A	N/A	N/A	N/A	N/A	0.574 J	N/A	N/A	<1 U	
Total Organic Carbon (415.1)														
TOTAL ORGANIC CARBON (TOC)	mg/L		9.37	N/A	N/A	N/A	N/A	N/A	N/A	6.27	N/A	N/A	1.99 J	
Metals (6010C)														
IRON	mg/L		N/A	1.46	N/A	N/A	N/A	N/A	N/A	N/A	0.0557 J	N/A	N/A	
Metals (6020A)														
MANGANESE	mg/L	14	N/A	0.192	N/A	N/A	N/A	N/A	N/A	N/A	1.86	N/A	N/A	
Volatile Organic Compounds (8260B)														
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	2.18	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,2,3-TRICHLOROETHANE	ug/L	310	<0.3 U	N/A	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	N/A	<0.3 U	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
1,2,4-TRICHLOROETHANE	ug/L	70	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 UJ	N/A	<2 U	<2 U	<2 U	<2 U	<2 UJ	<2 U	<2 U	N/A	<2 U	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,2-DICHLOROETHANE	ug/L	600	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
1,2-DICHLOROPROPANE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,3-DICHLOROETHANE	ug/L	3100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<0.4 U
1,4-DICHLOROETHANE	ug/L	75	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	N/A	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	N/A	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	<5 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	N/A	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	<5 U
ACETONE	ug/L	92000	<5 U	N/A	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A	<5 U	<5 U
BENZENE	ug/L	5	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
BROMOFORM	ug/L	36	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
BROMOMETHANE	ug/L	140	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
CARBON DISULFIDE	ug/L	10000	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
CHLOROETHANE	ug/L	100	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
CHLOROETHENE	ug/L	41000	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
CHLOROMETHANE	ug/L	220	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	2.09	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
m,p-Xylene	ug/L	10000	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	N/A	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
STYRENE	ug/L	100	<0.25 U	N/A	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
TOLUENE	ug/L	1000	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	N/A	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	N/A	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A	<1 U	<1 U
TRICHLOROETHENE	ug/L	5	35.2	N/A	<0.5 U	<0.5								

Location ID: Sample Date:	Units	MCL/MSC	46WW14F- 012714 1/27/2014	LHSMW25- 012514 1/25/2014
ID Location:			Site 46 - N, within the site boundary, outer region. Sampled quarterly	Site 46 - NE, inside the fence line, outer region. Sampled quarterly
Alkalinity (310.2)				
ALKALINITY, TOTAL	mg/L		N/A	N/A
Phosphorus (365.4)				
PHOSPHORUS	mg/L		N/A	N/A
Sulfide (376.1)				
SULFIDE	mg/L		N/A	N/A
Total Organic Carbon (415.1)				
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A
Metals (6010C)				
IRON	mg/L		<0.1 U	N/A
Metals (6020A)				
MANGANESE	mg/L	14	0.0538	N/A
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	110	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	N/A	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	N/A	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	N/A	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	N/A	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	N/A	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	N/A	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	N/A	<0.5 U
2-BUTANONE	ug/L	61000	N/A	<5 U
2-CHLOROTOLUENE	ug/L	2000	N/A	<0.25 U
2-HEXANONE	ug/L	6100	N/A	<5 U
4-CHLOROTOLUENE	ug/L	2000	N/A	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	N/A	<5 U
ACETONE	ug/L	92000	N/A	<5 U
BENZENE	ug/L	5	N/A	<0.25 U
BROMOBENZENE	ug/L	2000	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	N/A	<0.5 U
BROMOFORM	ug/L	36	N/A	<1 U
BROMOMETHANE	ug/L	140	N/A	<1 U
CARBON DISULFIDE	ug/L	10000	N/A	<1 U
CARBON TETRACHLORIDE	ug/L	5	N/A	<0.5 U
CHLOROBENZENE	ug/L	100	N/A	<0.25 U
CHLOROETHANE	ug/L	41000	N/A	<1 U
CHLOROFORM	ug/L	1000	N/A	<0.25 U
CHLOROMETHANE	ug/L	220	N/A	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	N/A	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	N/A	<0.5 U
DIBROMOMETHANE	ug/L	380	N/A	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	N/A	<0.5 U
ETHYLBENZENE	ug/L	700	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	N/A	<0.5 U
m,p-Xylene	ug/L	10000	N/A	<1 U
METHYLENE CHLORIDE	ug/L	5	N/A	<0.5 U
NAPHTHALENE	ug/L	2000	N/A	<0.4 U
N-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U
N-PROPYLBENZENE	ug/L	4100	N/A	<0.25 U
O-XYLENE	ug/L	10000	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U
STYRENE	ug/L	100	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U
TETRACHLOROETHENE	ug/L	5	N/A	<0.5 U
TOLUENE	ug/L	1000	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	N/A	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	N/A	<1 U
TRICHLOROETHENE	ug/L	5	N/A	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	N/A	<0.5 U
VINYL CHLORIDE	ug/L	2	N/A	<0.5 U
Inorganic Anions (9056)				
CHLORIDE	mg/L		N/A	N/A
NITRATE	mg/L	10	N/A	N/A
NITRITE	mg/L	1	N/A	N/A
SULFATE	mg/L		N/A	N/A
Dissolved Gases (RSK-175)				
CARBON DIOXIDE	ug/L		N/A	N/A
ETHANE	ug/L		N/A	N/A
ETHENE	ug/L		N/A	N/A
METHANE	ug/L		N/A	N/A

LHAAP-35A(56)
 Quarterly MNA Groundwater and Surface Water Monitoring
 January-February 2014

Location ID: Sample Date:	Units	MCL/MSC	03W01-12914 1/29/2014	03W01F-12914 1/29/2014	1004T006F-013114 1/31/2014	35AW03-020314 2/3/2014	35AWW01-013114 1/31/2014	35AWW01F-013114 1/31/2014	35AWW01FD-013114 1/31/2014	35AWW01FD-013114 1/31/2014	35AWW05-020114 2/1/2014	35AWW06-013014 1/30/2014	35AWW06F-013014 1/30/2014
ID Location:			Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - SW, inside the site boundary, outer region, between Building 716 and 113. Sampled quarterly, arsenic only	Site 58 - SSW, outside the site boundary. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		27500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	624	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		32.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.906	N/A
Sulfide (376.1)													
SULFIDE	mg/L		<1 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1 U	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		30200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.2	N/A
Metals (6010C)													
ARSENIC	mg/L	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.1 U	N/A
IRON	mg/L		N/A	92.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0716 J	N/A
Metals (6020A)													
ARSENIC	mg/L	0.01	N/A	0.0762 J	0.0111	N/A	N/A	0.000821 J	N/A	0.000796 J	N/A	N/A	N/A
MANGANESE	mg/L	14	N/A	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.256	0.246
Volatile Organic Compounds (6200B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<4 U	N/A	N/A	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,1-DICHLOROETHANE	ug/L	10000	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	2.13	N/A
1,1-DICHLOROETHENE	ug/L	7	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	14.2	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	310	<3 U	N/A	N/A	<0.3 U	<0.3 U	N/A	<0.3 U	N/A	<0.3 U	<0.3 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<4 U	N/A	N/A	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<20 U	N/A	N/A	<2 U	<2 U	N/A	<2 U	N/A	<2 U	<2 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,2-DICHLOROBENZENE	ug/L	800	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
1,2-DICHLOROETHANE	ug/L	5	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,2-DICHLOROPROPANE	ug/L	5	<4 U	N/A	N/A	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,3-DICHLOROBENZENE	ug/L	310	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	<4 U	N/A	N/A	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A
1,4-DICHLOROBENZENE	ug/L	75	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
2,2-DICHLOROPROPANE	ug/L	42	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
2-BUTANONE	ug/L	61000	1110	N/A	N/A	<5 U	<5 U	N/A	<5 U	N/A	<5 U	<5 U	N/A
2-CHLOROTOLUENE	ug/L	2000	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
2-HEXANONE	ug/L	6100	<50 U	N/A	N/A	<5 U	<5 U	N/A	<5 U	N/A	<5 U	<5 U	N/A
4-CHLOROTOLUENE	ug/L	2000	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
4-METHYL-2-PENTANONE	ug/L	8200	<50 U	N/A	N/A	<5 U	<5 U	N/A	<5 U	N/A	<5 U	<5 U	N/A
ACETONE	ug/L	92000	727	N/A	N/A	<5 U	<5 U	N/A	<5 U	N/A	<5 U	<5 U	N/A
BENZENE	ug/L	5	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
BROMOBENZENE	ug/L	2000	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	<4 U	N/A	N/A	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
BROMOFORM	ug/L	36	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
BROMOMETHANE	ug/L	140	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
CARBON DISULFIDE	ug/L	10000	7.33 J	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
CARBON TETRACHLORIDE	ug/L	5	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
CHLOROETHANE	ug/L	100	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
CHLOROETHENE	ug/L	41000	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
CHLOROFORM	ug/L	100	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
CHLOROMETHANE	ug/L	220	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
DIBROMOMETHANE	ug/L	380	<2.5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
ETHYLBENZENE	ug/L	700	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
ISOPROPYLBENZENE	ug/L	1000	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
m,p-Xylene	ug/L	10000	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
METHYLENE CHLORIDE	ug/L	5	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
NAPHTHALENE	ug/L	2000	<4 U	N/A	N/A	<0.4 U	<0.4 U	N/A	<0.4 U	N/A	<0.4 U	<0.4 U	N/A
N-BUTYLBENZENE	ug/L	4100	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
N-PROPYLBENZENE	ug/L	4100	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
O-XYLENE	ug/L	10000	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
STYRENE	ug/L	100	<2.5 U	N/A	N/A	<0.25 U	<0.25 U	N/A	<0.25 U	N/A	<0.25 U	<0.25 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
TETRACHLOROETHENE	ug/L	5	172	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
TOLUENE	ug/L	1000	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<10 U	N/A	N/A	<1 U	<1 U	N/A	<1 U	N/A	<1 U	<1 U	N/A
TRICHLOROETHENE	ug/L	5	58.4	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
VINYL CHLORIDE	ug/L	2	<5 U	N/A	N/A	<0.5 U	<0.5 U	N/A	<0.5 U	N/A	<0.5 U	<0.5 U	N/A
Volatile Fatty Acids (830-MBA)													
Acetic Acid	mg/L		713	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Butyric Acid	mg/L		3120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lactic Acid	mg/L		25400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Propionic Acid	mg/L	51	<1000 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pyruvic Acid	mg/L		21.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inorganic Anions (9056)													
CHLORIDE	mg/L		906	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1160	N/A
NITRATE	mg/L												

LHAAP-35A(58)
 Quarterly MNA Groundwater and Surface Water Monitoring
 January-February 2014

Location ID: Sample Date:	Units	MCL/MSC	35AWW07RF- 020314 2/3/2014	35AWW07RFFD- 020314 2/3/2014	35AWW08- 012914 1/29/2014	35AWW08F- 012914 1/29/2014	35AWW09- 012914 1/29/2014	35AWW09F- 012914 1/29/2014	35AWW09F- 012914 1/29/2014	35AWW10- 012914 1/29/2014	35AWW10F- 012914 1/29/2014	35AWW10F- 012914 1/29/2014	35AWW11- 020314 2/3/2014	35AWW11F- 020314 2/3/2014
ID Location:			Site 58 - ENE, outside the site boundary. Replacement Well sampled quarterly	Site 58 - ENE, outside the site boundary. Replacement Well sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - E, inside the site boundary, outer region. Sampled quarterly	Site 58 - ESE, inside the site boundary, middle region. Sampled quarterly	Site 58 - ESE, inside the site boundary, middle region. Sampled quarterly	Site 58 - ESE, inside the site boundary, middle region. Sampled quarterly	Site 58 - SE, inside the site boundary, outer region. Sampled quarterly	Site 58 - SE, inside the site boundary, outer region. Sampled quarterly
Alkalinity (310.2)														
ALKALINITY, TOTAL	mg/L		N/A	N/A	2700	N/A	264	N/A	95.1	N/A	N/A	N/A	380	N/A
Phosphorus (365.4)														
PHOSPHORUS	mg/L		N/A	N/A	113	N/A	0.996	N/A	<0.2 U	N/A	N/A	N/A	<0.2 U	N/A
Sulfide (376.1)														
SULFIDE	mg/L		N/A	N/A	<1 U	N/A	0.711 J	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
Total Organic Carbon (415.1)														
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	43500	N/A	9.25	N/A	5.85	N/A	N/A	N/A	8.49	N/A
Metals (6010C)														
ARSENIC	mg/L	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IRON	mg/L		N/A	N/A	<3 U	63.5	N/A	0.187 J	N/A	N/A	N/A	<0.1 U	N/A	0.2
Metals (6020A)														
ARSENIC	mg/L	0.01	0.00148 J	0.000592 J	N/A	0.16 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MANGANESE	mg/L	14	N/A	N/A	N/A	66.3	N/A	0.24	N/A	N/A	0.0687	0.0693	N/A	1.01
Volatile Organic Compounds (6260B)														
1,1,1,2-TETRACHLOROETHANE	ug/L	110	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	N/A	N/A	<5 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,1-DICHLOROETHANE	ug/L	10000	N/A	N/A	<2.5 U	N/A	0.533 J	N/A	<0.25 U	N/A	N/A	N/A	0.252 J	N/A
1,1-DICHLOROETHENE	ug/L	7	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	10.1	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,2-TRICHLOROETHANE	ug/L	310	N/A	N/A	<3 U	N/A	<0.3 U	N/A	<0.3 U	N/A	N/A	N/A	<0.3 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	N/A	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	N/A	N/A	<20 U	N/A	<2 U	N/A	<2 U	N/A	N/A	N/A	<2 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,2-DICHLOROBENZENE	ug/L	600	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
1,2-DICHLOROETHANE	ug/L	5	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,2-DICHLOROPROPANE	ug/L	5	N/A	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,3-DICHLOROBENZENE	ug/L	310	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	N/A	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A
1,4-DICHLOROBENZENE	ug/L	75	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
2,2-DICHLOROPROPANE	ug/L	42	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
2-BUTANONE	ug/L	61000	N/A	N/A	325	N/A	<5 U	N/A	<5 U	N/A	N/A	N/A	<5 U	N/A
2-CHLOROTOLUENE	ug/L	2000	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
2-HEXANONE	ug/L	6100	N/A	N/A	<50 U	N/A	<5 U	N/A	<5 U	N/A	N/A	N/A	<5 U	N/A
4-CHLOROTOLUENE	ug/L	2000	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
4-METHYL-2-PENTANONE	ug/L	8200	N/A	N/A	<50 U	N/A	<5 U	N/A	<5 U	N/A	N/A	N/A	<5 U	N/A
ACETONE	ug/L	92000	N/A	N/A	970	N/A	<5 U	N/A	<5 U	N/A	N/A	N/A	<5 U	N/A
BENZENE	ug/L	5	N/A	N/A	<5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
BROMOBENZENE	ug/L	2000	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	N/A	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
BROMOFORM	ug/L	36	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
BROMOMETHANE	ug/L	140	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
CARBON DISULFIDE	ug/L	10000	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
CARBON TETRACHLORIDE	ug/L	5	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
CHLOROBENZENE	ug/L	100	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
CHLOROETHANE	ug/L	41000	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
CHLOROFORM	ug/L	100	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
CHLOROMETHANE	ug/L	220	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	N/A	N/A	55.9	N/A	0.317 J	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
DIBROMOMETHANE	ug/L	380	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
ETHYLBENZENE	ug/L	700	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
ISOPROPYLBENZENE	ug/L	1000	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
m,p-Xylene	ug/L	10000	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
METHYLENE CHLORIDE	ug/L	5	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
NAPHTHALENE	ug/L	2000	N/A	N/A	<4 U	N/A	<0.4 U	N/A	<0.4 U	N/A	N/A	N/A	<0.4 U	N/A
N-BUTYLBENZENE	ug/L	4100	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
N-PROPYLBENZENE	ug/L	4100	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
O-XYLENE	ug/L	10000	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
STYRENE	ug/L	100	N/A	N/A	<2.5 U	N/A	<0.25 U	N/A	<0.25 U	N/A	N/A	N/A	<0.25 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
TETRACHLOROETHENE	ug/L	5	N/A	N/A	599	N/A	129	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
TOLUENE	ug/L	1000	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	N/A	N/A	<10 U	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
TRICHLOROETHENE	ug/L	5	N/A	N/A	898	N/A	37.3	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
TRICHLOROFLOROMETHANE	ug/L	31000	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
VINYL CHLORIDE	ug/L	2	N/A	N/A	<5 U	N/A	<0.5 U	N/A	<0.5 U	N/A	N/A	N/A	<0.5 U	N/A
Volatile Fatty Acids (830-MBA)														
Acetic Acid	mg/L		N/A	N/A	898	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
Butyric Acid	mg/L		N/A	N/A	1530	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
Lactic Acid	mg/L		N/A	N/A	52500	N/A	<1 U	N/A	<1 U	N/A	N/A	N/A	<1 U	N/A
Propionic Acid	mg/L	51	N/A	N/A	<1000 U	N/A	<10 U	N/A	<10 U	N/A	N/A	N/A	<10 U	N/A
Pyruvic Acid	mg/L		N/A	N/A	35.4	N/A	<0.1 U	N/A	<0.1 U	N/A	N/A	N/A	<0.1 U	N/A
Inorganic Anions (9056)														
CHLORIDE	mg/L		N/A	N/A	2190	N/A	1710	N/A	8.69	N/A	N/A	N/A	2560	N/A
NITRATE	mg/L	10	N/A	N/A	<10 UJ	N/A	<2 UJ	N/A	0.253 J	N/A	N/A	N/A	<2 U	N/A
NITRITE	mg/L	1	N/A	N/A	<10 UJ	N/A	<2 UJ	N/A	<0.2 UJ	N/A	N/A	N/A	<2 U	N/A
SULFATE	mg/L		N/A	N/A	285	N/A	1020	N/A	62.6	N/A	N/A	N/A	1250	N/A
Dissolved Gases (RSK-175)														
CARBON DIOXIDE	ug/L		N/A	N/A	4280									

LHAAP-35A(58)
 Quarterly MNA Groundwater and Surface Water Monitoring
 January-February 2014

Location ID: Sample Date:	Units	MCL/MSC	35AWW12-013114 1/31/2014	35AWW12FD-013114 1/31/2014	35AWW13-020314 2/3/2014	35AWW14-013114 1/31/2014	35AWW15-020114 2/1/2014	35AWW16-013114 1/31/2014	35AWW17-020114 2/1/2014	35AWW18-020114 2/1/2014	35AWW19-013114 1/31/2014	35AWW20-020314 2/3/2014	35AWW20F-020314 2/3/2014
ID Location:			Site 58 - E, outside the site boundary. Sampled quarterly	Site 58 - E, outside the site boundary. Sampled quarterly	Site 58 - NE, inside the site boundary, middle region. Sampled quarterly	Site 58 - SE, outside the site boundary. Sampled quarterly	Site 58 - W, inside the site boundary, outer region. Sampled quarterly	Site 58 - SW, outside the site boundary, near Building 744-A. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SSW, outside the site boundary. Sampled quarterly	Site 58 - SSW, outside the site boundary. Sampled quarterly	Site 58 - SW, inside the site boundary, outer region, between Building 716 and 113. Sampled quarterly	Site 58 - SW, inside the site boundary, outer region, between Building 716 and 113. Sampled quarterly
Alkalinity (310.2)													
ALKALINITY, TOTAL	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	769	N/A
Phosphorus (365.4)													
PHOSPHORUS	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.2 U	N/A
Sulfide (376.1)													
SULFIDE	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1 U	N/A
Total Organic Carbon (415.1)													
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.08	N/A
Metals (6010C)													
ARSENIC	mg/L	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IRON	mg/L		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.519	N/A
Metals (6020A)													
ARSENIC	mg/L	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MANGANESE	mg/L	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.35	2.06
Volatile Organic Compounds (#260B)													
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	48.3	N/A
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	<0.25 U	2.77	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	1.97	319
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	<1 U	1.63 J	<1 U	<1 U	<1 U	<1 U	9.31	2950	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	3100	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	3.32
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	2.06	13.2
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	0.579 J	N/A
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	0.25 J
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A
ACETONE	ug/L	92000	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	N/A
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	4.46
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
CHLOROFORM	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	0.475 J	N/A
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	<0.5 U	<0.5 U	1.75	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	87.7	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
m,p-Xylene	ug/L	10000	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.364 J	N/A
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	<0.4 U	N/A
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	<0.25 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	N/A
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	1.53	N/A
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.602 J	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	3.52	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	N/A
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	0.669 J	<0.5 U	<0.5 U	<0.5 U				

Location ID: Sample Date:	Units	MCL/MSCL	35AWW21- 020414 2/4/2014	35AWW22- 013114 1/31/2014	LHSMW06- 033114 1/31/2014	LHSMW06F- 013114 1/31/2014	LHSMW07- 013014 1/30/2014	LHSMW07F- 013014 1/30/2014
ID Location:			Site 58 - ESE, outside the site boundary, beside Building 725. Sampled quarterly	Site 58 - ENE, outside the site boundary. Sampled quarterly	Site 58 - SW, inside the site boundary, middle region, beside Building 715. Sampled quarterly	Site 58 - SW, inside the site boundary, middle region, beside Building 715. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly	Site 58 - SW, outside the site boundary. Sampled quarterly
Alkalinity (310.2)								
ALKALINITY, TOTAL	mg/L		N/A	N/A	N/A	N/A	712	N/A
Phosphorus (365.4)								
PHOSPHORUS	mg/L		N/A	N/A	N/A	N/A	<0.2 U	N/A
Sulfide (376.1)								
SULFIDE	mg/L		N/A	N/A	N/A	N/A	<1 U	N/A
Total Organic Carbon (415.1)								
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	N/A	11.3	N/A
Metals (6010C)								
ARSENIC	mg/L	0.01	N/A	N/A	N/A	N/A	<0.1 U	N/A
IRON	mg/L		N/A	N/A	N/A	N/A	1.29	N/A
Metals (6020A)								
ARSENIC	mg/L	0.01	N/A	N/A	N/A	0.00649	N/A	N/A
MANGANESE	mg/L	14	N/A	N/A	N/A	N/A	0.131	0.13
Volatile Organic Compounds (6260B)								
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	N/A	<0.8 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	0.876 J	N/A
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	1.58	N/A	32.5	N/A
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	0.884 J	N/A	334	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.8 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	N/A	<2 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	N/A	<0.8 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	N/A	<4 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	0.697 J	N/A
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	N/A	<0.8 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	N/A	<0.8 U	N/A
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	N/A	<10 U	N/A
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 U	N/A	<10 U	N/A
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	N/A	<10 U	N/A
ACETONE	ug/L	92000	<5 U	<5 U	<5 U	N/A	<10 U	N/A
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	N/A	<0.8 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	N/A	<2 U	N/A
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	N/A	<2 U	N/A
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	N/A	<2 U	N/A
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	N/A	<2 U	N/A
CHLOROFORM	ug/L	100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	N/A	<2 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	<0.5 U	1.85	N/A	4.66	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
m,p-Xylene	ug/L	10000	<1 U	<1 U	<1 U	N/A	<2 U	N/A
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	N/A	<0.8 U	N/A
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.5 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	N/A	<2 U	N/A
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	0.751 J	N/A	17.6	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	N/A	<1 U	N/A
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	0.5 J	N/A	5.43	N/A
Volatile Fatty Acids (830-MBA)								
Acetic Acid	mg/L		N/A	N/A	N/A	N/A	N/A	N/A
Butyric Acid	mg/L		N/A	N/A	N/A	N/A	N/A	N/A
Lactic Acid	mg/L		N/A	N/A	N/A	N/A	N/A	N/A
Propionic Acid	mg/L	51	N/A	N/A	N/A	N/A	N/A	N/A
Pyruvic Acid	mg/L		N/A	N/A	N/A	N/A	N/A	N/A
Inorganic Anions (9056)								
CHLORIDE	mg/L		N/A	N/A	N/A	N/A	2390	N/A
NITRATE	mg/L	10	N/A	N/A	N/A	N/A	<2 U	N/A
NITRITE	mg/L	1	N/A	N/A	N/A	N/A	<2 U	N/A
SULFATE	mg/L		N/A	N/A	N/A	N/A	2440	N/A
Dissolved Gases (RSK-175)								
CARBON DIOXIDE	ug/L		N/A	N/A	N/A	N/A	213000	N/A
ETHANE	ug/L		N/A	N/A	N/A	N/A	<2 U	N/A
ETHENE	ug/L		N/A	N/A	N/A	N/A	<2 U	N/A
METHANE	ug/L		N/A	N/A	N/A	N/A	24.2	N/A
SM3500FE	ug/L							
FEROUS IRON	mg/L		N/A	N/A	N/A	N/A	<0.04 U	N/A

LHAAP Surface Water Sampling
February 2014

Location ID: Sample Date:	Units	MCL/MSC	GPW 1-020514 2/5/2014	GPW 3-020514 2/5/2014	HBW 10-020514 2/5/2014	HBW 1-020514 2/5/2014	HBW 7-020514 2/5/2014
ID Location:			Goose Prairie Creek - Grab sample, collected off a bridge on the north side of LHAAP-50 Sampled Quarterly if the creek contains water	Goose Prairie Creek - Grab sample, collected near a bridge inside of LHAAP-47 Sampled Quarterly if the creek contains water	Harrison Bayou - Grab sample, collected near the GWTP creek discharge Sampled Quarterly if the creek contains water	Harrison Bayou - Grab sample, south of LHAAP 16, downhill, and below the pump house Sampled Quarterly if the creek contains water	Harrison Bayou - Grab sample, at the backside of the Well field, down in the woods Sampled Quarterly if the creek contains water
Perchlorate (6850)							
PERCHLORATE	ug/L	26	0.766	1.15	<0.2 U	<0.2 U	0.201 J

Subject: Final Minutes, Monthly Managers Meeting,
Longhorn Army Ammunition Plant (LHAAP)

Location of Meeting: LHAAP Army Trailer and Teleconference – 866-203-6896,
passcode 1759304791

Date of Meeting: May 15, 2014 – 9:00 AM

Attendees:

Army BRAC: Rose Zeiler, Tom Lederle
 EPA: Rich Mayer, Janetta Coats, Kent Becher (USGS Liaison)
 TCEQ: April Palmie
 USACE: Aaron Williams
 AECOM: Dave Wacker, Gretchen McDonnell, David Rowlands (World Environment)
 AEC:
 USFWS: Paul Bruckwicki

Welcome

RMZ

Mr. Wacker introduced Mr. David Rowlands from World Environmental, an AECOM subcontractor that handles daily operation of the GWTP.

Action Items

AECOM

- Provide a summary of nutrient data following fluidized bed reactor optimization. **Pending.**
- Plan 1,4-dioxane sampling. **Pending.** Second round of sampling planned for late fall.
- Create maps for the sites showing surface water sampling locations for MNA sites and basewide to support this evaluation. **Complete.**

Army

- Develop new LHAAP-18/24 FS Addendum submittal schedule. **Complete.** Hard copy was provided to agencies and Army will email electronic copy to agencies shortly. There is impact to the LHAAP-18/24 schedule due to continued investigation activities, but all FFA parties are on-board with the delays.

EPA

- Develop a list of wells/sites for upcoming EPA split sampling and advise Army. **Pending.** SOW has been drafted, work will likely take place in June or July. Total of 30 wells are anticipated for sampling: 17 at LHAAP-18/24, 8 at LHAAP-29, Fire Station and Water Tower Hill wells, a couple of perimeter wells, a couple of off-site wells at Caddo Lake Water Supply Corporation. EPA is in contact with Caddo Lake Water Supply Corporation to get access.
- Develop/coordinate with Army on a schedule for surface water drainage sampling. **Pending.** No scheduled date at this time.
- Mr. Mayer will consult with EPA legal to obtain ESD signature. **Complete.** EPA has signed. Army provided an example of a one-sheet errata page that will be added immediately prior in the AR as a document associated with the actual ESD.
- Mr. Tzhone will provide the EPA's fall protection safety briefing to Mr. Mayer, Ms. Palmie and Dr. Zeiler.

TCEQ**AEC****USFWS****Defense Environmental Restoration Program (DERP) PBR Update****AECOM**

- Upcoming document submissions to regulators (see Document and Issue Tracking table)

Item 1 (5 Year Review) – Document has been signed by Army and will be added to the AR. Mr. Tzhone stated that if the dispute is not settled by the end of the year, the EPA may issue a separate protectiveness statement saying that USEPA feels the remedy is protective only in the “short term”.

Item 2 (IWWP, QAPP, SOPs, and HASP) – Surface water SOP will be finalized as a procedure on how to physically deploy to collect a surface water sample. Issues related to surface water sampling rationale will be conducted separately within the context of each site. A redline of the surface water collection SOP will be transmitted to the agencies. A field excursion was completed after the meeting, to examine the GPC-1 and GPC-1A surface water sampling points at LHAAP-50.

Item 3 (LHAAP-18/24 - Explanation of Significant Differences) – Discussed earlier in the meeting.

Item 4 (GWTP Quarterly Report) – 4th Quarter 2013 report will be submitted to the agencies shortly.

Item 5 (LHAAP-18/24 Revised FS and PSI WP Addenda) - Placeholder for PSI WP Addenda 18/24 and Revised FS. A schedule for document submittal was provided, indicating an October 31st submittal date.

Item 6 (Completion Reports)

-LHAAP-46 well has been installed at clean location delineating the north edge of intermediate zone plume.

-The LHAAP-67 RD stated the “intermediate” zone will be sampled as part of the RA. During the RA, the CSM changed in that the zone being called “intermediate” was found to be simply the lower portion of the shallow zone aquifer, with no aquitard present. The change in CSM requires that we now need to look deeper to see the true “intermediate” zone (groundwater bearing zone underlying the shallow zone). Mr. Wacker explained the experience drilling 50WW10 at adjacent LHAAP-50 as a similar issue situation. At 50WW10, there was 40 feet of dry clay between the bottom of the shallow zone at ~60 feet bgs and the “intermediate” zone groundwater that was ultimately encountered at ~98 feet bgs. Based on boring logs and the thickness of the clay, it is expected to be laterally continuous across the site. Mr. Wacker asked if the group could agree upon a certain thickness of clay beneath the shallow zone that could be considered protective, and not require complete penetration of the aquitard to find “intermediate” zone groundwater. The group had an opportunity to examine the boring log for 50WW10 and to examine the actual core from that boring to assist in evaluating this question. Ms. Palmie stated that TCEQ would consider 10 feet of clay as sufficiently thick and that drilling could terminate at that point. Mr. Mayer stated that EPA would discuss and provide their recommendation for a clay thickness they could feel comfortable indicated a continuous layer across the site that would not require drilling all the way to “intermediate” zone groundwater.

- LHAAP-50 well has been installed at a clean location delineating the north edge of the shallow TCE plume so this RACR will be completed and submitted.
- LHAAP-37 – plume delineation is still being worked with step out borings.
- LHAAP-58 RACR will be submitted to the agencies in the next couple of weeks.

Item 7 (Monthly Manager's Meeting) – Next MMM scheduled for Thursday, June 12th, at 10AM, by teleconference.

Item 8 (GW Network Optimization Memos) – Additional optimization memos will be submitted with RACRs before agency evaluation is expected.

Item 9 (LHAAP-29 RI/FS Field Work in Progress) – Field work is in progress.

Item 10 (LHAAP-17 PDI WP, LHAAP-16 RD WP, LHAAP-03 RD/RAWP, LHAAP-04 RD, LHAAP-47 RD) – Placeholder for sites on hold due to dispute.

Item 11 (May RAB) – May RAB Tour planned today for 3PM. Dr. Zeiler will propose the 1st Thursday in August to the RAB for the next RAB meeting.

Item 12 (GWTP O&M) – On-going. Granulated activated carbon was purchased for FBR, chemicals were purchased last quarter. FBR functionality has been restored. Mr. Mayer asked what the final determination was on the causes of the FBR performance issues. Mr. Wacker stated that there was an improperly mixed batch of acetic acid (food source) received initially impacted FBR performance in October 2013. Subsequently, a power outage during a freeze event caused loss of fluidization of the reactor bed and bacterial suppression. Six to eight inches of granular activated carbon will be replenished in the bed. At this point, it appears treatment is stabilizing and it is time for nutrient optimization study to begin. On the INF Pond, Dr. Zeiler stated that Army is looking at keeping water in the pond only seasonally, just to keep vegetation growth down. The INF Pond would likely be drained quarterly. Dr. Zeiler said that the INF Pond operation SOP could be updated in an internal memo. AECOM will create that internal memo.

Item 13 (Admin Record Update) – AR Update for 1st Quarter 2014 is being prepared. All dispute-related correspondence is being placed at the very end of the 4th Quarter 2013 AR Update.

Item 14 (BERA Addendum) – BERA Addendum agency comments have been submitted. RTCs should be returned to agencies by the middle of June.

Item 15 – (Nutrient Issue for HB and INF) – Discussed earlier in meeting.

Item 16 – (Website) – Website will be opened up to agencies for feedback soon.

Item 17 – (CRP/CIP) – Placeholder maintained in the tracker as a reminder that these requirements and recommendations are applicable to our work going forward.

Item 18 (Field Work Planning LHAAP-18/24, LHAAP-29) – Ms. McDonnell provided a review of field work recently accomplished and remaining scope. Mr. Becher mentioned Beacon Technology passive soil gas samplers and volunteered to provide the group with some basic information on the technology.

Item 19 (LHAAP-12 RAO Report) – Should be submitted to agencies by the end of May.

Defense Environmental Restoration Program (DERP) PBR Update (continued) AECOM

- Upcoming field work – Discussed earlier in the meeting
- Monthly data – Mr. Wacker stated the monthly air data email will go out soon. Dr. Zeiler asked that a hard date be established for when this email will go to the agencies each.
- Groundwater Treatment Plant – discussed earlier in the meeting

MMRP Update Army

- Update – Mr. Wacker advised that ~40 pieces of faded signage were replaced and the signage areas were cleared with weed eater. Additional clearing will be done to maintain line-of-site visibility from sign to sign.

Other Environmental Restoration Army

- Vault at LHAAP-67 – USACE will provide technical direction for AECOM to address this vault.
- Fill pipes observed by USFWS near building foundations at LHAAP-47 were examined yesterday by the MMM group. Dr. Zeiler will check symbology observed on the fill pipe cap to try to determine what they were for.
- Decision Documents for multiple sites – status update – **Complete**. TCEQ has transmitted signed Non-NPL decision document to Army. PDF-format version of the document will be transmitted to Dr. Zeiler.
- Site 37 Bioplug – Animal chewing of bioplug tubings has stopped. The Bioplug study is scheduled to end in October 2014, when the contractor will then restore the aquifer to pre-existing conditions before MNA can begin.
- Quarterly Reporting and Requirements
 - GWTP Evaluation with air monitoring data – discussed earlier under Tracker
 - Surface Water/Perimeter Well Quarterly Update and AR Transmittal – Mr. Wacker provided a review of the RAB handouts which includes new surface water data for February 2014 and GWTP treatment volumes for the last quarter. The AR transmittal for this data will be generated by AECOM for submittal to Army.
 - Administrative Record Update – discussed earlier in meeting
- Annual Reporting
 - LUC Management Plan Update (due September 2015)
 - CRP/CIP Revision (Biennial) and questionnaire October 2015

Programmatic Issues RMZ/RM/AP

- Status of Dispute – Mr. Lederle briefed that a meeting with EPA Administrator McCarthy, was conducted. The Assistant Secretary of the Army made a few points that could be summarized as Army simply wanting to be treated like all other entities, able to rely on existing agreements without everything reopened/revisited. Army is awaiting EPA response. No timeframe for that response.

USFWS Update RMZ/PB

- Environmental Restoration Issues with Transfer Schedule Impact
 - LHAAP-12 has transferred to USFWS. Army has met with USFWS to coordinate continuing maintenance. USFWS must make annual use certifications and maintain them in a file. Media release is being handled by USFWS. USFWS will provide Ms. Coats with a copy of the release when finalized.

- ECP-VI offer to transfer has been made to USFWS, consisting of three Production Area Parcel tracts, LHAAP-49 (Former Acid Storage Area), LHAAP-32 (Former TNT Waste Disposal Plant), LHAAP-8 (Former Sewage Treatment Plant), LHAAP-35/36 (Sumps and Waste Rack Sumps), LHAAP-48 (Y-Area), LHAAP-55 (Septic Tanks), and LHAAP-35C(53) and co-located LHAAP-002-R (Static Test Area) (less the INF Pond).
- USFWS Comments on Documents - none

Schedule Next Managers' Meeting –Thursday, June 12th at 10AM, by teleconference.

New Action Items

AECOM

- Set a hard date when the GWTP monthly air monitoring email goes out each month.
- Create an internal memo to update the INF Pond operation SOP.

Army

- USACE to provide technical direction for AECOM to address the LHAAP-67 vault.
- Provide RTCs to BERA Addendum
- Determine nature of fill pipes observed at LHAAP-46

EPA

- Provide a clay thickness for LHAAP-67 that EPA would feel comfortable indicated a continuous layer across the site that would not require drilling all the way to the intermediate zone groundwater

TCEQ

AEC

USFWS

- Provide a copy of the media release on LHAAP-12 transfer to Ms. Coats when completed.

Adjourn

ACRONYM LIST

AEC	United States Army Environmental Command
AECOM	AECOM Technology Services, Inc.
AP	April Palmie
AR	Administrative Record
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
BRAC	Base Realignment and Closure
CRP/CIP	Community Relations Plan/Community Involvement Plan
CSM	Conceptual Site Model
DERP	Defense Environmental Restoration Program
ECP	Environmental Condition of Property

EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FBR	Fluidized Bed Reactor
FFA	Federal Facility Agreement
FS	Feasibility Study
GWTP	Ground Water Treatment Plant
GPC	Goose Prairie Creek
HASP	Health and Safety Plan
HB	Harrison Bayou
INF	Intermediate-Range Nuclear Forces
IWWP	Installation-Wide Work Plan
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MMM	Monthly Managers' Meeting
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
NPL	National Priorities List
O&M	Operation and Maintenance
PB	Paul Bruckwicki
PBR	Performance-Based Remediation
PDI	Pre-Design Investigation
PSI	Post-Screening Investigation
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RAO	Remedial Action Operation
RAWP	Remedial Action Work Plan
RD	Remedial Design
RI	Remedial Investigation
RM	Rich Mayer
RMZ	Rose M. Zeiler
RTC	Response to Comments
SOP	Standard Operating Procedure
SOW	Scope of Work
TCE	Trichloroethylene
TCEQ	Texas Commission on Environmental Quality
TNT	Trinitrotoluene
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
WP	Work Plan

**LHAAP Data Validated
April 2014**

GWTP Influent and Effluent	<i>Bi-weekly, Weekly, and Monthly</i>	
	<i>February and March 2014</i>	
	Ammonia (350.1)	Perchlorate (6850)
	Ortho-Phosphate (365.2)	Hexavalent Chromium (7196A)
	Total Organic Carbon (415.1)	VOC (8260B)
	Metals (6010C)	Inorganic Anions (9056)
	Metals (6020A)	
Site 18/24	<i>Annual ICT Sampling</i>	
	<i>February 2014</i>	
	VOC (8260B)	
	Perchlorate (6850)	
	Inorganic Anions (9056)	
	Metals (6010C and 6020A)	
	Mercury (7470A)	
Site 50	<i>Quarterly MNA Sampling</i>	
	<i>March 2014</i>	
	Total Alkalinity (310.2)	Metals (6020A)
	Phosphorus (365.4)	VOC (8260B)
	Sulfide (376.1)	Inorganic Anions (9056)
	Total Organic Carbon (415.1)	Dissolved Gasses (RSK-175)
	Metals (6010C)	Perchlorate (6850)

LHAAP GWTP INFLUENT

March 2014

Location ID: Sample Date:	Units	LH18/24-SP140 6157-GRAB 3/10/2014	LH18/24-SP140 7157-GRAB 3/10/2014	LH18/24-SP140 7162-GRAB 3/27/2014
ID Location:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly
Ammonia as Nitrogen (350.1)				
AMMONIA AS N	mg/L	N/A	N/A	N/A
Ortho-Phosphate (365.2)				
ORTHO-PHOSPHATE	mg/L	N/A	N/A	N/A
Total Organic Carbon (415.1)				
TOTAL ORGANIC CARBON (TOC)	mg/L	N/A	N/A	N/A
Metals (6010C)				
ALUMINUM	mg/L	<0.1 U	N/A	N/A
IRON	mg/L	0.0761 J	N/A	N/A
6020A				
ANTIMONY	mg/L	<0.001 U	N/A	N/A
ARSENIC	mg/L	0.00303	N/A	N/A
BARIUM	mg/L	0.0934	N/A	N/A
CADMIUM	mg/L	<0.0006 U	N/A	N/A
CHROMIUM	mg/L	0.00292 J	N/A	N/A
COBALT	mg/L	0.000819 J	N/A	N/A
LEAD	mg/L	<0.001 U	N/A	N/A
MANGANESE	mg/L	0.094	N/A	N/A
NICKEL	mg/L	0.00294 J	N/A	N/A
SELENIUM	mg/L	0.0112	N/A	0.00783
SILVER	mg/L	<0.001 U	N/A	N/A
THALLIUM	mg/L	<0.0002 U	N/A	N/A
VANADIUM	mg/L	0.000714 J	N/A	N/A
ZINC	mg/L	<0.025 U	N/A	N/A
Metals (6850)				
PERCHLORATE	ug/L	N/A	18900	N/A
Hexavalent Chromium (7196A)				
HEXAVALENT CHROMIUM	mg/L	N/A	N/A	N/A
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	N/A	<25 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	N/A	<25 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	N/A	<20 U	N/A

LHAAP GWTP INFLUENT

March 2014

Location ID: Sample Date:	Units	LH18/24-SP140- 6157-GRAB 3/10/2014	LH18/24-SP140- 7157-GRAB 3/10/2014	LH18/24-SP140- 7162-GRAB 3/27/2014
ID Location:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly
1,1,2-TRICHLOROETHANE	ug/L	N/A	<25 U	N/A
1,1-DICHLOROETHANE	ug/L	N/A	10.9 J	N/A
1,1-DICHLOROETHENE	ug/L	N/A	118	N/A
1,1-DICHLOROPROPENE	ug/L	N/A	<25 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	N/A	<15 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	N/A	<50 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	N/A	<20 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	N/A	<25 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	N/A	<100 U	N/A
1,2-DIBROMOETHANE	ug/L	N/A	<25 U	N/A
1,2-DICHLOROBENZENE	ug/L	N/A	<12.5 U	N/A
1,2-DICHLOROETHANE	ug/L	N/A	70.4	N/A
1,2-DICHLOROPROPANE	ug/L	N/A	<20 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	N/A	<25 U	N/A
1,3-DICHLOROBENZENE	ug/L	N/A	<25 U	N/A
1,3-DICHLOROPROPANE	ug/L	N/A	<20 U	N/A
1,4-DICHLOROBENZENE	ug/L	N/A	<12.5 U	N/A
2,2-DICHLOROPROPANE	ug/L	N/A	<25 U	N/A
2-BUTANONE	ug/L	N/A	<250 U	N/A
2-CHLOROTOLUENE	ug/L	N/A	<12.5 U	N/A
2-HEXANONE	ug/L	N/A	<250 U	N/A
4-CHLOROTOLUENE	ug/L	N/A	<25 U	N/A
4-METHYL-2-PENTANONE	ug/L	N/A	<250 U	N/A
ACETONE	ug/L	N/A	<250 U	N/A
BENZENE	ug/L	N/A	<12.5 U	N/A
BROMOBENZENE	ug/L	N/A	<12.5 U	N/A
BROMOCHLOROMETHANE	ug/L	N/A	<20 U	N/A
BROMODICHLOROMETHANE	ug/L	N/A	<25 U	N/A
BROMOFORM	ug/L	N/A	<50 U	N/A
BROMOMETHANE	ug/L	N/A	<50 U	N/A
CARBON DISULFIDE	ug/L	N/A	<50 U	N/A
CARBON TETRACHLORIDE	ug/L	N/A	<25 U	N/A
CHLOROBENZENE	ug/L	N/A	<12.5 U	N/A
CHLOROETHANE	ug/L	N/A	<50 U	N/A
CHLOROFORM	ug/L	N/A	26.5 J	N/A
CHLOROMETHANE	ug/L	N/A	<50 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	N/A	5000	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	N/A	<25 U	N/A
DIBROMOCHLOROMETHANE	ug/L	N/A	<25 U	N/A

LHAAP GWTP INFLUENT

March 2014

Location ID: Sample Date:	Units	LH18/24-SP140- 6157-GRAB 3/10/2014	LH18/24-SP140- 7157-GRAB 3/10/2014	LH18/24-SP140- 7162-GRAB 3/27/2014
ID Location:		GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly	GWTP – Collected from a spigot on the discharge of influent TK-140 Sampled Monthly
DIBROMOMETHANE	ug/L	N/A	<25 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	N/A	<25 U	N/A
ETHYLBENZENE	ug/L	N/A	<25 U	N/A
HEXACHLOROBUTADIENE	ug/L	N/A	<25 U	N/A
ISOPROPYLBENZENE	ug/L	N/A	<25 U	N/A
m,p-Xylene	ug/L	N/A	<50 U	N/A
METHYLENE CHLORIDE	ug/L	N/A	4610	N/A
NAPHTHALENE	ug/L	N/A	<20 U	N/A
N-BUTYLBENZENE	ug/L	N/A	<25 U	N/A
N-PROPYLBENZENE	ug/L	N/A	<12.5 U	N/A
O-XYLENE	ug/L	N/A	<25 U	N/A
P-ISOPROPYLTOLUENE	ug/L	N/A	<25 U	N/A
SEC-BUTYLBENZENE	ug/L	N/A	<25 U	N/A
STYRENE	ug/L	N/A	<12.5 U	N/A
TERT-BUTYLBENZENE	ug/L	N/A	<25 U	N/A
TETRACHLOROETHENE	ug/L	N/A	44.6 J	N/A
TOLUENE	ug/L	N/A	<25 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	N/A	18.8 J	N/A
TRANS-1,3-DICHLOROPROPEN	ug/L	N/A	<50 U	N/A
TRICHLOROETHENE	ug/L	N/A	11700	N/A
TRICHLOROFLUOROMETHANE	ug/L	N/A	<25 U	N/A
VINYL CHLORIDE	ug/L	N/A	54.5	N/A
Common Anions (9056)				
CHLORIDE	mg/L	N/A	N/A	N/A
SULFATE	mg/L	N/A	N/A	N/A

LHAAP GWTP EFFLUENT
FEBRUARY - MARCH 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650- 6154-COMP 2/17/2014	LH18/24-SP650- 6154-GRAB 2/17/2014	LH18/24-SP650- 6155-GRAB 2/24/2014
ID Location:			GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK-650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Monthly
Ammonia as Nitrogen (350.1)					
AMMONIA AS N	mg/L		N/A	N/A	<0.1 U
Ortho-Phosphate (365.2)					
ORTHO-PHOSPHATE	mg/L		N/A	N/A	<0.05 U
Total Organic Carbon (415.1)					
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	57.9
Metals (6010C)					
ALUMINUM	mg/L	1.644	N/A	N/A	N/A
IRON	mg/L	2.395	N/A	N/A	N/A
Metals (6020A)					
ANTIMONY	mg/L		N/A	N/A	N/A
ARSENIC	mg/L	0.772	N/A	N/A	N/A
BARIUM	mg/L	2	N/A	N/A	N/A
CADMIUM	mg/L	0.0034	N/A	N/A	N/A
CHROMIUM	mg/L	0.752	N/A	N/A	N/A
COBALT	mg/L	11.495	N/A	N/A	N/A
LEAD	mg/L	0.0046	<0.001 U	<0.001 U	N/A
MANGANESE	mg/L	15.494	N/A	N/A	N/A
NICKEL	mg/L	0.184	N/A	N/A	N/A
SELENIUM	mg/L	0.012	0.0124	0.00994	N/A
SILVER	mg/L	0.003	<0.001 U	<0.001 U	N/A
THALLIUM	mg/L		N/A	N/A	N/A
VANADIUM	mg/L	3.592	N/A	N/A	N/A
ZINC	mg/L	0.31	N/A	N/A	N/A
Metals (6850)					
PERCHLORATE	ug/L	13	<0.2 U	<0.2 U	54.8
Hexavalent Chromium (7196A)					
HEXAVALENT CHROMIUM	mg/L	0.124	<0.01 U	<0.01 U	N/A

LHAAP GWTP EFFLUENT
FEBRUARY - MARCH 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650- 6154-COMP 2/17/2014	LH18/24-SP650- 6154-GRAB 2/17/2014	LH18/24-SP650- 6155-GRAB 2/24/2014
ID Location:			GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK-650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Monthly

Volatile Organic Compounds (8260B)

1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	<0.5 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	<0.5 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	<0.4 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	217	N/A	<0.5 U	N/A
1,1-DICHLOROETHANE	ug/L	14032	N/A	<0.25 U	N/A
1,1-DICHLOROETHENE	ug/L	253	N/A	<1 U	N/A
1,1-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L		N/A	<0.3 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L		N/A	<1 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L		N/A	<0.4 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A
1,2-DIBROMO-3-CHLOROPROPAN	ug/L		N/A	<2 U	N/A
1,2-DIBROMOETHANE	ug/L		N/A	<0.5 U	N/A
1,2-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A
1,2-DICHLOROETHANE	ug/L	181	N/A	0.328 J	N/A
1,2-DICHLOROPROPANE	ug/L		N/A	<0.4 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	<0.5 U	N/A
1,3-DICHLOROBENZENE	ug/L		N/A	<0.5 U	N/A
1,3-DICHLOROPROPANE	ug/L		N/A	<0.4 U	N/A
1,4-DICHLOROBENZENE	ug/L		N/A	<0.25 U	N/A
2,2-DICHLOROPROPANE	ug/L		N/A	<0.5 UJ	N/A
2-BUTANONE	ug/L		N/A	<5 U	N/A
2-CHLOROTOLUENE	ug/L		N/A	<0.25 U	N/A
2-HEXANONE	ug/L		N/A	<5 U	N/A
4-CHLOROTOLUENE	ug/L		N/A	<0.5 U	N/A
4-METHYL-2-PENTANONE	ug/L		N/A	<5 U	N/A
ACETONE	ug/L	2395	N/A	12.2	N/A
BENZENE	ug/L	181	N/A	<0.25 U	N/A
BROMOBENZENE	ug/L		N/A	<0.25 U	N/A
BROMOCHLOROMETHANE	ug/L		N/A	<0.4 U	N/A
BROMODICHLOROMETHANE	ug/L		N/A	<0.5 U	N/A
BROMOFORM	ug/L		N/A	<1 U	N/A
BROMOMETHANE	ug/L		N/A	<1 U	N/A

LHAAP GWTP EFFLUENT
FEBRUARY - MARCH 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650- 6154-COMP 2/17/2014	LH18/24-SP650- 6154-GRAB 2/17/2014	LH18/24-SP650- 6155-GRAB 2/24/2014
ID Location:			GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK-650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Monthly
CARBON DISULFIDE	ug/L		N/A	3.94	N/A
CARBON TETRACHLORIDE	ug/L	181	N/A	<0.5 U	N/A
CHLOROBENZENE	ug/L	47180	N/A	<0.25 U	N/A
CHLOROETHANE	ug/L		N/A	<1 U	N/A
CHLOROFORM	ug/L	3615	N/A	<0.25 U	N/A
CHLOROMETHANE	ug/L		N/A	<1 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L		N/A	0.876 J	N/A
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	<0.5 U	N/A
DIBROMOCHLOROMETHANE	ug/L		N/A	<0.5 U	N/A
DIBROMOMETHANE	ug/L		N/A	<0.5 U	N/A
DICHLORODIFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A
ETHYLBENZENE	ug/L	57025	N/A	<0.5 U	N/A
HEXACHLOROBUTADIENE	ug/L		N/A	<0.5 U	N/A
ISOPROPYLBENZENE	ug/L		N/A	<0.5 U	N/A
m,p-Xylene	ug/L	83.6	N/A	<1 U	N/A
METHYLENE CHLORIDE	ug/L	1699	N/A	<0.5 U	N/A
NAPHTHALENE	ug/L		N/A	<0.4 U	N/A
N-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A
N-PROPYLBENZENE	ug/L		N/A	<0.25 U	N/A
O-XYLENE	ug/L	83.6	N/A	<0.5 U	N/A
P-ISOPROPYLTOLUENE	ug/L		N/A	<0.5 U	N/A
SEC-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A
STYRENE	ug/L	5987	N/A	<0.25 U	N/A
TERT-BUTYLBENZENE	ug/L		N/A	<0.5 U	N/A
TETRACHLOROETHENE	ug/L	181	N/A	<0.5 U	N/A
TOLUENE	ug/L	4189	N/A	<0.5 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	<0.5 U	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	<1 U	N/A
TRICHLOROETHENE	ug/L	181	N/A	0.984 J	N/A
TRICHLOROFLUOROMETHANE	ug/L		N/A	<0.5 U	N/A
VINYL CHLORIDE	ug/L	72	N/A	<0.5 U	N/A
Common Anions (9056)					
CHLORIDE	mg/L		657	675	N/A
SULFATE	mg/L		131	137	N/A

LHAAP GWTP EFFLUENT
FEBRUARY - MARCH 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650- 6158-GRAB 3/10/2014	LH18/24-SP650- 6160-COMP 3/18/2014	LH18/24-SP650- 6160-GRAB 3/18/2014
ID Location:			GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Weekly	GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK-650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly
Ammonia as Nitrogen (350.1)					
AMMONIA AS N	mg/L		2.35	N/A	N/A
Ortho-Phosphate (365.2)					
ORTHO-PHOSPHATE	mg/L		0.376	N/A	N/A
Total Organic Carbon (415.1)					
TOTAL ORGANIC CARBON (TOC)	mg/L		56.4	40	40.8
Metals (6010C)					
ALUMINUM	mg/L	1.644	N/A	N/A	N/A
IRON	mg/L	2.395	N/A	N/A	N/A
Metals (6020A)					
ANTIMONY	mg/L		N/A	N/A	N/A
ARSENIC	mg/L	0.772	N/A	N/A	N/A
BARIUM	mg/L	2	N/A	N/A	N/A
CADMIUM	mg/L	0.0034	N/A	N/A	N/A
CHROMIUM	mg/L	0.752	N/A	N/A	N/A
COBALT	mg/L	11.495	N/A	N/A	N/A
LEAD	mg/L	0.0046	N/A	<0.001 U	<0.001 U
MANGANESE	mg/L	15.494	N/A	N/A	N/A
NICKEL	mg/L	0.184	N/A	N/A	N/A
SELENIUM	mg/L	0.012	N/A	0.00857 J	0.00792 J
SILVER	mg/L	0.003	N/A	<0.001 U	<0.001 U
THALLIUM	mg/L		N/A	N/A	N/A
VANADIUM	mg/L	3.592	N/A	N/A	N/A
ZINC	mg/L	0.31	N/A	N/A	N/A
Metals (6850)					
PERCHLORATE	ug/L	13	13.2	2.02	3.37
Hexavalent Chromium (7196A)					
HEXAVALENT CHROMIUM	mg/L	0.124	N/A	<0.01 U	<0.01 U

LHAAP GWTP EFFLUENT
FEBRUARY - MARCH 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650- 6158-GRAB 3/10/2014	LH18/24-SP650- 6160-COMP 3/18/2014	LH18/24-SP650- 6160-GRAB 3/18/2014
ID Location:			GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Weekly	GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK-650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly
Volatile Organic Compounds (8260B)					
1,1,1,2-TETRACHLOROETHANE	ug/L		N/A	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	7230	N/A	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L		N/A	N/A	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	217	N/A	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	14032	N/A	N/A	<0.25 U
1,1-DICHLOROETHENE	ug/L	253	N/A	N/A	<1 U
1,1-DICHLOROPROPENE	ug/L		N/A	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L		N/A	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L		N/A	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L		N/A	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L		N/A	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPAN	ug/L		N/A	N/A	<2 U
1,2-DIBROMOETHANE	ug/L		N/A	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L		N/A	N/A	<0.25 U
1,2-DICHLOROETHANE	ug/L	181	N/A	N/A	<0.5 U
1,2-DICHLOROPROPANE	ug/L		N/A	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L		N/A	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L		N/A	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L		N/A	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L		N/A	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L		N/A	N/A	<0.5 U
2-BUTANONE	ug/L		N/A	N/A	<5 U
2-CHLOROTOLUENE	ug/L		N/A	N/A	<0.25 U
2-HEXANONE	ug/L		N/A	N/A	<5 U
4-CHLOROTOLUENE	ug/L		N/A	N/A	<0.5 U
4-METHYL-2-PENTANONE	ug/L		N/A	N/A	<5 U
ACETONE	ug/L	2395	N/A	N/A	3.96 J
BENZENE	ug/L	181	N/A	N/A	<0.25 U
BROMOBENZENE	ug/L		N/A	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L		N/A	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L		N/A	N/A	<0.5 U
BROMOFORM	ug/L		N/A	N/A	<1 U
BROMOMETHANE	ug/L		N/A	N/A	<1 U

LHAAP GWTP EFFLUENT
FEBRUARY - MARCH 2014

Location ID: Sample Date:	Units	Daily Maximum Conc.	LH18/24-SP650- 6158-GRAB 3/10/2014	LH18/24-SP650- 6160-COMP 3/18/2014	LH18/24-SP650- 6160-GRAB 3/18/2014
ID Location:			GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Weekly	GWTP – Collected from holding jar which collects the discharge from a spigot on effluent TK-650 every couple of hours Sampled Biweekly	GWTP – Collected from a spigot on the discharge of effluent TK-650 Sampled Biweekly
CARBON DISULFIDE	ug/L		N/A	N/A	2.99
CARBON TETRACHLORIDE	ug/L	181	N/A	N/A	<0.5 U
CHLOROBENZENE	ug/L	47180	N/A	N/A	<0.25 U
CHLOROETHANE	ug/L		N/A	N/A	<1 U
CHLOROFORM	ug/L	3615	N/A	N/A	<0.25 U
CHLOROMETHANE	ug/L		N/A	N/A	<1 U
CIS-1,2-DICHLOROETHENE	ug/L		N/A	N/A	1.07
CIS-1,3-DICHLOROPROPENE	ug/L		N/A	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L		N/A	N/A	<0.5 U
DIBROMOMETHANE	ug/L		N/A	N/A	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L		N/A	N/A	<0.5 U
ETHYLBENZENE	ug/L	57025	N/A	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L		N/A	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L		N/A	N/A	<0.5 U
m,p-Xylene	ug/L	83.6	N/A	N/A	<1 U
METHYLENE CHLORIDE	ug/L	1699	N/A	N/A	<0.5 U
NAPHTHALENE	ug/L		N/A	N/A	<0.4 U
N-BUTYLBENZENE	ug/L		N/A	N/A	<0.5 U
N-PROPYLBENZENE	ug/L		N/A	N/A	<0.25 U
O-XYLENE	ug/L	83.6	N/A	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L		N/A	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L		N/A	N/A	<0.5 U
STYRENE	ug/L	5987	N/A	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L		N/A	N/A	<0.5 U
TETRACHLOROETHENE	ug/L	181	N/A	N/A	<0.5 U
TOLUENE	ug/L	4189	N/A	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L		N/A	N/A	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L		N/A	N/A	<1 U
TRICHLOROETHENE	ug/L	181	N/A	N/A	1.34
TRICHLOROFLUOROMETHANE	ug/L		N/A	N/A	<0.5 U
VINYL CHLORIDE	ug/L	72	N/A	N/A	<0.5 U
Common Anions (9056)					
CHLORIDE	mg/L		N/A	725	691
SULFATE	mg/L		N/A	98.6	90.6

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MSC	ICT 11-022614 2/26/2014	ICT 12B- 022614 2/26/2014
Metals (6010C)				
ALUMINUM	mg/L	100	<0.1 U	<0.1 U
BERYLLIUM	mg/L	0.004	<0.01 U	<0.01 U
CALCIUM	mg/L		63.4	28.5
IRON	mg/L		<0.1 U	0.052 J
MAGNESIUM	mg/L		50.4	22.4
POTASSIUM	mg/L		2.32	<1 U
SODIUM	mg/L		283	292
Metals (6020A)				
ANTIMONY	mg/L	0.006	<0.001 U	<0.001 U
ARSENIC	mg/L	0.01	0.0039	0.00208
BARIUM	mg/L	2	2.16	0.17
CADMIUM	mg/L	0.005	<0.0006 U	<0.0006 U
CHROMIUM	mg/L	0.1	0.00456	0.00119 J
COBALT	mg/L	6.1	0.00173 J	0.00054 J
COPPER	mg/L	1.3	<0.002 U	<0.002 U
LEAD	mg/L	0.015	<0.001 U	<0.001 U
MANGANESE	mg/L	14	0.236	0.0463
NICKEL	mg/L	2	0.00836	0.00298 J
SELENIUM	mg/L	0.05	0.0148	0.00697
SILVER	mg/L	0.51	<0.001 U	<0.001 U
THALLIUM	mg/L	0.002	<0.0002 U	<0.0002 U
VANADIUM	mg/L	0.72	0.000937 J	0.00167 J
ZINC	mg/L	31	<0.025 U	<0.025 U
Metals (6850)				
PERCHLORATE	ug/L	72	29800	267000
Mercury (7470A)				
MERCURY	mg/L	0.002	<0.0002 U	<0.0002 U
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<5 U	<50 U
1,1,1-TRICHLOROETHANE	ug/L	200	<5 U	<50 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<4 U	<40 U
1,1,2-TRICHLOROETHANE	ug/L	5	<5 U	<50 U
1,1-DICHLOROETHANE	ug/L	10000	<2.5 U	<25 U
1,1-DICHLOROETHENE	ug/L	7	<10 U	<100 U
1,1-DICHLOROPROPENE	ug/L	2.9	<5 U	<50 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<3 U	<30 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<10 U	<100 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<4 U	<40 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<5 U	<50 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<20 U	<200 U
1,2-DIBROMOETHANE	ug/L	0.005	<5 U	<50 U
1,2-DICHLOROBENZENE	ug/L	600	<2.5 U	<25 U
1,2-DICHLOROETHANE	ug/L	5	13.1	62.6 J

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MSC	ICT 11-022614 2/26/2014	ICT 12B- 022614 2/26/2014
1,2-DICHLOROPROPANE	ug/L	5	<4 U	<40 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<5 U	<50 U
1,3-DICHLOROBENZENE	ug/L	3100	<5 U	<50 U
1,3-DICHLOROPROPANE	ug/L	29	<4 U	<40 U
1,4-DICHLOROBENZENE	ug/L	75	<2.5 U	<25 U
2,2-DICHLOROPROPANE	ug/L	42	<5 U	<50 U
2-BUTANONE	ug/L	61000	<50 U	<500 U
2-CHLOROTOLUENE	ug/L	2000	<2.5 U	<25 U
2-HEXANONE	ug/L	6100	<50 U	<500 U
4-CHLOROTOLUENE	ug/L	2000	<5 U	<50 U
4-METHYL-2-PENTANONE	ug/L	8200	<50 U	<500 U
ACETONE	ug/L	92000	<50 U	<500 U
BENZENE	ug/L	5	1.25 J	<25 U
BROMOBENZENE	ug/L	2000	<2.5 U	<25 U
BROMOCHLOROMETHANE	ug/L	4100	<4 U	<40 U
BROMODICHLOROMETHANE	ug/L	4.6	<5 U	<50 U
BROMOFORM	ug/L	36	<10 U	<100 U
BROMOMETHANE	ug/L	140	<10 U	<100 U
CARBON DISULFIDE	ug/L	10000	<10 U	<100 U
CARBON TETRACHLORIDE	ug/L	5	<5 U	55.1 J
CHLOROBENZENE	ug/L	100	<2.5 U	<25 U
CHLOROETHANE	ug/L	41000	<10 U	<100 U
CHLOROFORM	ug/L	1000	7.66 J	55.4 J
CHLOROMETHANE	ug/L	220	<10 UJ	<100 UJ
CIS-1,2-DICHLOROETHENE	ug/L	70	152	112
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<5 U	<50 U
DIBROMOCHLOROMETHANE	ug/L	34	<5 U	<50 U
DIBROMOMETHANE	ug/L	380	<5 U	<50 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<5 U	<50 U
ETHYLBENZENE	ug/L	700	<5 U	<50 U
HEXACHLOROBUTADIENE	ug/L	20	<5 U	<50 U
ISOPROPYLBENZENE	ug/L	1000	<5 U	<50 U
m,p-Xylene	ug/L	10000	<10 U	<100 U
METHYLENE CHLORIDE	ug/L	5	10.3	<50 U
NAPHTHALENE	ug/L	2000	<4 U	<40 U
N-BUTYLBENZENE	ug/L	4100	<5 U	<50 U
N-PROPYLBENZENE	ug/L	4100	<2.5 U	<25 U
O-XYLENE	ug/L	10000	<5 U	<50 U
P-ISOPROPYLTOLUENE	ug/L	10000	<5 U	<50 U
SEC-BUTYLBENZENE	ug/L	4100	<5 U	<50 U
STYRENE	ug/L	100	<2.5 U	<25 U
TERT-BUTYLBENZENE	ug/L	4100	<5 U	<50 U
TETRACHLOROETHENE	ug/L	5	<5 U	<50 U
TOLUENE	ug/L	1000	<5 U	<50 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<5 U	<50 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<10 U	<100 U
TRICHLOROETHENE	ug/L	5	3760	11800
TRICHLOROFLUOROMETHANE	ug/L	31000	<5 U	<50 U
VINYL CHLORIDE	ug/L	2	<5 U	<50 U

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MSC	ICT 12C- 022614 2/26/2014	ICT 12E- 022614 2/26/2014
Metals (6010C)				
ALUMINUM	mg/L	100	<0.1 U	0.149 J
BERYLLIUM	mg/L	0.004	<0.01 U	<0.01 U
CALCIUM	mg/L		11.1	35.1
IRON	mg/L		0.325	0.469
MAGNESIUM	mg/L		8.96	28.8
POTASSIUM	mg/L		<1 U	1.43 J
SODIUM	mg/L		139	372
Metals (6020A)				
ANTIMONY	mg/L	0.006	<0.001 U	<0.001 U
ARSENIC	mg/L	0.01	0.00103 J	0.00189 J
BARIUM	mg/L	2	0.17	0.314
CADMIUM	mg/L	0.005	<0.0006 U	0.000572 J
CHROMIUM	mg/L	0.1	0.00314 J	0.00538
COBALT	mg/L	6.1	0.00256	0.0266
COPPER	mg/L	1.3	0.00277 J	0.00533
LEAD	mg/L	0.015	<0.001 U	<0.001 U
MANGANESE	mg/L	14	0.0866	1.36
NICKEL	mg/L	2	0.0207	0.024
SELENIUM	mg/L	0.05	0.00282	0.0081
SILVER	mg/L	0.51	<0.001 U	<0.001 U
THALLIUM	mg/L	0.002	<0.0002 U	<0.0002 U
VANADIUM	mg/L	0.72	0.000969 J	0.00172 J
ZINC	mg/L	31	0.0187 J	0.0334 J
Metals (6850)				
PERCHLORATE	ug/L	72	30700	57100
Mercury (7470A)				
MERCURY	mg/L	0.002	<0.0002 U	<0.0002 U
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<50 U	<125 U
1,1,1-TRICHLOROETHANE	ug/L	200	<50 U	<125 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<40 U	<100 U
1,1,2-TRICHLOROETHANE	ug/L	5	<50 U	<125 U
1,1-DICHLOROETHANE	ug/L	10000	<25 U	100 J
1,1-DICHLOROETHENE	ug/L	7	<100 U	497 J
1,1-DICHLOROPROPENE	ug/L	2.9	<50 U	<125 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<30 U	<75 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<100 U	<250 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<40 U	<100 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<50 U	<125 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<200 U	<500 U
1,2-DIBROMOETHANE	ug/L	0.005	<50 U	<125 U
1,2-DICHLOROBENZENE	ug/L	600	<25 U	<62.6 U
1,2-DICHLOROETHANE	ug/L	5	114	168 J

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MSCL	ICT 12C- 022614 2/26/2014	ICT 12E- 022614 2/26/2014
1,2-DICHLOROPROPANE	ug/L	5	<40 U	<100 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<50 U	<125 U
1,3-DICHLOROBENZENE	ug/L	3100	<50 U	<125 U
1,3-DICHLOROPROPANE	ug/L	29	<40 U	<100 U
1,4-DICHLOROBENZENE	ug/L	75	<25 U	<62.6 U
2,2-DICHLOROPROPANE	ug/L	42	<50 U	<125 U
2-BUTANONE	ug/L	61000	<500 U	<1250 U
2-CHLOROTOLUENE	ug/L	2000	<25 U	<62.6 U
2-HEXANONE	ug/L	6100	<500 U	<1250 U
4-CHLOROTOLUENE	ug/L	2000	<50 U	<125 U
4-METHYL-2-PENTANONE	ug/L	8200	<500 U	<1250 U
ACETONE	ug/L	92000	<500 U	<1250 U
BENZENE	ug/L	5	<25 U	<62.6 U
BROMOBENZENE	ug/L	2000	<25 U	<62.6 U
BROMOCHLOROMETHANE	ug/L	4100	<40 U	144 J
BROMODICHLOROMETHANE	ug/L	4.6	<50 U	<125 U
BROMOFORM	ug/L	36	<100 U	<250 U
BROMOMETHANE	ug/L	140	<100 U	<250 U
CARBON DISULFIDE	ug/L	10000	<100 U	<250 U
CARBON TETRACHLORIDE	ug/L	5	<50 U	<125 U
CHLOROBENZENE	ug/L	100	<25 U	<62.6 U
CHLOROETHANE	ug/L	41000	<100 U	<250 U
CHLOROFORM	ug/L	1000	15.3 J	93 J
CHLOROMETHANE	ug/L	220	<100 UJ	<250 U
CIS-1,2-DICHLOROETHENE	ug/L	70	332	10700
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<50 U	<125 U
DIBROMOCHLOROMETHANE	ug/L	34	<50 U	<125 U
DIBROMOMETHANE	ug/L	380	<50 U	<125 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<50 U	<125 U
ETHYLBENZENE	ug/L	700	<50 U	<125 U
HEXACHLOROBUTADIENE	ug/L	20	<50 U	<125 U
ISOPROPYLBENZENE	ug/L	1000	<50 U	<125 U
m,p-Xylene	ug/L	10000	<100 U	<250 U
METHYLENE CHLORIDE	ug/L	5	<50 U	7650
NAPHTHALENE	ug/L	2000	<40 U	<100 U
N-BUTYLBENZENE	ug/L	4100	<50 U	<125 U
N-PROPYLBENZENE	ug/L	4100	<25 U	<62.6 U
O-XYLENE	ug/L	10000	<50 U	<125 U
P-ISOPROPYLTOLUENE	ug/L	10000	<50 U	<125 U
SEC-BUTYLBENZENE	ug/L	4100	<50 U	<125 U
STYRENE	ug/L	100	<25 U	<62.6 U
TERT-BUTYLBENZENE	ug/L	4100	<50 U	<125 U
TETRACHLOROETHENE	ug/L	5	<50 U	<125 U
TOLUENE	ug/L	1000	<50 U	<125 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<50 U	<125 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<100 U	<250 U
TRICHLOROETHENE	ug/L	5	13000	65700
TRICHLOROFLUOROMETHANE	ug/L	31000	<50 U	<125 U
VINYL CHLORIDE	ug/L	2	<50 U	298

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MS	ICT 13A- 022614 2/26/2014	ICT 13AFD- 022614 2/26/2014
Metals (6010C)				
ALUMINUM	mg/L	100	<0.1 U	<0.1 U
BERYLLIUM	mg/L	0.004	<0.01 U	<0.01 U
CALCIUM	mg/L		26.9	27.9
IRON	mg/L		12	6.29
MAGNESIUM	mg/L		27.9	29.4
POTASSIUM	mg/L		1.45 J	1.25 J
SODIUM	mg/L		438	444
Metals (6020A)				
ANTIMONY	mg/L	0.006	<0.001 U	<0.001 U
ARSENIC	mg/L	0.01	0.00314	0.00328
BARIUM	mg/L	2	0.118	0.126
CADMIUM	mg/L	0.005	<0.0006 U	0.000302 J
CHROMIUM	mg/L	0.1	0.00456	0.0041
COBALT	mg/L	6.1	0.0313	0.0358
COPPER	mg/L	1.3	0.00651	0.00483
LEAD	mg/L	0.015	<0.001 U	<0.001 U
MANGANESE	mg/L	14	0.757	0.803
NICKEL	mg/L	2	0.0383	0.0379
SELENIUM	mg/L	0.05	0.0126	0.0124
SILVER	mg/L	0.51	<0.001 U	<0.001 U
THALLIUM	mg/L	0.002	<0.0002 U	<0.0002 U
VANADIUM	mg/L	0.72	0.00137 J	0.00148 J
ZINC	mg/L	31	0.0479 J	0.053
Metals (6850)				
PERCHLORATE	ug/L	72	31200	31400
Mercury (7470A)				
MERCURY	mg/L	0.002	<0.0002 U	<0.0002 U
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<12.5 U	<25 U
1,1,1-TRICHLOROETHANE	ug/L	200	<12.5 U	<25 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<10 U	<20 U
1,1,2-TRICHLOROETHANE	ug/L	5	<12.5 U	<25 U
1,1-DICHLOROETHANE	ug/L	10000	12.6 J	12.1 J
1,1-DICHLOROETHENE	ug/L	7	30.2 J	33.4 J
1,1-DICHLOROPROPENE	ug/L	2.9	<12.5 U	<25 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<7.5 U	<15 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<25 U	<50 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<10 U	<20 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<12.5 U	<25 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<50 U	<100 U
1,2-DIBROMOETHANE	ug/L	0.005	<12.5 U	<25 U
1,2-DICHLOROBENZENE	ug/L	600	<6.26 U	<12.5 U
1,2-DICHLOROETHANE	ug/L	5	137	162

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MSCL	ICT 13A- 022614 2/26/2014	ICT 13AFD- 022614 2/26/2014
1,2-DICHLOROPROPANE	ug/L	5	<10 U	<20 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<12.5 U	<25 U
1,3-DICHLOROBENZENE	ug/L	3100	<12.5 U	<25 U
1,3-DICHLOROPROPANE	ug/L	29	<10 U	<20 U
1,4-DICHLOROBENZENE	ug/L	75	<6.26 U	<12.5 U
2,2-DICHLOROPROPANE	ug/L	42	<12.5 U	<25 U
2-BUTANONE	ug/L	61000	<125 U	<250 U
2-CHLOROTOLUENE	ug/L	2000	<6.26 U	<12.5 U
2-HEXANONE	ug/L	6100	<125 U	<250 U
4-CHLOROTOLUENE	ug/L	2000	<12.5 U	<25 U
4-METHYL-2-PENTANONE	ug/L	8200	<125 U	<250 U
ACETONE	ug/L	92000	<125 U	<250 U
BENZENE	ug/L	5	<6.26 U	<12.5 U
BROMOBENZENE	ug/L	2000	<6.26 U	<12.5 U
BROMOCHLOROMETHANE	ug/L	4100	<10 U	<20 U
BROMODICHLOROMETHANE	ug/L	4.6	<12.5 U	<25 U
BROMOFORM	ug/L	36	<25 U	<50 U
BROMOMETHANE	ug/L	140	<25 U	<50 U
CARBON DISULFIDE	ug/L	10000	<25 U	34.7 J
CARBON TETRACHLORIDE	ug/L	5	<12.5 U	<25 U
CHLOROBENZENE	ug/L	100	<6.26 U	<12.5 U
CHLOROETHANE	ug/L	41000	<25 U	<50 U
CHLOROFORM	ug/L	1000	6.84 J	8.84 J
CHLOROMETHANE	ug/L	220	<25 U	<50 U
CIS-1,2-DICHLOROETHENE	ug/L	70	736	845
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<12.5 U	<25 U
DIBROMOCHLOROMETHANE	ug/L	34	<12.5 U	<25 U
DIBROMOMETHANE	ug/L	380	<12.5 U	<25 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<12.5 U	<25 U
ETHYLBENZENE	ug/L	700	<12.5 U	<25 U
HEXACHLOROBUTADIENE	ug/L	20	<12.5 U	<25 U
ISOPROPYLBENZENE	ug/L	1000	<12.5 U	<25 U
m,p-Xylene	ug/L	10000	<25 U	<50 U
METHYLENE CHLORIDE	ug/L	5	62.1	15.1 J
NAPHTHALENE	ug/L	2000	<10 U	<20 U
N-BUTYLBENZENE	ug/L	4100	<12.5 U	<25 U
N-PROPYLBENZENE	ug/L	4100	<6.26 U	<12.5 U
O-XYLENE	ug/L	10000	<12.5 U	<25 U
P-ISOPROPYLTOLUENE	ug/L	10000	<12.5 U	<25 U
SEC-BUTYLBENZENE	ug/L	4100	<12.5 U	<25 U
STYRENE	ug/L	100	<6.26 U	<12.5 U
TERT-BUTYLBENZENE	ug/L	4100	<12.5 U	<25 U
TETRACHLOROETHENE	ug/L	5	<12.5 U	<25 U
TOLUENE	ug/L	1000	<12.5 U	<25 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	7.27 J	<25 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<25 U	<50 U
TRICHLOROETHENE	ug/L	5	5420	6470
TRICHLOROFLUOROMETHANE	ug/L	31000	<12.5 U	<25 U
VINYL CHLORIDE	ug/L	2	25.6	35.8 J

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MSC	ICT 2-022614 2/26/2014	ICT 4-022614 2/26/2014
Metals (6010C)				
ALUMINUM	mg/L	100	<0.1 U	<0.1 U
BERYLLIUM	mg/L	0.004	<0.01 U	<0.01 U
CALCIUM	mg/L		43	48.2
IRON	mg/L		2.38	0.106 J
MAGNESIUM	mg/L		40.9	45.6
POTASSIUM	mg/L		2.41	1.49 J
SODIUM	mg/L		467	273
Metals (6020A)				
ANTIMONY	mg/L	0.006	<0.001 U	<0.001 U
ARSENIC	mg/L	0.01	0.00403	0.00208
BARIUM	mg/L	2	0.154	0.296 J
CADMIUM	mg/L	0.005	<0.0006 U	0.00153
CHROMIUM	mg/L	0.1	0.00436	0.0128
COBALT	mg/L	6.1	0.00967	0.0329
COPPER	mg/L	1.3	0.00258 J	0.00196 J
LEAD	mg/L	0.015	<0.001 U	<0.001 U
MANGANESE	mg/L	14	0.313	1.13
NICKEL	mg/L	2	0.0401	0.0443
SELENIUM	mg/L	0.05	0.0107	0.0071
SILVER	mg/L	0.51	<0.001 U	<0.001 U
THALLIUM	mg/L	0.002	<0.0002 U	<0.0002 U
VANADIUM	mg/L	0.72	0.000826 J	0.000966 J
ZINC	mg/L	31	<0.025 U	0.0244 J
Metals (6850)				
PERCHLORATE	ug/L	72	428	20100
Mercury (7470A)				
MERCURY	mg/L	0.002	<0.0002 U	<0.0002 U
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<12.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<12.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<10 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<12.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<6.26 U
1,1-DICHLOROETHENE	ug/L	7	<1 U	<25 U
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<12.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<7.5 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<25 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<10 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<12.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<50 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<12.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<6.26 U
1,2-DICHLOROETHANE	ug/L	5	2.22	152

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Location ID: Sample Date:	Units	MCL/MSC	ICT 2-022614 2/26/2014	ICT 4-022614 2/26/2014
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<10 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<12.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<12.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<10 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<6.26 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<12.5 U
2-BUTANONE	ug/L	61000	<5 U	<125 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<6.26 U
2-HEXANONE	ug/L	6100	<5 U	<125 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<12.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<125 U
ACETONE	ug/L	92000	<5 U	<125 U
BENZENE	ug/L	5	<0.25 U	3.41 J
BROMOBENZENE	ug/L	2000	<0.25 U	<6.26 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<10 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<12.5 U
BROMOFORM	ug/L	36	<1 U	<25 U
BROMOMETHANE	ug/L	140	<1 U	<25 U
CARBON DISULFIDE	ug/L	10000	<1 U	<25 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	9.06 J
CHLOROBENZENE	ug/L	100	<0.25 U	<6.26 U
CHLOROETHANE	ug/L	41000	<1 U	<25 U
CHLOROFORM	ug/L	1000	<0.25 U	11.1 J
CHLOROMETHANE	ug/L	220	<1 UJ	<25 UJ
CIS-1,2-DICHLOROETHENE	ug/L	70	6.63	626
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<12.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<12.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<12.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<12.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	<12.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<12.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<12.5 U
m,p-Xylene	ug/L	10000	<1 U	<25 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<12.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	<10 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<12.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<6.26 U
O-XYLENE	ug/L	10000	<0.5 U	<12.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<12.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<12.5 U
STYRENE	ug/L	100	<0.25 U	<6.26 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<12.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	<12.5 U
TOLUENE	ug/L	1000	<0.5 U	<12.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<12.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<25 U
TRICHLOROETHENE	ug/L	5	64.2	6200
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<12.5 U
VINYL CHLORIDE	ug/L	2	0.581 J	7.71 J

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February 2014

Location ID: Sample Date:	Units	MCL/MSC	ICT 7-022614 2/26/2014	ICT 8-022614 2/26/2014
Metals (6010C)				
ALUMINUM	mg/L	100	2.07	<0.1 U
BERYLLIUM	mg/L	0.004	<0.01 U	<0.01 U
CALCIUM	mg/L		5.06	50.4
IRON	mg/L		4.3	6.15
MAGNESIUM	mg/L		4.58	42.7
POTASSIUM	mg/L		1.62 J	2
SODIUM	mg/L		43.3	199
Metals (6020A)				
ANTIMONY	mg/L	0.006	<0.001 U	<0.001 U
ARSENIC	mg/L	0.01	0.00147 J	0.00577
BARIUM	mg/L	2	0.169	1.71
CADMIUM	mg/L	0.005	<0.0006 U	<0.0006 U
CHROMIUM	mg/L	0.1	0.00552	0.00314 J
COBALT	mg/L	6.1	0.00222	0.0165
COPPER	mg/L	1.3	0.00281 J	0.00195 J
LEAD	mg/L	0.015	0.000986 J	<0.001 U
MANGANESE	mg/L	14	0.0894	0.903
NICKEL	mg/L	2	0.0151	0.0158
SELENIUM	mg/L	0.05	0.00194 J	0.00622
SILVER	mg/L	0.51	<0.001 U	<0.001 U
THALLIUM	mg/L	0.002	<0.0002 U	<0.0002 U
VANADIUM	mg/L	0.72	0.00266	0.00283
ZINC	mg/L	31	0.148	0.0143 J
Metals (6850)				
PERCHLORATE	ug/L	72	1110	3000
Mercury (7470A)				
MERCURY	mg/L	0.002	<0.0002 U	<0.0002 U
Volatile Organic Compounds (8260B)				
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<250 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<250 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<200 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<250 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<125 U
1,1-DICHLOROETHENE	ug/L	7	<1 U	775 J
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<250 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<150 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<500 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<200 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<250 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<1000 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<250 U
1,2-DICHLOROETHENE	ug/L	600	<0.25 U	<125 U
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<250 U

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Location ID: Sample Date:	Units	MCL/MSC	ICT 7-022614 2/26/2014	ICT 8-022614 2/26/2014
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<200 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<250 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<250 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<200 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<125 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<250 U
2-BUTANONE	ug/L	61000	<5 U	<2500 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<125 U
2-HEXANONE	ug/L	6100	<5 U	<2500 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<250 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<2500 U
ACETONE	ug/L	92000	<5 U	<2500 U
BENZENE	ug/L	5	<0.25 U	<125 U
BROMOBENZENE	ug/L	2000	<0.25 U	<125 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	300 J
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<250 U
BROMOFORM	ug/L	36	<1 U	<500 U
BROMOMETHANE	ug/L	140	<1 U	<500 U
CARBON DISULFIDE	ug/L	10000	<1 U	<500 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<250 U
CHLOROBENZENE	ug/L	100	<0.25 U	<125 U
CHLOROETHANE	ug/L	41000	<1 U	<500 U
CHLOROFORM	ug/L	1000	<0.25 U	101 J
CHLOROMETHANE	ug/L	220	<1 UJ	<500 UJ
CIS-1,2-DICHLOROETHENE	ug/L	70	0.282 J	22900
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<250 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<250 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<250 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<250 U
ETHYLBENZENE	ug/L	700	<0.5 U	<250 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<250 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<250 U
m,p-Xylene	ug/L	10000	<1 U	<500 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	129000
NAPHTHALENE	ug/L	2000	<0.4 U	<200 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<250 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<125 U
O-XYLENE	ug/L	10000	<0.5 U	<250 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<250 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<250 U
STYRENE	ug/L	100	<0.25 U	79.3 J
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<250 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	347 J
TOLUENE	ug/L	1000	<0.5 U	<250 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<250 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<500 U
TRICHLOROETHENE	ug/L	5	0.775 J	35000
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<250 U
VINYL CHLORIDE	ug/L	2	<0.5 U	<250 U

LHAAP-18/24 ICTs

February 2014

Location ID: Sample Date:	Units	MCL/MSC	ICT 8FD- 022614 2/26/2014
Metals (6010C)			
ALUMINUM	mg/L	100	<0.1 U
BERYLLIUM	mg/L	0.004	<0.01 U
CALCIUM	mg/L		53.4
IRON	mg/L		6.56
MAGNESIUM	mg/L		45.1
POTASSIUM	mg/L		2.15
SODIUM	mg/L		207
Metals (6020A)			
ANTIMONY	mg/L	0.006	<0.001 U
ARSENIC	mg/L	0.01	0.00574
BARIUM	mg/L	2	1.74
CADMIUM	mg/L	0.005	<0.0006 U
CHROMIUM	mg/L	0.1	0.00302 J
COBALT	mg/L	6.1	0.0169
COPPER	mg/L	1.3	0.00203 J
LEAD	mg/L	0.015	<0.001 U
MANGANESE	mg/L	14	0.923
NICKEL	mg/L	2	0.0154
SELENIUM	mg/L	0.05	0.00522
SILVER	mg/L	0.51	<0.001 U
THALLIUM	mg/L	0.002	<0.0002 U
VANADIUM	mg/L	0.72	0.00282
ZINC	mg/L	31	0.0139 J
Metals (6850)			
PERCHLORATE	ug/L	72	3010
Mercury (7470A)			
MERCURY	mg/L	0.002	<0.0002 U
Volatile Organic Compounds (8260B)			
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<500 U
1,1,1-TRICHLOROETHANE	ug/L	200	<500 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<400 U
1,1,2-TRICHLOROETHANE	ug/L	5	<500 U
1,1-DICHLOROETHANE	ug/L	10000	<250 U
1,1-DICHLOROETHENE	ug/L	7	<1000 U
1,1-DICHLOROPROPENE	ug/L	2.9	<500 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<300 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1000 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<400 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<500 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2000 U
1,2-DIBROMOETHANE	ug/L	0.005	<500 U
1,2-DICHLOROBENZENE	ug/L	600	<250 U
1,2-DICHLOROETHANE	ug/L	5	<500 U

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February 2014

Location ID: Sample Date:	Units	MCL/MSC	ICT 8FD- 022614 2/26/2014
1,2-DICHLOROPROPANE	ug/L	5	<400 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<500 U
1,3-DICHLOROBENZENE	ug/L	3100	<500 U
1,3-DICHLOROPROPANE	ug/L	29	<400 U
1,4-DICHLOROBENZENE	ug/L	75	<250 U
2,2-DICHLOROPROPANE	ug/L	42	<500 U
2-BUTANONE	ug/L	61000	<5000 U
2-CHLOROTOLUENE	ug/L	2000	<250 U
2-HEXANONE	ug/L	6100	<5000 U
4-CHLOROTOLUENE	ug/L	2000	<500 U
4-METHYL-2-PENTANONE	ug/L	8200	<5000 U
ACETONE	ug/L	92000	<5000 U
BENZENE	ug/L	5	<250 U
BROMOBENZENE	ug/L	2000	<250 U
BROMOCHLOROMETHANE	ug/L	4100	<400 U
BROMODICHLOROMETHANE	ug/L	4.6	<500 U
BROMOFORM	ug/L	36	<1000 U
BROMOMETHANE	ug/L	140	<1000 U
CARBON DISULFIDE	ug/L	10000	<1000 U
CARBON TETRACHLORIDE	ug/L	5	<500 U
CHLOROBENZENE	ug/L	100	<250 U
CHLOROETHANE	ug/L	41000	<1000 U
CHLOROFORM	ug/L	1000	<250 U
CHLOROMETHANE	ug/L	220	<1000 U
CIS-1,2-DICHLOROETHENE	ug/L	70	8380
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<500 U
DIBROMOCHLOROMETHANE	ug/L	34	<500 U
DIBROMOMETHANE	ug/L	380	<500 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<500 U
ETHYLBENZENE	ug/L	700	<500 U
HEXACHLOROBUTADIENE	ug/L	20	<500 U
ISOPROPYLBENZENE	ug/L	1000	<500 U
m,p-Xylene	ug/L	10000	<1000 U
METHYLENE CHLORIDE	ug/L	5	140000
NAPHTHALENE	ug/L	2000	<400 U
N-BUTYLBENZENE	ug/L	4100	<500 U
N-PROPYLBENZENE	ug/L	4100	<250 U
O-XYLENE	ug/L	10000	<500 U
P-ISOPROPYLTOLUENE	ug/L	10000	<500 U
SEC-BUTYLBENZENE	ug/L	4100	<500 U
STYRENE	ug/L	100	<250 U
TERT-BUTYLBENZENE	ug/L	4100	<500 U
TETRACHLOROETHENE	ug/L	5	<500 U
TOLUENE	ug/L	1000	<500 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<500 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1000 U
TRICHLOROETHENE	ug/L	5	13300
TRICHLOROFLUOROMETHANE	ug/L	31000	<500 U
VINYL CHLORIDE	ug/L	2	<500 U

Location ID: Sample Date:	Units	MCL/MSC	50WW01- 031314 3/13/2014	50WW01F- 031314 3/13/2014	50WW05- 031714 3/17/2014	50WW06- 031114 3/11/2014	50WW06F- 031114 3/11/2014	50WW08- 031114 3/11/2014
ID Location			Site 50 - NW, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - NW, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - NE, lower shallow, outside the site boundary. Sampled quarterly	Site 50 - ENE, outside the site boundary. Sampled quarterly	Site 50 - ENE, outside the site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside the site boundary. Sampled quarterly
Alkalinity (310.2)								
ALKALINITY, TOTAL	mg/L		583	N/A	N/A	322	N/A	435
Phosphorus (365.4)								
PHOSPHORUS	mg/L		<0.2 U	N/A	N/A	<0.2 U	N/A	<0.2 U
Sulfide (376.1)								
SULFIDE	mg/L		<1 U	N/A	N/A	<1 U	N/A	<1 U
Total Organic Carbon (415.1)								
TOTAL ORGANIC CARBON (TOC)	mg/L		6.73	N/A	N/A	6.28	N/A	9.39
Metals (6010C)								
IRON	mg/L		N/A	<0.1 U	N/A	N/A	<0.1 U	N/A
Metals (6020A)								
MANGANESE	mg/L		N/A	0.002	N/A	N/A	0.00567	N/A
Perchlorate (6850)								
PERCHLORATE	ug/L	72	<0.2 U	N/A	<0.2 U	2090	N/A	91.5
Volatile Organic Compounds (8260B)								
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	1.97
1,1-DICHLOROETHENE	ug/L	7	<1 U	N/A	2.12	<1 U	N/A	1.71 J
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	N/A	<0.3 U	<0.3 U	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	N/A	<1 U	<1 U	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	N/A	<2 U	<2 U	N/A	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	0.134 J
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	N/A	2.54	<0.5 U	N/A	5.73
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	N/A	<5 U	<5 U	N/A	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	N/A	<5 U	<5 U	N/A	<5 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	N/A	<5 U	<5 U	N/A	<5 U
ACETONE	ug/L	92000	<5 U	N/A	<5 U	<5 U	N/A	<5 U
BENZENE	ug/L	5	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
BROMOFORM	ug/L	36	<1 U	N/A	<1 U	<1 U	N/A	<1 U
BROMOMETHANE	ug/L	140	<1 U	N/A	<1 U	<1 U	N/A	<1 U
CARBON DISULFIDE	ug/L	10000	<1 U	N/A	<1 U	<1 U	N/A	<1 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
CHLOROBENZENE	ug/L	100	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	<0.25 U
CHLOROETHANE	ug/L	41000	<1 U	N/A	<1 U	<1 U	N/A	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	0.818 J

Location ID: Sample Date:	Units	MCL/MSC	50WW01- 031314 3/13/2014	50WW01F- 031314 3/13/2014	50WW05- 031714 3/17/2014	50WW06- 031114 3/11/2014	50WW06F- 031114 3/11/2014	50WW08- 031114 3/11/2014
ID Location			Site 50 - NW, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - NW, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - NE, lower shallow, outside the site boundary. Sampled quarterly	Site 50 - ENE, outside the site boundary. Sampled quarterly	Site 50 - ENE, outside the site boundary. Sampled quarterly	Site 50 - E, upper shallow, inside the site boundary. Sampled quarterly
CHLOROMETHANE	ug/L	220	<1 U	N/A	<1 U	<1 U	N/A	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	N/A	10.5	0.39 J	N/A	103
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
m,p-Xylene	ug/L	10000	<1 U	N/A	<1 U	<1 U	N/A	<1 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	N/A	<0.4 U	<0.4 U	N/A	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
STYRENE	ug/L	100	<0.25 U	N/A	<0.25 U	<0.25 U	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	N/A	1.01	<0.5 U	N/A	2.15
TOLUENE	ug/L	1000	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	0.406 J
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	N/A	<1 U	<1 U	N/A	<1 U
TRICHLOROETHENE	ug/L	5	<0.5 U	N/A	204	36.5	N/A	845
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	<0.5 U
VINYL CHLORIDE	ug/L	2	<0.5 U	N/A	<0.5 U	<0.5 U	N/A	0.517 J
Common Anions (9056)								
CHLORIDE	mg/L		17.4	N/A	N/A	91.8	N/A	358
NITRATE	mg/L		<0.2 U	N/A	N/A	3.29	N/A	<1 U
NITRITE	mg/L		<0.2 U	N/A	N/A	<0.2 U	N/A	<1 U
SULFATE	mg/L		84.6	N/A	N/A	49.2	N/A	306
Dissolved Gases (RSK-175)								
CARBON DIOXIDE	ug/L		334000	N/A	N/A	165000	N/A	208000
ETHANE	ug/L		<2 U	N/A	N/A	<2 U	N/A	<2 U
ETHENE	ug/L		<2 U	N/A	N/A	<2 U	N/A	<2 U
METHANE	ug/L		<2 U	N/A	N/A	<2 U	N/A	2.23 J

Location ID: Sample Date:	Units	MCL/MSC	50WW08F- 031114 3/11/2014	50WW09- 031414 3/14/2014	50WW10-031414 3/14/2014	50WW11- 031314 3/13/2014	50WW11F- 031314 3/13/2014	50WW12- 031114 3/11/2014
ID Location			Site 50 - E, upper shallow, inside the site boundary. Sampled quarterly	Site 50 - E, lower shallow, inside the site boundary. Sampled quarterly	Site 50 - E, intermediate, inside the site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly
Alkalinity (310.2)								
ALKALINITY, TOTAL	mg/L		N/A	N/A	N/A	293	N/A	207
Phosphorus (365.4)								
PHOSPHORUS	mg/L		N/A	N/A	N/A	0.402	N/A	<0.2 U
Sulfide (376.1)								
SULFIDE	mg/L		N/A	N/A	N/A	<1 U	N/A	<1 U
Total Organic Carbon (415.1)								
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	8.01	N/A	7.33
Metals (6010C)								
IRON	mg/L		<0.1 U	N/A	N/A	N/A	0.1 U	N/A
Metals (6020A)								
MANGANESE	mg/L		0.0244	N/A	N/A	N/A	0.169	N/A
Perchlorate (6850)								
PERCHLORATE	ug/L	72	N/A	<0.2 U	0.272 J	2570	N/A	35700
Volatile Organic Compounds (8260B)								
1,1,1,2-TETRACHLOROETHANE	ug/L	110	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	N/A	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	N/A	<0.25 U	<0.25 U	0.595 J	N/A	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	N/A	<1 U	<1 U	1.88 J	N/A	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	N/A	<0.3 U	<0.3 U	<0.75 U	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	N/A	<1 U	<1 U	<2.5 U	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	N/A	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	N/A	<2 U	<2 U	<5 U	N/A	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	N/A	<0.5 U	<0.5 U	2.28 J	N/A	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	N/A	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	N/A	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
2-BUTANONE	ug/L	61000	N/A	<5 U	<5 U	<12.5 U	N/A	<5 U
2-CHLOROTOLUENE	ug/L	2000	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
2-HEXANONE	ug/L	6100	N/A	<5 U	<5 U	<12.5 U	N/A	<5 U
4-CHLOROTOLUENE	ug/L	2000	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	N/A	<5 U	<5 U	<12.5 U	N/A	<5 U
ACETONE	ug/L	92000	N/A	<5 U	4.57 J	<12.5 U	N/A	<5 U
BENZENE	ug/L	5	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
BROMOBENZENE	ug/L	2000	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	N/A	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
BROMOFORM	ug/L	36	N/A	<1 U	<1 U	<2.5 U	N/A	<1 U
BROMOMETHANE	ug/L	140	N/A	<1 U	<1 U	<2.5 U	N/A	<1 U
CARBON DISULFIDE	ug/L	10000	N/A	<1 U	21.9	<2.5 U	N/A	0.618 J
CARBON TETRACHLORIDE	ug/L	5	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
CHLOROBENZENE	ug/L	100	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
CHLOROETHANE	ug/L	41000	N/A	<1 U	<1 U	<2.5 U	N/A	<1 U
CHLOROFORM	ug/L	1000	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U

Location ID: Sample Date:	Units	MCL/MSCL	50WW08F- 031114 3/11/2014	50WW09- 031414 3/14/2014	50WW10-031414 3/14/2014	50WW11- 031314 3/13/2014	50WW11F- 031314 3/13/2014	50WW12- 031114 3/11/2014
ID Location			Site 50 - E, upper shallow, inside the site boundary. Sampled quarterly	Site 50 - E, lower shallow, inside the site boundary. Sampled quarterly	Site 50 - E, intermediate, inside the site boundary. Sampled quarterly	Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly
CHLOROMETHANE	ug/L	220	N/A	<1 U	<1 U	<2.5 U	N/A	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	N/A	0.579 J	<0.5 U	4.46	N/A	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
DIBROMOMETHANE	ug/L	380	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
ETHYLBENZENE	ug/L	700	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
m,p-Xylene	ug/L	10000	N/A	<1 U	<1 U	<2.5 U	N/A	<1 U
METHYLENE CHLORIDE	ug/L	5	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
NAPHTHALENE	ug/L	2000	N/A	<0.4 U	<0.4 U	<1 U	N/A	<0.4 U
N-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
N-PROPYLBENZENE	ug/L	4100	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
O-XYLENE	ug/L	10000	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
STYRENE	ug/L	100	N/A	<0.25 U	<0.25 U	<0.626 U	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
TETRACHLOROETHENE	ug/L	5	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
TOLUENE	ug/L	1000	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	N/A	<1 U	<1 U	<2.5 U	N/A	<1 U
TRICHLOROETHENE	ug/L	5	N/A	20.2	<0.5 U	362	N/A	0.257 J
TRICHLOROFLUOROMETHANE	ug/L	31000	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
VINYL CHLORIDE	ug/L	2	N/A	<0.5 U	<0.5 U	<1.25 U	N/A	<0.5 U
Common Anions (9056)								
CHLORIDE	mg/L		N/A	N/A	N/A	242	N/A	1180
NITRATE	mg/L		N/A	N/A	N/A	<1 U	N/A	<2 U
NITRITE	mg/L		N/A	N/A	N/A	<1 U	N/A	<2 U
SULFATE	mg/L		N/A	N/A	N/A	265	N/A	529
Dissolved Gases (RSK-175)								
CARBON DIOXIDE	ug/L		N/A	N/A	N/A	127000	N/A	172000
ETHANE	ug/L		N/A	N/A	N/A	<2 U	N/A	<2 U
ETHENE	ug/L		N/A	N/A	N/A	<2 U	N/A	<2 U
METHANE	ug/L		N/A	N/A	N/A	7.69	N/A	<2 U

Location ID: Sample Date:	Units	MCL/MSC	50WW12F- 031114 3/11/2014	50WW13- 031214 3/12/2014	50WW13F- 031214 3/12/2014	50WW14- 031214 3/12/2014	50WW14F- 031214 3/12/2014	50WW15- 031714 3/17/2014
ID Location			Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside the site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside the site boundary. Sampled quarterly	Site 50 - E, lower shallow, outside the site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - E, lower shallow, outside the site boundary, along S. Crockett Ave. Sampled quarterly	Site 50 - NNE, upper shallow, outside the site boundary, along Goose Prairie Creek bridge. Sampled quarterly
Alkalinity (310.2)								
ALKALINITY, TOTAL	mg/L		N/A	299	N/A	261	N/A	N/A
Phosphorus (365.4)								
PHOSPHORUS	mg/L		N/A	<0.2 UJ	N/A	<0.2 UJ	N/A	N/A
Sulfide (376.1)								
SULFIDE	mg/L		N/A	<1 U	N/A	<1 U	N/A	N/A
Total Organic Carbon (415.1)								
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	5.28	N/A	5.41	N/A	N/A
Metals (6010C)								
IRON	mg/L		0.0793 J	N/A	0.355	N/A	9.21	N/A
Metals (6020A)								
MANGANESE	mg/L		0.226	N/A	0.348	N/A	0.884	N/A
Perchlorate (6850)								
PERCHLORATE	ug/L	72	N/A	510	N/A	0.256 J	N/A	<0.2 U
Volatile Organic Compounds (8260B)								
1,1,1,2-TETRACHLOROETHANE	ug/L	110	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	N/A	1.01	N/A	<0.25 U	N/A	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	N/A	2.54	N/A	<1 U	N/A	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	N/A	<0.3 U	N/A	<0.3 U	N/A	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	N/A	<1 U	N/A	<1 U	N/A	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	N/A	<2 U	N/A	<2 U	N/A	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	N/A	4.45	N/A	<0.5 U	N/A	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
2-BUTANONE	ug/L	61000	N/A	<5 U	N/A	<5 U	N/A	<5 U
2-CHLOROTOLUENE	ug/L	2000	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
2-HEXANONE	ug/L	6100	N/A	<5 U	N/A	<5 U	N/A	<5 U
4-CHLOROTOLUENE	ug/L	2000	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	N/A	<5 U	N/A	<5 U	N/A	<5 U
ACETONE	ug/L	92000	N/A	<5 U	N/A	<5 U	N/A	<5 U
BENZENE	ug/L	5	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
BROMOBENZENE	ug/L	2000	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
BROMOFORM	ug/L	36	N/A	<1 U	N/A	<1 U	N/A	<1 U
BROMOMETHANE	ug/L	140	N/A	<1 U	N/A	<1 U	N/A	<1 U
CARBON DISULFIDE	ug/L	10000	N/A	<1 U	N/A	<1 U	N/A	<1 U
CARBON TETRACHLORIDE	ug/L	5	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
CHLOROETHANE	ug/L	100	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
CHLOROETHANE	ug/L	41000	N/A	<1 U	N/A	<1 U	N/A	<1 U
CHLOROFORM	ug/L	1000	N/A	0.276 J	N/A	<0.25 U	N/A	<0.25 U

Location ID: Sample Date:	Units	MCL/MSC	50WW12F- 031114 3/11/2014	50WW13- 031214 3/12/2014	50WW13F- 031214 3/12/2014	50WW14- 031214 3/12/2014	50WW14F- 031214 3/12/2014	50WW15- 031714 3/17/2014
ID Location			Site 50 - ENE, upper shallow, outside the site boundary. Sampled quarterly Sampled quarterly	Site 50 - E, upper shallow, outside the site boundary. Sampled quarterly	Site 50 - E, upper shallow, outside the site boundary. Sampled quarterly	Site 50 - E, lower shallow, outside the site boundary, along S. Crockett Ave. Sampled quarterly Filtered, Sampled quarterly	Site 50 - E, lower shallow, outside the site boundary, along S. Crockett Ave. Sampled quarterly Filtered, Sampled quarterly	Site 50 - NNE, upper shallow, outside the site boundary, along Goose Prairie Creek bridge. Sampled quarterly Sampled quarterly
CHLOROMETHANE	ug/L	220	N/A	<1 U	N/A	<1 U	N/A	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	N/A	25	N/A	1.33	N/A	13.8
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
DIBROMOMETHANE	ug/L	380	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
ETHYLBENZENE	ug/L	700	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
m,p-Xylene	ug/L	10000	N/A	<1 U	N/A	<1 U	N/A	<1 U
METHYLENE CHLORIDE	ug/L	5	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
NAPHTHALENE	ug/L	2000	N/A	<0.4 U	N/A	<0.4 U	N/A	<0.4 U
N-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
N-PROPYLBENZENE	ug/L	4100	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
O-XYLENE	ug/L	10000	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
STYRENE	ug/L	100	N/A	<0.25 U	N/A	<0.25 U	N/A	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
TETRACHLOROETHENE	ug/L	5	N/A	1.06	N/A	<0.5 U	N/A	3.33
TOLUENE	ug/L	1000	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	N/A	0.406 J	N/A	<0.5 U	N/A	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	N/A	<1 U	N/A	<1 U	N/A	<1 U
TRICHLOROETHENE	ug/L	5	N/A	823	N/A	37.4	N/A	23.5
TRICHLOROFLUOROMETHANE	ug/L	31000	N/A	<0.5 U	N/A	<0.5 U	N/A	<0.5 U
VINYL CHLORIDE	ug/L	2	N/A	<0.5 U	N/A	<0.5 U	N/A	3.09
Common Anions (9056)								
CHLORIDE	mg/L		N/A	372	N/A	385	N/A	N/A
NITRATE	mg/L		N/A	<1 U	N/A	<1 U	N/A	N/A
NITRITE	mg/L		N/A	<1 U	N/A	<1 U	N/A	N/A
SULFATE	mg/L		N/A	327	N/A	358	N/A	N/A
Dissolved Gases (RSK-175)								
CARBON DIOXIDE	ug/L		N/A	83800	N/A	78200	N/A	N/A
ETHANE	ug/L		N/A	<2 U	N/A	<2 U	N/A	N/A
ETHENE	ug/L		N/A	<2 U	N/A	<2 U	N/A	N/A
METHANE	ug/L		N/A	6.41	N/A	3.96 J	N/A	N/A

Location ID: Sample Date:	Units	MCL/MSC	50WW20- 031314 3/13/2014	50WW20FD- 031314 3/13/2014	50WW22- 031214 3/12/2014	50WW22F- 031214 3/12/2014	50WW23- 031314 3/13/2014	50WW23F- 031314 3/13/2014
ID Location			Site 50 - E, fully-penetrating shallow, outside of site boundary. Sampled quarterly	Site 50 - E, fully-penetrating shallow, outside of site boundary. Sampled quarterly	Site 50 - E, outside, but close to, the site boundary. Sampled quarterly	Site 50 - E, outside, but close to, the site boundary. Sampled quarterly	Site 50 - E, outside the site boundary. Sampled quarterly	Site 50 - E, outside the site boundary. Sampled quarterly
Alkalinity (310.2)								
ALKALINITY, TOTAL	mg/L		N/A	N/A	378	N/A	262	N/A
Phosphorus (365.4)								
PHOSPHORUS	mg/L		N/A	N/A	<0.2 UJ	N/A	0.484	N/A
Sulfide (376.1)								
SULFIDE	mg/L		N/A	N/A	<1 U	N/A	<1 U	N/A
Total Organic Carbon (415.1)								
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	5.83	N/A	6.17	N/A
Metals (6010C)								
IRON	mg/L		N/A	N/A	N/A	<0.1 U	N/A	<0.1 U
Metals (6020A)								
MANGANESE	mg/L		N/A	N/A	N/A	0.554	N/A	0.244
Perchlorate (6850)								
PERCHLORATE	ug/L	72	0.697	0.673	1.54	N/A	0.227	N/A
Volatile Organic Compounds (8260B)								
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	<1 U	N/A	<1 U	N/A
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	N/A	<0.3 U	N/A
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	N/A	<1 U	N/A
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	N/A	<2 U	N/A
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	N/A	<5 U	N/A
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 U	N/A	<5 U	N/A
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	N/A	<5 U	N/A
ACETONE	ug/L	92000	<5 U	<5 U	<5 U	N/A	<5 U	N/A
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	N/A	<1 U	N/A
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	N/A	<1 U	N/A
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	N/A	<1 U	N/A
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	N/A	<1 U	N/A
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A

Location ID: Sample Date:	Units	MCL/MSCL	50WW20- 031314 3/13/2014	50WW20FD- 031314 3/13/2014	50WW22- 031214 3/12/2014	50WW22F- 031214 3/12/2014	50WW23- 031314 3/13/2014	50WW23F- 031314 3/13/2014
ID Location			Site 50 - E, fully- penetrating shallow, outside of site boundary. Sampled quarterly	Site 50 - E, fully- penetrating shallow, outside of site boundary. Sampled quarterly	Site 50 - E, outside, but close to, the site boundary. Sampled quarterly	Site 50 - E, outside, but close to, the site boundary. Sampled quarterly	Site 50 - E, outside the site boundary. Sampled quarterly	Site 50 - E, outside the site boundary. Sampled quarterly
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	N/A	<1 U	N/A
CIS-1,2-DICHLOROETHENE	ug/L	70	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
m,p-Xylene	ug/L	10000	<1 U	<1 U	<1 U	N/A	<1 U	N/A
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	N/A	<0.4 U	N/A
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	N/A	<0.25 U	N/A
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	N/A	<1 U	N/A
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	<0.5 U	N/A	<0.5 U	N/A
Common Anions (9056)								
CHLORIDE	mg/L		N/A	N/A	994	N/A	1990	N/A
NITRATE	mg/L		N/A	N/A	<2 U	N/A	<2 U	N/A
NITRITE	mg/L		N/A	N/A	<2 U	N/A	<2 U	N/A
SULFATE	mg/L		N/A	N/A	654	N/A	59.1	N/A
Dissolved Gases (RSK-175)								
CARBON DIOXIDE	ug/L		N/A	N/A	139000	N/A	321000	N/A
ETHANE	ug/L		N/A	N/A	<2 U	N/A	<2 U	N/A
ETHENE	ug/L		N/A	N/A	<2 U	N/A	<2 U	N/A
METHANE	ug/L		N/A	N/A	2.84 J	N/A	<2 U	N/A

Location ID: Sample Date:	Units	MCL/MSC	50WW27- 031714 3/17/2014	50WW27FD- 031714 3/17/2014	GPW1-031414 3/14/2014	50SW06-031414 3/14/2014
ID Location			Site 50 - NNE, upper shallow, outside the site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - NNE, upper shallow, outside the site boundary, east of S. Crockett Ave. Sampled quarterly	Goose Prairie Creek - Grab sample, collected north of culvert at NW corner of intersection of Crockett Avenue and 51st Street Sampled Quarterly for 2 years after LHAAP-50 perchlorate-impacted soil removal, if the creek contains water	Tributary of Goose Prairie Creek - Grab sample, collected immediately before tributary discharges to Goose Prairie Creek, ~350 feet downstream from Crockett Avenue bridge Sampled Quarterly for 2 years after LHAAP-50 perchlorate-impacted soil removal, if the tributary contains water
Alkalinity (310.2)						
ALKALINITY, TOTAL	mg/L		N/A	N/A	N/A	N/A
Phosphorus (365.4)						
PHOSPHORUS	mg/L		N/A	N/A	N/A	N/A
Sulfide (376.1)						
SULFIDE	mg/L		N/A	N/A	N/A	N/A
Total Organic Carbon (415.1)						
TOTAL ORGANIC CARBON (TOC)	mg/L		N/A	N/A	N/A	N/A
Metals (6010C)						
IRON	mg/L		N/A	N/A	N/A	N/A
Metals (6020A)						
MANGANESE	mg/L		N/A	N/A	N/A	N/A
Perchlorate (6850)						
PERCHLORATE	ug/L	72	<0.2 U	<0.2 U	1.2	1.09
Volatile Organic Compounds (8260B)						
1,1,1,2-TETRACHLOROETHANE	ug/L	110	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,1-TRICHLOROETHANE	ug/L	200	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,2,2-TETRACHLOROETHANE	ug/L	14	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,1,2-TRICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1-DICHLOROETHANE	ug/L	10000	<0.25 U	<0.25 U	<0.25 U	<0.25 U
1,1-DICHLOROETHENE	ug/L	7	<1 U	<1 U	<1 U	<1 U
1,1-DICHLOROPROPENE	ug/L	2.9	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2,3-TRICHLOROBENZENE	ug/L	310	<0.3 U	<0.3 U	<0.3 U	<0.3 U
1,2,3-TRICHLOROPROPANE	ug/L	0.0041	<1 U	<1 U	<1 U	<1 U
1,2,4-TRICHLOROBENZENE	ug/L	70	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,2,4-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	ug/L	0.2	<2 U	<2 U	<2 U	<2 U
1,2-DIBROMOETHANE	ug/L	0.005	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DICHLOROBENZENE	ug/L	600	<0.25 U	<0.25 U	<0.25 U	<0.25 U
1,2-DICHLOROETHANE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-DICHLOROPROPANE	ug/L	5	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,3,5-TRIMETHYLBENZENE	ug/L	5100	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROBENZENE	ug/L	3100	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,3-DICHLOROPROPANE	ug/L	29	<0.4 U	<0.4 U	<0.4 U	<0.4 U
1,4-DICHLOROBENZENE	ug/L	75	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2,2-DICHLOROPROPANE	ug/L	42	<0.5 U	<0.5 U	<0.5 U	<0.5 U
2-BUTANONE	ug/L	61000	<5 U	<5 U	<5 U	<5 U
2-CHLOROTOLUENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U
2-HEXANONE	ug/L	6100	<5 U	<5 U	<5 U	<5 U
4-CHLOROTOLUENE	ug/L	2000	<0.5 U	<0.5 U	<0.5 U	<0.5 U
4-METHYL-2-PENTANONE	ug/L	8200	<5 U	<5 U	<5 U	<5 U
ACETONE	ug/L	92000	<5 U	<5 U	3.39 J	2.87 J
BENZENE	ug/L	5	<0.25 U	<0.25 U	<0.25 U	<0.25 U
BROMOBENZENE	ug/L	2000	<0.25 U	<0.25 U	<0.25 U	<0.25 U
BROMOCHLOROMETHANE	ug/L	4100	<0.4 U	<0.4 U	<0.4 U	<0.4 U
BROMODICHLOROMETHANE	ug/L	4.6	<0.5 U	<0.5 U	<0.5 U	<0.5 U
BROMOFORM	ug/L	36	<1 U	<1 U	<1 U	<1 U
BROMOMETHANE	ug/L	140	<1 U	<1 U	<1 U	<1 U
CARBON DISULFIDE	ug/L	10000	<1 U	<1 U	<1 U	<1 U
CARBON TETRACHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CHLOROBENZENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U
CHLOROETHANE	ug/L	41000	<1 U	<1 U	<1 U	<1 U
CHLOROFORM	ug/L	1000	<0.25 U	<0.25 U	<0.25 U	<0.25 U

Location ID: Sample Date:	Units	MCL/MSC	50WW27- 031714 3/17/2014	50WW27FD- 031714 3/17/2014	GPW1-031414 3/14/2014	50SW06-031414 3/14/2014
ID Location			Site 50 - NNE, upper shallow, outside the site boundary, east of S. Crockett Ave. Sampled quarterly	Site 50 - NNE, upper shallow, outside the site boundary, east of S. Crockett Ave. Sampled quarterly	Goose Prairie Creek - Grab sample, collected north of culvert at NW corner of intersection of Crockett Avenue and 51st Street Sampled Quarterly for 2 years after LHAAP-50 perchlorate-impacted soil removal, if the creek contains water	Tributary of Goose Prairie Creek - Grab sample, collected immediately before tributary discharges to Goose Prairie Creek, ~350 feet downstream from Crockett Avenue bridge Sampled Quarterly for 2 years after LHAAP-50 perchlorate-impacted soil removal, if the tributary contains water
CHLOROMETHANE	ug/L	220	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	ug/L	70	0.611 J	0.518 J	<0.5 U	<0.5 U
CIS-1,3-DICHLOROPROPENE	ug/L	5.3	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOCHLOROMETHANE	ug/L	34	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DIBROMOMETHANE	ug/L	380	<0.5 U	<0.5 U	<0.5 U	<0.5 U
DICHLORODIFLUOROMETHANE	ug/L	20000	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ETHYLBENZENE	ug/L	700	<0.5 U	<0.5 U	<0.5 U	<0.5 U
HEXACHLOROBUTADIENE	ug/L	20	<0.5 U	<0.5 U	<0.5 U	<0.5 U
ISOPROPYLBENZENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U
m,p-Xylene	ug/L	10000	<1 U	<1 U	<1 U	<1 U
METHYLENE CHLORIDE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U
NAPHTHALENE	ug/L	2000	<0.4 U	<0.4 U	<0.4 U	<0.4 U
N-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U
N-PROPYLBENZENE	ug/L	4100	<0.25 U	<0.25 U	<0.25 U	<0.25 U
O-XYLENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U
P-ISOPROPYLTOLUENE	ug/L	10000	<0.5 U	<0.5 U	<0.5 U	<0.5 U
SEC-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U
STYRENE	ug/L	100	<0.25 U	<0.25 U	<0.25 U	<0.25 U
TERT-BUTYLBENZENE	ug/L	4100	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TOLUENE	ug/L	1000	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	ug/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,3-DICHLOROPROPENE	ug/L	29	<1 U	<1 U	<1 U	<1 U
TRICHLOROETHENE	ug/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROFLUOROMETHANE	ug/L	31000	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	ug/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Common Anions (9056)						
CHLORIDE	mg/L		N/A	N/A	N/A	N/A
NITRATE	mg/L		N/A	N/A	N/A	N/A
NITRITE	mg/L		N/A	N/A	N/A	N/A
SULFATE	mg/L		N/A	N/A	N/A	N/A
Dissolved Gases (RSK-175)						
CARBON DIOXIDE	ug/L		N/A	N/A	N/A	N/A
ETHANE	ug/L		N/A	N/A	N/A	N/A
ETHENE	ug/L		N/A	N/A	N/A	N/A
METHANE	ug/L		N/A	N/A	N/A	N/A

**LONGHORN ARMY AMMUNITION PLANT (LHAAP) SITE-35B(37)
IN SITU MICROBIAL BIOREACTOR (BIO PLUG) FIELD TEST
INTERIM REPORT NO. 3**

RELEASE DATE: 20 May 2014

TEST OFFICER: Gene L. Fabian

REPORT PREPARED BY: U.S. Army Aberdeen Test Center, Gene L. Fabian

TEST SPONSOR: U.S. Army Environmental Command

TEST EXECUTION PERIOD: September 2013 through March 2014

(1) Background

The bio plug technology is a method of augmenting and enhancing the in situ biological degradation of chlorinated organic contaminants. The technology involves the installation of microbiological reactors (bio plugs) into the subsurface that will generate and disperse contaminant-specific microorganisms directly into the contaminated zone. The technology is patented by and proprietary to Advanced BioSystems, LLC (ABS); a subsidiary of TMD Technologies Group, LLC.

Bio plugs are small, immobilized microbe bioreactors. They are constructed using slotted PVC or HDPE pipe loaded with an inert porous material which serves as a structural support matrix (media) for the microorganisms. The microbial populations used are consortia of microorganisms selected for their abilities to biodegrade contaminants of concern, as well as their genetic stability, viability after storage, non-pathogenicity, and ability to compete with indigenous microorganisms. Selected microorganisms are attached (immobilized) on the media in high densities. Nutrients and air are supplied to the bio plugs to stimulate microbial respiration, reproduction and to promote microbial dispersion.

A pilot-scale field test of the bio plug technology was initiated at a chlorinated organic contaminated groundwater remediation site at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, TX. LHAAP-35B(37) is the location of a former chemical laboratory built in the mid-1950's to support propellant production activities at LHAAP. Industrial solid wastes and possibly hazardous wastes were generated at the site. In addition, one wash rack sump was located on the site. The primary groundwater contaminants of concern are tetrachloroethene and trichloroethene. Installation of the pilot-scale bio plug system was completed in Sep 2012. Figure 1 depicts the locations of the bio plugs within estimated contaminant plume, as well as, the bioreactor support equipment (i.e. zone distribution sheds, nutrient mixing equipment, etc.), monitoring well clusters between the bio plug arrays, and existing site monitoring wells. System operation was initialized and stabilized in Oct 2012.

(2) Objectives

The objective for the application of the bio-plug technology test is to accelerate the biological degradation of chlorinated organic contaminants in the groundwater at the test site. The critical performance assessment factor is an increase in the rate of contaminant concentration reduction as detected in monitoring wells. In addition, an increase in the contaminant degrading microbial

population throughout the targeted treatment zone is an expected indicator of enhanced bioremediation performance.

(3) Test Procedures

Prior to initiation of bio plug system operation, baseline samples were collected in Jul 2012 from the existing monitoring wells and the twelve cluster wells installed between the bio plug arrays in accordance with the approved site work plan (ref 1). Groundwater field parameters (well depth, temperature, conductivity, pH, oxygen reduction potential, dissolved oxygen, and total dissolved solids) were recorded for each well. Samples were collected for volatile organic compound (VOC) and total metals analysis in accordance with USEPA SW-846, Methods 8260B and 6020, respectively. Samples were also collected for microbial population enumeration using the guidelines of Method 9215B - Standard Methods for the Examination of Water and Wastewater, 20th Edition.

ATC began quarterly monitoring of the groundwater to assess the bio plug systems' contaminant reduction and microbial population changes in the groundwater in Dec 2012. The results of the Dec 2012 and Mar 2013 monitoring were reported in Interim Report No. 1 (ref 2) and the results of the Jun and Sep 2013 monitoring were reported in Interim Report No. 2 (ref 3). ATC continued quarterly monitoring in Dec 2013 and Mar 2014. The same field parameter data were collected and sample analyses were performed as those collected for baseline characterization and previous quarterly monitoring periods.

(4) Test Data

The sample results for the primary VOC contaminants (tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethane, 1,1-dichloroethene, and cis-1,2-dichloroethene) collected after the fifth and sixth quarters of operation, Dec 2013 and Mar 2014, respectively, are summarized in Tables 1 – 5 along with previously collected baseline and quarterly monitoring data. All chemical analysis data collected during fifth and sixth quarters of system operation were previously provided to USAEC when made available by the analytical laboratory. Only data pertaining to the primary contaminants which support the assessment of interim technology performance is included in this interim report. The metal analyses indicated low concentrations of metals consistent with historical metals data collected at this site. No changes in the metals concentrations have been observed between the baseline data and the quarterly monitoring metals data.

Quarterly samples have been collected for microbial enumerations in conjunction with VOC contaminate sample collection beginning in Dec 2012. As discussed in Interim Report No. 1, the Dec 2012 microbial enumeration results are being used as the baseline microbial population levels because sediment in the samples collected during the Jul and Sep 2012 baseline events skewed microbial population data. The Dec 2012 is considered representative of baseline levels because distribution of the microbes through the groundwater layer to the monitoring wells between the rows of bio plugs had not occurred at this point. Limited distribution of microbial population between the bio plug rows within the first three months of operation is typical at most sites. Distribution of the microbial population within the bio plug array is dependent upon the site geology and hydrology, contaminant types and levels, and bio plug array spacing. This can be a fairly slow process. Typically, it has taken 9-12 months (and sometimes as long as 18

months) before microbial population dispersion is achieved in the target area at most sites. Total heterotrophy and chlorinated aliphatic degrader microbial data is summarized in Tables 6 and 7, respectively.

Groundwater field parameters (well depth, temperature, conductivity, pH, oxygen reduction potential, dissolved oxygen, and total dissolved solids) were recorded for each well during each sampling event. All field parameters were consistent between the baseline and quarterly monitoring sampling events with the exception of groundwater temperature, dissolved oxygen (DO), and oxidation reduction potential (ORP) concentrations. The temperature, DO, and ORP data are summarized in Tables 8, 9 and 10, respectively.

(5) Technical Analysis

The primary performance factor for assessment of the bio plug technology is an observed reduction of the VOC concentrations in the monitoring wells. A comparison of the baseline to the fifth and sixth quarter PCE concentrations in Tables 1 yields trends in contaminate reductions in wells MW 2-1, MW 3-1, MW 3-3, and MW4-3 in the cluster wells. In addition, the PCE concentrations in LHS-MW-58 are also reducing. PCE concentrations in the other wells within the bio plug array are either non-detect, stable, or may possibly be in the early stage of a contaminant reduction trend (i.e. MW 3-2 and 35BWW04).

A comparison of the baseline to the fifth and sixth quarter TCE concentrations in Tables 2 yields trends in contaminate reductions in monitoring well cluster groups 1 and 2, as well as, MW 4-3. In addition, the TCE concentrations in LHS-MW-58 and 35BWW08 are also reducing. TCE concentrations in the other wells within the bio plug array are either, non-detect, stable, or may possibly be in the early stage of a contaminant reduction trend (i.e. 35BWW04).

No contaminate reduction trends were observed in the other VOC data. The lack of contaminate reduction in the some areas of the test site may result from variations in the upper shallow groundwater flow rates in these areas. Groundwater flow is the primary mover for microbial dispersion from bio plugs.

Enhanced bioremediation as a result of the fifth and sixth quarters of bio plug technology operation appears to be yielding an increase in microbial populations at the monitoring wells within the test area. There is a increase in total heterotrophic microbial counts between the Dec 2012 and the Mar 2014 microbial counts (Table 6). The chlorinated aliphatic degrader microbial counts remain mixed (Table 7). However, there appears to be increasing chlorinated aliphatic degrader populations in a few of the cluster and monitoring wells within the test area.

Groundwater temperature decreased during the fifth and sixth quarters compared to the third and fourth quarters of system operation (Table 8). The data is typical of seasonal fluctuations in groundwater temperature. The DO concentrations during the fifth and sixth quarters of operation increased in a few of the wells while other wells remained at levels observed during the third and fourth quarters (Table 9). These DO increases may be the result of rain water infiltration in the area. Rain events prior to the Mar 2014 monitoring increased groundwater levels at the site approximately 6-inches over the previous monitoring period. The ORP data (Table 10) collected the sixth quarter (Mar 2014) indicated a decrease in ORP levels. ATC is not sure if this fairly uniform decrease in ORP levels is a result significant rainwater infiltration or if there is some other factor influencing these levels.

In summary, after approximately 17 months of operation the bio plug system appears to be increasing the rate of bioremediation within several areas of the test site. Bio plug system

operation is expected to continue to degrade the primary contaminants within the test area. The general level of performance observed to date correlates with the stated performance of ABC, LLC's previous applications of this technology.

(6) Bio Plug System Quarterly Operational Activities (Dec 2013 through Mar 2014)

ABS, LLC completed its sixth quarter of operation of the bio plug system at LHAAP-35B(37) in Mar 2013. The bio plug array nutrient and air injection rates remain the same as those used at the end of the fifth quarter. A nutrient solution mixed at a concentration of 1.25 gallons of nutrient per 1000 gallons of water was injected daily into the bio plugs. The nutrient solution consists of nitrogen, phosphorous, carbon, and micronutrients required for microbe growth. A total of 2933 gallons of nutrient solution was injected daily into the bio plug array. This volume was evenly distributed amongst the 419 bio plugs in the bio plug array resulting in a daily injection of approximately 7 gallons per day per bio plug. The rate of nutrient injection into each bio plug is 1 gallon per hour. Air continues to be injected into the bio plugs at a rate of 1 standard cubic feet per hour per bio plug.

(7) References

1. Advanced Bio Systems, LLC. Final Site Work Plan – Pilot Test of an In Situ Microbial Bioreactor Enhanced Bioremediation Technology. LHAAP-35B(37), Longhorn Army Ammunition Plant, Karnack, TX. March 29, 2012.
2. U.S. Army Aberdeen Test Center. Longhorn Army Ammunition Plant (LHAAP) Site-35B(37) In Situ Microbial Bioreactor (Bio Plug) Field Test Interim Report No.1. July 19, 2013.
3. U.S. Army Aberdeen Test Center. Longhorn Army Ammunition Plant (LHAAP) Site-35B(37) In Situ Microbial Bioreactor (Bio Plug) Field Test Interim Report No.2. November 26, 2013.

TABLE 1. MONITORING AND CLUSTER WELL
TETRACHLOROETHENE DATA ($\mu\text{g/L}$)

Well ID	Jul-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	ND	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS
35BWW03	ND	ND	NS	ND	NS	ND	ND
35BWW04	48.90	NS	45.40	50.60	68.80	57.8	33.1
35BWW05	1.09	1.41	1.00	1.23	1.56	1.77	1.95
35BWW06	ND	ND	ND	NS	NS	ND	ND
35BWW07	ND	NS	NS	NS	ND	NS	NS
35BWW08	ND	ND	ND	ND	ND	ND	ND
35BWW09	ND	NS	ND	ND	ND	ND	ND
35BWW10						3.61	1.49
35BWW11	ND	NS	NS	NS	ND	NS	NS
35BWW12						16.3	NS
35BWW14	21.00	28.00	21.80	24.00	26.80	23.90	NS
35BWW17						15.30	1.24
35BWW20						20.60	NS
LHS-MW-58	36.30	40.60	14.80	25.80	29.00	10.30	4.06
MW 1-1	ND	ND	ND	ND	ND	ND	ND
MW 1-2	ND	ND	ND	ND	ND	ND	ND
MW 1-3	ND	NS	NS	NS	NS	NS	ND
MW 2-1	2.65	5.95	3.17	2.84	1.67	1.49	1.17
MW 2-2	ND	ND	ND	ND	ND	ND	ND
MW 2-3	ND	0.256	ND	ND	ND	ND	ND
MW 3-1	30.10	26.2	22.10	18.70	18.70	15.20	11.2
MW 3-2	41.80	32.5	27.10	37.90	40.10	40.10	30
MW 3-3	60.50	49.00	38.00	40.50	36.20	33.90	14.6
MW 4-1	20.10	15.7	16.60	24.20	24.90	19.30	24.5
MW 4-2	9.60	9.18	7.06	8.25	8.76	10.80	8.48
MW 4-3	18.80	20.10	16.90	5.87	6.18	NS	4.05

Notes:

NS = Not sampled.

ND = Non-detect.

TABLE 2. MONITORING AND CLUSTER WELL
TRICHLOROETHENE DATA ($\mu\text{g/L}$)

Well ID	Jul-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	ND	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS
35BWW03	ND	ND	NS	ND	NS	ND	ND
35BWW04	8.09	NS	15.40	11.40	13.40	9.39	4.53
35BWW05	13.50	14.60	15.60	18.80	17.30	13.00	15.1
35BWW06	ND	ND	ND	NS	NS	ND	ND
35BWW07	ND	NS	NS	NS	ND	NS	NS
35BWW08	65.70	62.50	77.10	67.50	49.60	39.70	31
35BWW09	55.60	NS	45.20	43.90	53.60	54.30	73.3
35BWW10						54.4	37.2
35BWW11	ND	NS	NS	NS	ND	NS	NS
35BWW12						2.40	NS
35BWW14	80.60	80.50	80.30	90.90	89.70	72.60	NS
35BWW17						4.53	0.349
35BWW20						7.33	NS
LHS-MW-58	5.17	6.76	3.39	5.02	4.99	1.57	0.312
MW 1-1	16.80	17.60	24.80	22.1	4.83	5.09	2.82
MW 1-2	8.66	8.57	8.96	9.13	0.817	ND	ND
MW 1-3	2.80	NS	NS	NS	NS	NS	0.426
MW 2-1	4.59	7.25	4.78	3.35	2.15	1.82	1.37
MW 2-2	0.27	0.272	0.312	0.320	ND	ND	ND
MW 2-3	1.44	1.24	0.915	0.840	0.289	ND	0.259
MW 3-1	2.42	2.43	2.57	2.02	2.05	1.84	1.86
MW 3-2	3.07	1.90	2.14	2.71	3.02	3.42	2.49
MW 3-3	5.99	5.79	5.49	7.64	5.50	5.28	2.68
MW 4-1	3.63	4.16	4.27	5.32	5.48	4.38	5.13
MW 4-2	4.21	4.19	3.77	4.53	6.14	7.21	6.28
MW 4-3	13.50	13.5	12.40	4.97	5.53	NS	3.38

Notes:

NS = Not sampled.

ND = Non-detect.

TABLE 3. MONITORING AND CLUSTER WELL
1,1-DICHLOROETHANE DATA (µg/L)

Well ID	Jul-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	ND	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS
35BWW03	ND	ND	NS	ND	NS	ND	ND
35BWW04	0.64	NS	2.11	1.07	1.37	0.884	0.42
35BWW05	ND	ND	ND	ND	ND	ND	ND
35BWW06	ND	ND	ND	NS	NS	ND	ND
35BWW07	ND	NS	NS	NS	ND	NS	NS
35BWW08	ND	ND	ND	ND	ND	ND	ND
35BWW09	ND	NS	ND	ND	ND	ND	ND
35BWW10						ND	ND
35BWW11	ND	NS	NS	NS	ND	NS	NS
35BWW12						ND	NS
35BWW14	4.95	4.58	4.89	4.27	4.88	4.84	NS
35BWW17						0.333	ND
35BWW20						ND	NS
LHS-MW-58	ND	0.306	ND	ND	0.231	ND	ND
MW 1-1	ND	ND	ND	ND	ND	ND	ND
MW 1-2	ND	ND	ND	ND	ND	ND	ND
MW 1-3	ND	NS	NS	NS	NS	NS	ND
MW 2-1	ND	ND	ND	ND	ND	ND	ND
MW 2-2	ND	ND	ND	ND	ND	ND	ND
MW 2-3	ND	ND	ND	ND	ND	ND	ND
MW 3-1	ND	ND	ND	ND	ND	ND	ND
MW 3-2	0.246	0.158	0.230	0.199	0.222	ND	0.188
MW 3-3	0.444	0.425	0.359	ND	0.251	0.161	ND
MW 4-1	ND	0.278	0.261	0.202	0.297	0.246	0.254
MW 4-2	0.273	0.270	0.320	0.246	0.379	0.631	0.457
MW 4-3	1.05	0.901	0.934	0.304	0.463	NS	0.302

Notes:

NS = Not sampled.

ND = Non-detect.

TABLE 4. MONITORING AND CLUSTER WELL
1,1-DICHLOROETHENE DATA ($\mu\text{g/L}$)

Well ID	Jul-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	ND	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS
35BWW03	ND	ND	NS	ND	NS	ND	ND
35BWW04	1.67	NS	2.94	1.78	2.25	2.31	0.689
35BWW05	ND	ND	ND	ND	ND	ND	ND
35BWW06	ND	ND	ND	NS	NS	ND	ND
35BWW07	ND	NS	NS	NS	ND	NS	NS
35BWW08	ND	ND	ND	ND	ND	ND	ND
35BWW09	ND	NS	ND	ND	ND	ND	ND
35BWW10						ND	ND
35BWW11	ND	NS	NS	NS	ND	NS	NS
35BWW12						ND	NS
35BWW14	52.30	50.20	48.20	44.70	52.80	49.80	NS
35BWW17						1.13	ND
35BWW20						ND	NS
LHS-MW-58	0.66	0.81	ND	ND	ND	ND	ND
MW 1-1	ND	ND	ND	ND	ND	ND	ND
MW 1-2	ND	ND	ND	ND	ND	ND	ND
MW 1-3	ND	NS	NS	NS	NS	NS	ND
MW 2-1	ND	ND	ND	ND	ND	ND	ND
MW 2-2	ND	ND	ND	ND	ND	ND	ND
MW 2-3	ND	ND	ND	ND	ND	ND	ND
MW 3-1	ND	ND	ND	ND	ND	ND	ND
MW 3-2	1.01	0.537	0.65	0.711	0.61	ND	ND
MW 3-3	1.34	0.86	0.75	ND	ND	ND	ND
MW 4-1	0.66	1.15	0.93	0.875	0.863	0.972	0.892
MW 4-2	1.54	1.81	1.58	1.80	2.76	3.73	2.93
MW 4-3	7.58	6.76	6.12	1.64	1.64	NS	1.1

Notes:

NS = Not sampled.

ND = Non-detect.

TABLE 5. MONITORING AND CLUSTER WELL
CIS-1,2-DICHLOROETHENE DATA (µg/L)

Well ID	Jul-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	ND	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS
35BWW03	ND	ND	NS	ND	NS	ND	ND
35BWW04	0.475	NS	1.050	0.762	0.749	0.726	0.277
35BWW05	ND	ND	0.255	0.330	0.377	0.367	0.346
35BWW06	ND	ND	ND	NS	NS	ND	ND
35BWW07	ND	NS	NS	NS	ND	NS	NS
35BWW08	0.305	0.300	0.356	0.253	0.301	ND	ND
35BWW09	0.380	NS	0.431	0.367	0.465	0.568	0.654
35BWW10						0.279	ND
35BWW11	ND	NS	NS	NS	ND	NS	NS
35BWW12						ND	NS
35BWW14	13.20	12.20	12.80	12.70	13.70	13.20	NS
35BWW17						ND	ND
35BWW20						0.301	NS
LHS-MW-58	ND	0.267	ND	ND	ND	ND	ND
MW 1-1	ND	ND	ND	ND	ND	ND	ND
MW 1-2	ND	ND	ND	ND	ND	ND	ND
MW 1-3	ND	NS	NS	NS	NS	NS	ND
MW 2-1	ND	ND	ND	ND	ND	ND	ND
MW 2-2	ND	ND	ND	ND	ND	ND	ND
MW 2-3	ND	ND	ND	ND	ND	ND	ND
MW 3-1	ND	ND	ND	ND	ND	ND	ND
MW 3-2	0.271	ND	ND	ND	ND	ND	ND
MW 3-3	0.311	1.20	0.691	0.292	0.383	0.356	ND
MW 4-1	0.320	0.599	0.540	0.526	0.452	0.517	0.494
MW 4-2	0.561	0.534	0.465	0.432	0.621	0.901	0.693
MW 4-3	1.320	1.180	1.030	0.353	0.425	NS	0.332

Notes:

NS = Not sampled.

ND = Non-detect.

TABLE 6. MONITORING AND CLUSTER WELL MICROBIAL ENUMERATION
TOTAL HETEROTROPH DATA (CFU/ml)

Well ID	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS
35BWW03	0	NS	0.67	NS	338.33	530
35BWW04	NS	15.60	11.67	402.67	125.00	17333.33
35BWW05	14.6	15.60	210.00	108.00	1025.00	19333.33/ 28166.67
35BWW06	0	0.00	NS	NS	55.00	3833.33
35BWW07	NS	NS	NS	115.33	NS	NS
35BWW08	62.5	77.65	34.00	14.00	926.67	8666.67
35BWW09	NS	75.20	167.33	254.00	31500.00	9500.00
35BWW10					610.00	590.00
35BWW11	NS	NS	NS	59.33	NS	NS
35BWW12					80	NS
35BWW14	80.5	80.30	44.00	90.33	2865.00	NS
35BWW17					11.67	13000.00
35BWW20					23333.33	NS
LHS-MW-58	6.76	3.39	1.67	4.33	273.33	675.00
MW 1-1	18.85	24.80	21.67	75.67	663.33	16833.33
MW 1-2	8.57	8.96	1.33	229.67	733.33	83.33
MW 1-3	NS	NS	NS	NS	NS	13833.33
MW 2-1	7.25	4.78	1.67	298.33	405.00	26000/ 411.67
MW 2-2	0.272	0.31	43.00	253.33	28.67	263.33
MW 2-3	1.24	0.92	81.67	78.67	561.67	37166.67
MW 3-1	2.43	2.57	7.33/ 2.00	65.33/ 36.67	75.00	4.00
MW 3-2	1.9	2.12	4.00	75.00	41166.67/ 44833.33	11833.33
MW 3-3	1.2	5.49	5.33	200.00	1500.00	16833.33
MW 4-1	4.19	4.27	0.33/ 2.33	68000.00/ 49133.33	673.33/ 503.33	10333.33
MW 4-2	4.19	3.67	20.67	57.00	1110.00	170.00
MW 4-3	13.5	12.40	40.67	448.67	NS	491.67

Notes:

NS = Not sampled.

CFU/ml = colony forming units per milliliter

TABLE 7. MONITORING AND CLUSTER WELL MICROBIAL ENUMERATION
CHLORINATED ALIPHATIC DEGRADER DATA (CFU/ml)

Well ID	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS
35BWW03	0	NS	11.33	NS	0	3.33
35BWW04	NS	6.67	5.00	274.33	78.33	350.33
35BWW05	5	8.67	32.00	19.67	49.33	117.00/ 146.00
35BWW06	0	3.33	NS	NS	0.67	5.67
35BWW07	NS	NS	NS	1.67	NS	NS
35BWW08	14.33	5.00/ 7.00	24.00	1.67	476.67	252.67
35BWW09	NS	1.00	50.33	2.67	1291.67	128.67
35BWW10					8.33	147.00
35BWW11	NS	NS	NS	39.33	NS	NS
35BWW12					21.67	NS
35BWW14	0	30.67	17.00	1.00	445.00	NS
35BWW17					7.67	134.00
35BWW20					1568.33	NS
LHS-MW-58	0	28.00	0.33	2.67	76.67	274.33
MW 1-1	233.33/ 33.33	2.33	0.67	35.00	223.33	532.33
MW 1-2	100	341.67	8.00	12.00	26.67	0.67
MW 1-3	NS	NS	NS	NS	NS	507.67
MW 2-1	0	8.00	0.67	4.33	10.00	92.33/ 4.00
MW 2-2	3333.33	5.00	7.00	67.00	195.00	407.33
MW 2-3	36.33	178.33	14.67	5.67	270.33	8.67
MW 3-1	4.00/ 0.00	76.67	0.00/ 0.33	0.00/ 3.67	2.67	0.00
MW 3-2	0	28.00	0.00	26.67	241.67/ 86.67	7.00
MW 3-3	0	4.67	4.33	52.00	2.33	18.67
MW 4-1	21.67	3.33	1.33/ 4.33	927.33/ 360.67	231.67/ 188.33	131.67
MW 4-2	3333.33	5.33/ 10.33	13.00	4.67	25.00	88.00
MW 4-3	0	15.33	34.33	194.00	NS	280.67

Notes:

NS = Not sampled.

CFU/ml = colony forming units per milliliter

TABLE 8. MONITORING AND CLUSTER WELL
GROUNDWATER TEMPERATURE DATA (°C)

Well ID	Jul-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	20.6	NS	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS	NS
35BWW03	20.4	23.6	18.3	NS	23.38	NS	15.46	19.66
35BWW04	20.0	21.3	NS	19.31	21.87	19.29	15.28	16.82
35BWW05	21.0	18.7	18.5	18.61	21.04	19.89	16.42	15.83
35BWW06	20.5	19.7	17.6	13.95	NS	NS	16.34	18.72
35BWW07	25.2	20.9	NS	NS	NS	24.51	NS	NS
35BWW08	22.2	22.2	18.0	19.89	20.56	22.56	21.28	20.29
35BWW09	21.6	20.6	NS	18.62	20.08	20.94	18.87	16.51
35BWW10							21.02	18.99
35BWW11	25.8	23.0	NS	NS	NS	21.11	NS	NS
35BWW12							15.72	NS
35BWW14	22.8	19.0	17.8	18.54	20.02	22.54	17.04	NS
35BWW17							16.72	17.09
35BWW20							17.28	NS
LHS-MW-58	22.0	21.3	19.4	20.14	22.95	21.52	16.00	18.50
MW 1-1	24.5	22.2	18.6	19.57	20.54	23.72	21.66	20.79
MW 1-2	22.6	22.2	15.8	16.18	20.61	30.89	22.62	21.14
MW 1-3	28.1	NS	NS	NS	NS	NS	NS	26.10
MW 2-1	21.4	20.0	19.0	18.81	20.82	21.30	20.39	19.03
MW 2-2	23.6	21.2	18.8	19.08	21.27	23.14	18.57	19.69
MW 2-3	23.8	22.0	19.0	19.02	21.60	23.54	18.11	20.07
MW 3-1	21.2	19.1	17.6	17.88	21.73	22.33	16.76	20.18
MW 3-2	20.5	19.8	18.2	19.09	20.52	22.69	17.29	20.81
MW 3-3	22.0	21.9	17.9	19.42	23.18	26.88	16.46	16.73
MW 4-1	21.1	19.1	17.4	18.25	19.23	19.87	15.80	15.66
MW 4-2	21.9	19.4	17.8	18.66	19.44	20.84	14.74	16.43
MW 4-3	26.6	21.2	13.5	18.32	22.37	27.01	NS	16.47

Notes:
NS = Not sampled.

TABLE 9. MONITORING AND CLUSTER WELL
GROUNDWATER DISSOLVED OXYGEN DATA (mg/L)

Well ID	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	NS	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS
35BWW03	6.76	6.08	NS	1.06	NS	1.13	1.08
35BWW04	6.90	NS	5.61	6.13	3.07	1.08	8.93
35BWW05	6.20	15.18	0.70	1.05	0.22	0.89	1.18
35BWW06	5.90	16.88	1.18	NS	NS	0.91	1.10
35BWW07	6.72	NS	NS	NS	1.95	NS	NS
35BWW08	5.25	5.00	1.40	1.30	0.27	1.05	1.62
35BWW09	6.55	NS	2.49	4.13	1.33	0.78	6.30
35BWW10						0.86	0.37
35BWW11	5.89	NS	NS	NS	3.36	NS	NS
35BWW12						1.71	NS
35BWW14	6.14	5.67	2.39	2.87	0.79	0.86	NS
35BWW17						1.23	4.63
35BWW20						2.37	NS
LHS-MW-58	5.54	5.02	5.98	4.61	0.66	7.07	10.86
MW 1-1	5.23	8.56	0.69	1.21	0.38	2.27	5.04
MW 1-2	5.30	10.12	0.94	1.68	0.46	0.95	0.82
MW 1-3	NS	NS	NS	NS	NS	NS	4.30
MW 2-1	5.80	8.14	0.42	0.84	0.66	0.60	1.45
MW 2-2	5.48	6.79	1.41	1.58	2.02	6.99	8.96
MW 2-3	5.38	3.98	0.77	1.73	1.70	6.05	8.31
MW 3-1	6.20	6.01	0.51	0.77	0.61	0.76	3.94
MW 3-2	5.93	5.43	1.07	0.74	0.74	1.81	1.57
MW 3-3	5.36	5.98	2.48	3.48	1.43	1.52	3.12
MW 4-1	6.09	NM	1.28	1.12	1.02	1.04	1.72
MW 4-2	6.00	NM	0.53	0.79	0.82	0.91	0.98
MW 4-3	6.20	NM	3.16	7.97	4.71	NS	6.78

Notes:

1. Jul 2012 data suspect due to faulty dissolved oxygen sensor. Data not included in table.

NS = Not sampled.

NM = Not measured due to dissolved oxygen sensor failure.

TABLE 10. MONITORING AND CLUSTER WELL GROUNDWATER
OXIDATION REDUCTION POTENTIAL DATA (mV)

Well ID	Jul-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
35BWW01	84	NS	NS	NS	NS	NS	NS	NS
35BWW02	NS	NS	NS	NS	NS	NS	NS	NS
35BWW03	-78	NM	19	NS	139.3	NS	-155.2	-199.7
35BWW04	41	NM	NS	81.3	130.7	198.4	130.8	-202.3
35BWW05	-101	NM	-51	-69.7	-39.0	-54.6	-73.6	-177.1
35BWW06	7	NM	-38	-61.1	NS	NS	-66.2	-185.0
35BWW07	13	NM	NS	NS	NS	228	NS	NS
35BWW08	10	NM	155	101.3	192.3	212.8	99.5	-223.1
35BWW09	14	NM	NS	-10.6	127.5	144.5	-44.7	-219.6
35BWW10							137.5	-225.2
35BWW11	-114	NM	NS	NS	NS	41.5	NS	NS
35BWW12							127.7	NS
35BWW14	-145	NM	50	76.1	74.6	157.9	-64.3	NS
35BWW17							135.1	-173.7
35BWW20							132.2	NS
LHS-MW-58	23	NM	163	67.1	159.4	165.8	136.3	-199.8
MW 1-1	31	NM	78	60.8	177.4	243.6	102.8	-224.2
MW 1-2	13	NM	122	78.8	115.6	289.2	174.0	-221.3
MW 1-3	8	NS	NS	NS	NS	NS	NS	-173.4
MW 2-1	-103	NM	-9	38.8	146.3	170.9	105.5	-208.4
MW 2-2	26	NM	107	116.2	174.7	278.4	187.8	-190.6
MW 2-3	68	NM	102	90.1	174.1	275.9	127.1	-209.3
MW 3-1	-87	NM	-30	-64.1	140.8	197.1	-138.5	-216.7
MW 3-2	66	NM	108	116.8	145.1	273.1	144.6	-216.7
MW 3-3	-164	NM	-68	15.9	126.6	283.0	159.4	-206.0
MW 4-1	-46	NM	-49	12.2	45.8	8.7	-99.1	-195.6
MW 4-2	-43	NM	25 ^A	29.3	131.7	74.8	-12.5	-193.1
MW 4-3	NM	NM	140	177.7	160.2	237.2	NS	-177.0

Notes:

A = ORP failed to stabilize. Value is last measurement taken prior to sampling.

NM = Not measured. ORP sensor failed.



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

June 10, 2014

DAIM-ODB-LO

Mr. Rich Mayer
US Environmental Protection Agency
Federal Facilities Section R6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final LHAAP-18/24 Post Screening Investigation Work Plan Addenda,
Longhorn Army Ammunition Plant, Karnack, Texas, June 2014

Dear Mr. Mayer,

The above-referenced document is being transmitted for your records. The document was prepared by AECOM on behalf of the Army as part of AECOM's Performance Based Remediation contract for the facility. I ask that Dave Wacker, AECOM's Project Manager, be copied on any communications related to the project.

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

Sincerely,

A handwritten signature in cursive script that reads "Rose M. Zeiler".

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

Copies furnished:

- A. Palmie, TCEQ, Austin, TX
- D. Vodak, TCEQ, Tyler, TX
- P. Bruckwicki, Caddo Lake NWR, TX
- R. Smith, USACE, Tulsa District, OK
- A. Williams, USACE, Tulsa District, OK
- R. Paul, USAEC, San Antonio, TX
- D. Wacker, AECOM – San Antonio, TX (for project files)



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

June 10, 2014

DAIM-ODB-LO

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

Re: Final LHAAP-18/24 Post Screening Investigation Work Plan Addenda,
Longhorn Army Ammunition Plant, Karnack, Texas, June 2014

Dear Ms. Palmie,

The above-referenced document is being transmitted for your records. The document was prepared by AECOM on behalf of the Army as part of AECOM's Performance Based Remediation contract for the facility. I ask that Dave Wacker, AECOM's Project Manager, be copied on any communications related to the project.

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

Sincerely,

A handwritten signature in cursive script that reads "Rose M. Zeiler".

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

Copies furnished:
R. Mayer, USEPA Region 6, Dallas, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
R. Smith, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
R. Paul, USAEC, San Antonio, TX
D. Wacker, AECOM, San Antonio, TX (for project files)

FINAL
POST-SCREENING INVESTIGATION WORK PLAN
ADDENDUM
LHAAP-18/24, BURNING GROUND NO. 3 AND UNLINED
EVAPORATION POND
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:



U.S. Army Corps of Engineers

Prepared By:

AECOM

AECOM Technical Services, Inc.

June 2014

FINAL
POST-SCREENING INVESTIGATION WORK PLAN
ADDENDUM
LHAAP-18/24, BURNING GROUND NO. 3 AND UNLINED
EVAPORATION POND
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:
U.S. Army Corp of Engineers
Tulsa District

Prepared By:
AECOM Technical Services, Inc.
Contract No. W912DY-09-D-0059
Task Order No. DS01

June 2014

1 INTRODUCTION

A post-screening investigation work plan (PSI WP) was developed by the United States (U.S.) Army and approved in February 2013 (AECOM, February 2013). The purpose of the PSI was to refine the conceptual site model (CSM) and incorporate the investigation results into the Feasibility Study (FS).

PSI field activities were implemented between February and May 2013 and the results were documented in a PSI Report (AECOM, November 2013). Following the PSI, the CSM was updated for contaminant presence, distribution, and migration in the shallow groundwater zone and the Wilcox Formation. Four items, identified as part of the PSI require further evaluation to facilitate selection of a Preferred Remedial Alternative for the site. These items consist of the unknown extent and distribution of dense non-aqueous phase liquid (DNAPL) in two shallow zone locations, unknown presence and distribution of contaminants of concern (CoCs) in the vadose zone underneath and to the south of the UEP, unknown presence and extent in the shallow groundwater zone of perchlorate at two locations, and uncertainty in effectiveness of potentially feasible technologies being considered in the FS.

This document serves as an addendum to the PSI WP and describes the proposed activities to provide the required data to accurately and cost effectively select the Preferred Remedy for the site as part of the Comprehensive Environmental Response Compensation and Liability Act process for LHAAP-18 (Burning Ground No. 3) and LHAAP-24 (Unlined Evaporation Pond/Rocket Motor Washout Facility).

This work will be performed under USACE Huntsville District's Worldwide Environmental Remediation Services Contract No. W912DY-09-D-0059 Task Order No. DS01. The U.S. Army Environmental Command provides funding for the environmental remedial activities at LHAAP. The Base Realignment and Closure Division is responsible for all aspects of LHAAP including the environmental program, operations, and land transfer.

2 PURPOSE AND OBJECTIVES

The following specific objectives have been identified for this work:

2.1 DNAPL Extent and Distribution Assessment

- Determine the extent and distribution of DNAPL in the shallow groundwater bearing zone in two areas at the site; the area in the vicinity of MW-2 south of the former Unlined Evaporation Pond (UEP) and area in the vicinity of the former air curtain destructor (ACD).

2.2 CoC Presence and Distribution in the UEP Vadose Zone

- Determine the presence and distribution of CoCs in the vadose zone underneath and to the south of the UEP (closure of the UEP in 1986 did not include assessment of the vadose zone for the presence of CoCs).

2.3 PSI-Identified Data Required to Identify Extent of CoCs

- Determine the extent of perchlorate south of 18CPTMW22 in the shallow zone.

- Determine the extent of perchlorate to the northwest of 18CPTMW23 towards Harrison Bayou in the shallow zone.

2.4 Treatability Testing

- Collect site soil and groundwater samples and conduct treatability testing for identified technologies to refine the FS as proof of concept or to ensure costs are within an acceptable range of accuracy.

3 PROPOSED INVESTIGATION ACTIVITIES

3.1 Continuing Sources and DNAPL Extent Assessment

The proposed activities for DNAPL assessment consist of continuous cone penetrometer testing (CPT) along with membrane interface probe (MIP) measurements to determine the relative distribution of volatile CoCs followed by soil sampling as described below and in **Figures 1 and 2** for the former UEP and ACD areas, respectively. Note that the MIP data are qualitative and will only be used to determine impacted zones on a relative basis and to guide collection of soil samples.

A judgmental approach will be used for DNAPL assessment at the UEP and ACD areas using a step-out approach. The approach will entail starting at the known DNAPL locations (center points of investigation) and conducting CPT/MIP investigation at step-out locations in the direction of areas with known absence of DNAPL (control points), as determined from previous boring data such as 18CPT25 or existing wells such as MW-21 in the vicinity of the UEP. The center points of investigation are MW-2 and 18CPT21 in the former UEP vicinity and 18CPT27 in the former ACD vicinity. If the MIP response at a location is significant, another step-out sampling location half the distance to the control point will be investigated. However, if the results yield a low MIP response or no MIP response, the new CPT/MIP investigation location will be at the midpoint between the center point and the first CPT/MIP location. This process will be repeated until the extent of DNAPL is identified.

Analysis of total soil saturation data developed at LHAAP-18/24 for the PSI Report (Appendix E) (AECOM, November 2013) for two major soil types: fine-grained and coarse-grained soils, revealed that DNAPL could be implied at a concentration of approximately $3.3 \text{ E}+06$ and $3.6 \text{ E}+06$ ug/kg soil for methylene chloride (MC) and $4.04 \text{ E}+05$ and $4.15 \text{ E}+05$ ug/kg soil for trichloroethene (TCE), respectively.

It is proposed that up to 16 CPT/MIP locations, 18CPTUEP01 through 18CPTUEP16, be used in the vicinity of the UEP area, to better delineate the horizontal and vertical distribution of chlorinated VOCs (primarily, TCE and MC) DNAPL. The presence of concentrated source areas and/or DNAPL in either the vadose zone or saturated zone can be identified by MIP measurements and confirmed with direct sampling. **Figure 1** presents the first set of boring locations for the UEP area.

It is proposed that up to 14 CPT/MIP locations, 18CPTACD01 through 18CPTACD14, be used in the vicinity of the ACD area, to better delineate the horizontal and vertical distribution of chlorinated VOC (primarily, TCE and MC) DNAPL and collect lithology data. **Figure 2** presents the first set of boring locations for the ACD area.

Additional CPT/MIP borings will be driven if needed (in coordination with the U.S. EPA and TCEQ) if field results identify the need to extend the delineation area beyond the number of locations identified above. The determination to add or delete investigation locations will be coordinated with the U.S. EPA and TCEQ as field data become available.

In addition to the UEP and ACD areas, results from two historical borings within the Burn Pits area (8A-940 and 8A-984) had very high TCE and MC concentrations implying potential presence of DNAPL at a depth of 14 feet below ground surface (bgs). Although based on historical accounts, excavations to a depth of 15 feet occurred within the Burn Pits area, data from deeper soil within the saturated zone are not available. Therefore, it is proposed that two confirmation borings be placed in that area to assess the potential presence of DNAPL (18CPTBB01 and 18CPTBB02). Should DNAPL be identified, additional step-out borings will be used at an approximate distance of 100 feet from the first boring or at half the distance to a nearby control point such as 18CPTMW04 to the east and AWD-2 to the west.

At each boring location, up to five (5) discrete soil samples will be collected based on MIP responses. Therefore, approximately 160 discrete soil samples (plus Quality Control Samples) will be collected from the three investigation areas (a subset of samples will be analyzed for perchlorate). The discrete soil samples will be collected using a direct push tool (DPT) at the intervals identified from the MIP responses. DPT borings will be located adjacent to the CPT/MIP locations. The results will allow mapping the DNAPL distribution across the investigation areas. As MIP is not responsive to perchlorate, laboratory analyses of a subset of the soil samples are proposed to confirm perchlorate concentrations in these areas. Discrete groundwater samples will not be collected as it is believed the soil results are sufficient for determining presence of DNAPL as demonstrated by data collected during the PSI.

No monitoring wells are proposed in these areas.

3.2 CoC Presence and Distribution in the UEP Vadose Zone

Closure of the UEP in 1986 did not include assessment of the vadose zone for the presence of CoCs. Unknown residual contamination in the vadose zone soil could become a long-term source to groundwater, particularly, after groundwater remediation is complete. The presence of the engineered UEP cap should reduce the potential for rainwater infiltration through the vadose zone, but the threat of vertical migration remains and needs to be quantified. Two additional areas to the south of the UEP contain TCE or MC within the unsaturated soil at concentrations that could contribute CoCs to groundwater. These areas are in the vicinity of soil borings 18-SB02/8A-911 and 8A-975.

Because the limit of the UEP is well defined, a systematic approach for sampling is proposed as shown in **Figure 3**. A grid at approximately 100-foot intervals will be used and a CPT/MIP boring at each location will be driven to the top of the saturated zone as determined by the CPT/MIP instrument. Discrete soil samples will be collected from each location only within the vadose zone. The discrete soil samples will be collected using a DPT at the intervals identified from the MIP responses. The samples will be collected from the vadose zone. However, overlap with the DNAPL extent delineation is anticipated in the southern area of the UEP and farther to the south of the UEP. In these locations, soil samples from the unsaturated and saturated soil will be collected as dictated by MIP responses. Adjacent to former soil boring locations 18-SB02/8A-911 and 8A-975 to the south of the former UEP, soil samples in the unsaturated zone along the

extended UEP grid lines will be collected to delineate the extent of unsaturated soil impact (**Figure 3**).

Based on the grid points and previously collected sample locations, up to 20 soil borings for unsaturated soil delineation are anticipated (**Figure 3**) and up to five (5) discrete soil samples will be collected based on MIP responses from each boring location. For overlapped boring locations in the southern area of the UEP and farther to the south of the UEP (see **Figure 1** for areal extent assessment to the south of the UEP), greater than five (5) discrete soil samples may be collected to cover the saturated (associated with DNAPL extent determination) and the unsaturated zones (associated with vadose zone as a source extent determination).

The soil samples will be analyzed for VOCs and a subset of the samples will be analyzed for perchlorate. The results will allow mapping the vadose zone soil CoC distribution within and to the south of the UEP and will provide information on the magnitude of CoC concentrations.

Additional CPT/MIP borings will be driven if needed (in coordination with the U.S. EPA and TCEQ) if field results identify the need to extend the delineation area beyond the number of locations identified above. The determination to add or delete investigation locations will be coordinated with the U.S. EPA and TCEQ as field data become available. No monitoring wells are proposed in this area.

3.3 PSI-Identified Data Required to Identify Extent of CoCs

Data collected during the PSI identified further need for assessment at two locations described below:

1. A high concentration of perchlorate was detected in 18CPTMW22 within the shallow zone but the extent of perchlorate in the shallow zone to the south is not delineated. Installing a shallow zone well to the south of 18CPTMW22 is proposed as part of this investigation. The well will be fully-penetrating with the bottom of the screen defined by the Wilcox clay layer.
2. A high perchlorate concentration was detected in 18CPTMW23 in the shallow zone but the extent to the northwest towards Harrison Bayou is not delineated. Installing a shallow zone well to the northwest of 18CPTMW23 is proposed as part of this investigation. The shallow zone well will be screened between approximately 5 and 15 feet bgs where the bottom of the screen will be below the bottom of Harrison Bayou and the top of the screen defined by the occurrence of sand.

Figure 4 presents the locations and proposed nomenclature for these wells. The wells will be developed no earlier than 24 hours after completion and the wells will be sampled following procedures developed in the Installation-Wide Work Plan (AECOM, January 2014). The wells will subsequently be included in future semi-annual compliance sampling events for perchlorate, VOCs, and metals.

3.4 Treatability Study Activities Contributing to Finalization of the FS

The major technologies identified in the FS consist of: monitored natural attenuation (MNA), air sparging/soil vapor extraction (AS/SV), in situ chemical oxidation (ISCO), in situ bioremediation (ISB), surfactant flushing, electrical resistivity heating (ERH), electrokinetics, and emulsified nano-scale zero-valent iron (EZVI). Of those technologies, natural attenuation, in situ bioremediation, electrokinetics, thermal treatment, and EZVI require additional testing as a

proof of concept. Test results will provide data to support successful remedy selection including accurate costing.

3.4.1 Electrical Resistivity Testing

Electrokinetics and thermal treatment will benefit from the same electrical resistivity testing. Soil cores from various lithologies (e.g., fine-grained and coarse-grained) will be collected during DNAPL investigation work described above and sent to the laboratory for total organic carbon (TOC) determination and electrical resistivity testing following ASTM G187-12a Standard Test Method for Measurement of Soil Resistivity Using the Two-Electrode Soil Box Method or similar. This information allows a determination of the amount of electric current that would be required to either heat the soil for application of ERH or to mobilize water and ions through the soil under electrokinetics application. Three samples from each lithology type will be tested for electrical resistivity. The results would be expected within two to three weeks.

3.4.2 In Situ Microcosm Test

The in-situ microcosm study will be conducted to evaluate the effectiveness of natural attenuation and the potential for EISB to biodegrade MC, using Bio-Traps with stable isotope probing (SIP). SIP is an innovative method to track the environmental fate of a “labeled” CoC to unambiguously determine whether biodegradation is occurring and to evaluate natural and enhanced biodegradation. With the SIP method, a Bio-Trap sampler is amended with a specially synthesized form of the contaminant containing heavy carbon (^{13}C) as the “label”. Since ^{13}C is rare, carbon originating from labeled contaminant can be readily distinguished from carbon (predominantly ^{12}C) from other sources. In the field, the Bio-Trap is suspended in an existing monitoring well within impacted zone for a designated period of time (30-90 days). During in well deployment, the ^{13}C labeled contaminant (e.g., ^{13}C - MC) on the Bio- Trap is subject to the same physical, chemical, and microbiological processes as the unlabeled contaminant present at the site. If biodegradation is occurring, the ^{13}C label from the synthesized contaminant will be incorporated into the end products of biodegradation: microbial biomass and carbon dioxide.

Following field deployment, the Bio-Trap® is recovered and two analytical methods are used to conclusively determine whether biodegradation of the contaminant occurred in-situ: quantification of ^{13}C enriched phospholipid fatty acids (PLFA) indicates incorporation of ^{13}C from Bio-Trap® into microbial biomass and quantification of ^{13}C enriched dissolved inorganic carbon (DIC) indicates contaminant mineralization.

For this study, Bio-Traps amended with ^{13}C -MC will be used. Bio-Traps for degradation of chlorinated ethenes are not effective and will not be used. Briefly, Bio-Traps contain Bio-SEP® beads, an engineered composite of Nomex and powdered activated carbon (PAC), as the sampling matrix. The beads are 2-3 millimeter in diameter, have a large surface area for microbial attachment, and due to their adsorptive capacity, can be loaded with ^{13}C labeled MC. Prior to shipping for field deployment, Bio-Traps® amended with ^{13}C -MC will be subject to a leaching study similar to an adsorption isotherm to remove the labile fraction of the adsorbed contaminant. At the conclusion of the leaching study, the concentration of the ^{13}C MC on the Bio-Sep® beads will be quantified to establish the pre-deployment concentration and the Bio-Traps will be shipped to the field for deployment.

A total of six Bio-Traps (three per well) for MC will be suspended in two monitoring wells, that contain high and moderate levels of MC (MW-2 and 120 for MC). Each of the wells will house

three Bio-Traps, one without any biodegradation stimulants, one with emulsified vegetable oil (EVO) as substrate to stimulate anaerobic biodegradation, and another one with oxygen-releasing compound (ORC®) to supplement oxygen and stimulate aerobic biodegradation. After an incubation period of 60 to 90 days, the Bio-Traps will be retrieved and shipped to off-site laboratory (Microbial Insight, Inc.) for analysis including quantification of ¹³C enriched PLFA and DIC.

Natural attenuation is evaluated by the Bio-Traps that are not stimulated, while the enhanced biodegradation is evaluated by the Bio-Traps that are stimulated. Based on these results, laboratory testing will be designed and implemented as discussed below.

3.4.3 Bench-Scale Microcosm Test

A bench-scale microcosm treatability testing to test bioaugmented conditions and to optimize the process will be conducted. The focus of this work will be to biodegrade TCE and perchlorate. Enhancement of biodegradation for MC, if occurred, will be considered a plus. The microcosm laboratory test will entail enhanced anaerobic biodegradation bioaugmented with bacterial formulation, as needed. The purpose of the treatability testing is to determine the requirements for carbon sources, nutrients, pH buffer, and bioaugmentation (as needed) to estimate the rate and extent of CoC degradation. To obtain study material, one soil boring advanced to a depth interval of approximately 30-35 feet below ground surface will be used to collect representative saturated soil material (e.g., during DPT soil sampling) and a groundwater sample will be collected from well MW-21 or MW-8 at the site. These wells are selected because they are in areas considered amenable to enhanced ISB and contain relatively high concentrations of TCE and perchlorate. Up to 8 liters of groundwater and 2 kg of soil will be collected for testing.

Testing will be conducted by SiRem Laboratory (SiRem), a specialty analytical laboratory, located in Guelph, Ontario, Canada. The study will consist of microcosm construction followed by microcosm incubation, and sampling and analysis. The length of the study will be approximately three months.

For the treatability testing, vegetable oil based carbon source (e.g. emulsified vegetable oil) will be evaluated. The vegetable oil carbon source will be SRS® - SD Small Droplet Emulsified Vegetable Oil, purchased from Terra Systems, Inc., located in Claymont, Delaware, or equivalent. As the test progresses, the need to have the microcosms augmented with a microbial culture will be evaluated. This will be performed if it is determined that the native microbial population is insufficient for complete dechlorination of site CoCs. If bioaugmentation is deemed necessary, the microbial culture formulation KB-1® Plus, provided by SiRem, will be used in the treatability test.

Anaerobic microcosms will be constructed by filling 250 milliliter (mL) glass bottles with approximately 200 mL of site groundwater and 60 grams (g) of geologic materials (soil), leaving a nominal headspace for gas production (e.g. carbon dioxide and/or methane). The microcosms will be sealed with Mininert™ valves to maintain anaerobic conditions and allow repetitive sampling and addition of amendments to sustain metabolic/biodegradation activities.

Prior to start of the study, a baseline sampling event for all microcosms will be performed for analysis of volatile organic compounds, dissolved hydrocarbon gases (methane, ethane, ethane), anions (chloride, nitrate, nitrite, sulfate, and phosphates), volatile fatty acids (pyruvic acid, lactic acid, acetic acid, propionic acid, and butyric acid), and pH. The treatment microcosms will be

amended with the site target contaminants (MC, TCE, and perchlorate) to reach target concentrations within the range of historic levels as may be required. If needed, only TCE, MC, and perchlorate may be added to the microcosms (i.e., no daughter chemicals will be added). The concentration of electron donor amendments will be based on the vendor's recommendations.

Anaerobic intrinsic control microcosms will be used to measure intrinsic biodegradation activity and will not receive electron donor amendments.

Prior to the start of the study the two electron donor amendments will be sampled for TOC. Following initiation of the study, samples will be collected from the microcosms every 2 to 3 weeks for the remainder of the study. After review of the first 2 rounds of sampling data (excluding the baseline data), the need for bioaugmentation of treatment microcosms will be determined.

The half-life data from the treatability study and the estimated site groundwater velocity can be used to determine movement and influence of selected amendment in the field.

3.4.4 EZVI Test

The EZVI testing will be conducted at the lab-scale to test effectiveness and half-life of using EZVI on site soils collected from DNAPL areas (e.g., from vicinity of MW-2). If available emulsified nano-scale ZVI will be used for testing, otherwise, emulsified micro-scale ZVI will be used. The purpose of the EZVI study is to determine the ratio of iron mass to soil mass, pH buffer requirements, and to estimate the rate and extent of CoC degradation. To obtain study material, one soil boring advanced to a depth interval of approximately 30-35 feet below ground surface adjacent to MW-2 will be used to collect representative saturated soil material and a groundwater sample will be collected from well MW-2. This well is selected because it is in the area where DNAPL is suspected. Up to 8 liters of groundwater and 2 kg of soil will be collected for testing. The length of the treatability testing will be approximately three to four months. Testing will be conducted by SiRem.

For the treatability testing, EZVI, ZVI, EVO, and a blank setup will be evaluated. The EZVI will be obtained from Toda America RNIP and OnMaterials Zloy, or equivalent.

Anaerobic microcosms will be constructed by filling 250 mL glass bottles with approximately 200 mL of site groundwater, 60 grams (g) of geologic materials (soil), and varying amounts of EZVI, ZVI, or EVO, leaving a nominal headspace for gas production (e.g., carbon dioxide and/or methane). The microcosms will be sealed with Mininert™ valves to maintain anaerobic conditions. Blank bottles with no amendments will also be constructed to evaluate intrinsic CoC losses.

Prior to start of the study, a baseline sampling event for all microcosms will be performed for analysis of VOCs, dissolved hydrocarbon gases (methane, ethane, ethane), anions (chloride, nitrate, nitrite, sulfate, and phosphates), volatile fatty acids (pyruvic acid, lactic acid, acetic acid, propionic acid, and butyric acid), and pH. The treatment microcosms will be amended with the site target contaminants (MC, TCE, and perchlorate) to reach target concentrations within the range of historic levels as may be required. If needed, only TCE, MC, and perchlorate may be added to the microcosms. Ratios of EZVI, ZVI, or EVO to soil of 0.001, 0.005, 0.01, and 0.1 will be tested. This range encompasses the ratio of 0.004 which was deemed acceptable for ZVI to achieve a reduction in the oxidation-reduction potential (NAVFAC, September 2005).

Following initiation of the study, samples will be collected from microcosms every 2 to 3 weeks for the remainder of the study. The half-life data from the study for various amendments will be determined and the concentrations of CoCs at the end of the study will be determined to assess the optimum NZVI to soil ratio that achieves the fastest and most complete removal.

4 INVESTIGATION DATA COLLECTION PROCEDURES AND REPORTING

Investigation methods, analytical methods, surveying, investigation derived waste management, health and safety procedures, and reporting will follow the processes described in the PSI WP (AECOM, February 2013) and will be in compliance with the Installation-Wide Work Plan (including the Quality Assurance Project Plan and Health and Safety Plan (AECOM, January 2014). Data collected during this effort will be reported in an addendum to the PSI Report (AECOM, November 2013) and will be used to facilitate selection of the Preferred Remedy for the site.

5 REFERENCES

AECOM, 2013. *Post-Screening Investigation Work Plan, LHAAP-18/24, Longhorn Ammunition Plant, Karnack, Texas*, February.

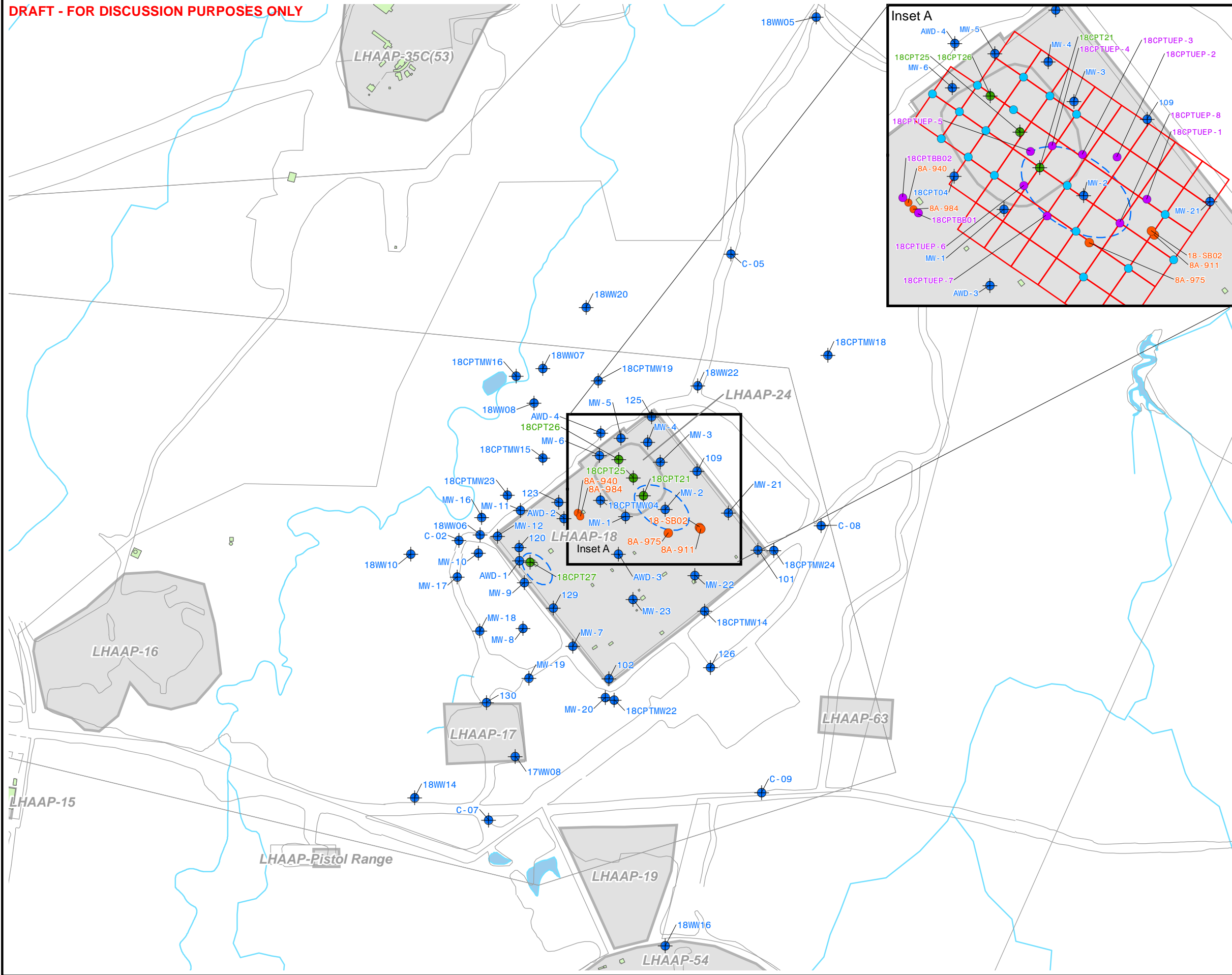
AECOM, 2013, *Draft Post-Screening Investigation Report for LHAAP-18/24, Burning Grounds No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas*, November.

AECOM, 2014, *Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas*, January.

NAVFAC Engineering Service Center, 2005. *Cost and Performance Report – Non-Scale Zero-Valent Iron Technologies for Source Remediation, Contract Report CR-05-007-ENV*, September.

Shaw, 2010, *Final Feasibility Study, LHAAP-29, Former TNT Production Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas*, April.

DRAFT - FOR DISCUSSION PURPOSES ONLY

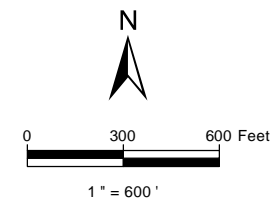


Legend

- Shallow Zone Monitoring Well
- Soil Boring Location (PSI, 2013)
- Soil Boring Location (Previous Events)
- Proposed CPT/MIP Location in Unsaturated Zone
- Proposed CPT/MIP Location to Wilcox Clay
- DNAPL Extent
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Ponded Area

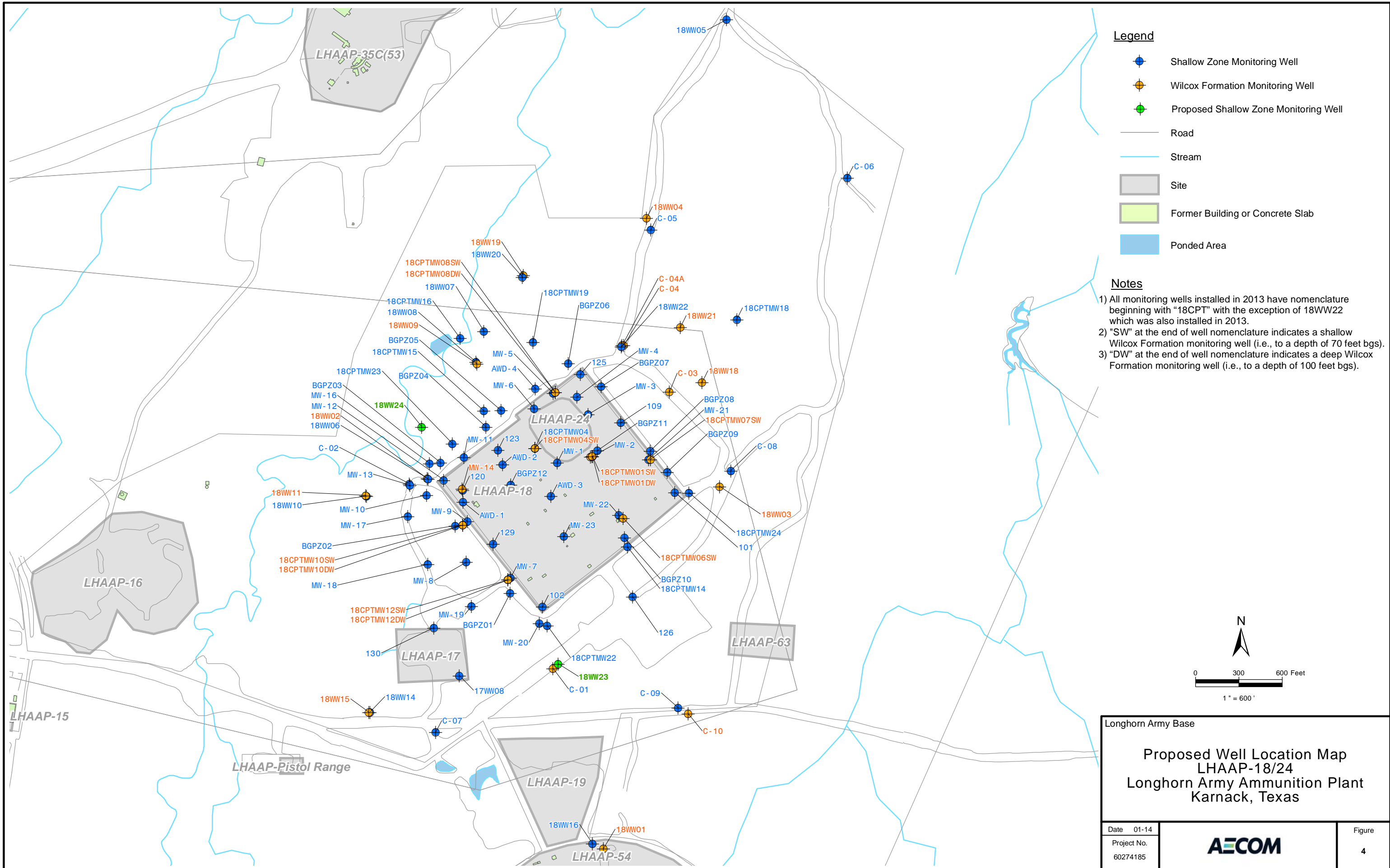
Abbreviations

CPT Cone Penetrometer Tool
 MIP Membrane Interface Probe
 PSI Post-Screening Investigation
 UEP Unlined Evaporation Pond



Longhorn Army Base
 UEP Unsaturated Soil Investigation
 in Shallow Formation
 LHAAP-18/24
 Longhorn Army Ammunition Plant
 Karnack, Texas

Date 04-2014	AECOM	Figure
Project No. 60274185		3

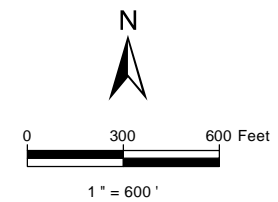


Legend

- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Proposed Shallow Zone Monitoring Well
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Ponded Area

Notes

- 1) All monitoring wells installed in 2013 have nomenclature beginning with "18CPT" with the exception of 18WW22 which was also installed in 2013.
- 2) "SW" at the end of well nomenclature indicates a shallow Wilcox Formation monitoring well (i.e., to a depth of 70 feet bgs).
- 3) "DW" at the end of well nomenclature indicates a deep Wilcox Formation monitoring well (i.e., to a depth of 100 feet bgs).



Longhorn Army Base		
Proposed Well Location Map LHAAP-18/24 Longhorn Army Ammunition Plant Karnack, Texas		
Date	01-14	AECOM
Project No.	60274185	
Figure		4

Subject: Final Minutes, Monthly Managers Meeting,
Longhorn Army Ammunition Plant (LHAAP)

Location of Meeting: Teleconference – 866-203-6896, passcode 1759304791

Date of Meeting: June 12, 2014 – 10:00 AM

Attendees:

Army BRAC: Rose Zeiler
 EPA: Rich Mayer, Janetta Coats, Kent Becher (USGS Liaison)
 TCEQ: April Palmie
 USACE: Aaron Williams, Rick Smith
 AECOM: Dave Wacker, Gretchen McDonnell, Josh Miller
 AEC: Robin Paul
 USFWS:

Welcome

RMZ

Action Items

AECOM

- Provide a summary of nutrient data following fluidized bed reactor optimization. **In progress.**
- Plan 1,4-dioxane sampling. **Pending.** Will occur in a few months to cover seasonality.
- Set a hard date when the GWTP monthly air monitoring email goes out each month. **Complete.** The email will be submitted by the 20th of the month, for the previous month.

Army

- Develop new LHAAP-18/24 FS Addendum submittal schedule. **Complete.** Submittal still scheduled for October, but subject to change.
- USACE to provide technical direction for AECOM to address the LHAAP-67 vault. **In progress.**
- Provide RTCs to BERA Addendum. **Complete.** EPA concurrence was received. TCEQ had previously provided concurrence. Replacement sheets being issued by USACE.
- Determine nature of fill pipes observed at LHAAP-46. **Complete.** Symbol FF was found on a LHAAP-49 drawing where it indicated fire alarm system electrical, but no FF inside a diamond as observed on these fill pipes was found.

EPA

- Develop a list of wells/sites for upcoming EPA split sampling and advise Army. **Complete.** Dr. Zeiler reminded the group that any data that will be used in any official way or added to the Administrative Records must be subject to the same document review/comment process required of all other investigation work. This would include submittal of a work plan and provision of 30 days for FFA parties to review and comment.
- Develop/coordinate with Army on a schedule for surface water drainage sampling. **Postponed until next spring.**
- To minimize drilling effort, provide opinion on a clay thickness for LHAAP-67 considered sufficient to act as a laterally continuous aquitard between the shallow and intermediate groundwater. **Pending. AECOM to provide supporting documentation including logs from Sites 50 and 67. The crew is in the field – EPA committed to expedite.**

TCEQ**AEC****USFWS**

- Provide a copy of the media release on LHAAP-12 transfer to Ms. Coats when completed.
Pending.

Defense Environmental Restoration Program (DERP) PBR Update**AECOM**

- Upcoming document submissions to regulators (see Document and Issue Tracking table)

Item 1 (GWTP Quartely Report) – 4th quarter 2013 will be transmitted to agencies today. 1st quarter 2014 will be following shortly behind.

Item 2 (LHAAP-18/24 Revised FS) – October 31, 2014 is the scheduled submittal date, subject to change.

Item 3 (Completion Reports)

Final plume delineation wells at LHAAP-46, LHAAP-50, and LHAAP-37 have been installed. Groundwater in these wells will be sampled within the next two weeks, with validated data by the end of July. The Draft RACRs will be updated with this data and any LUC boundary changes, and submitted to the agencies for review.

LHAAP-67 RACR – drilling underway for “intermediate” zone confirmation

LHAAP-58 RACR – with agencies for review

Item 4 (Monthly Manager’s Meeting) – Next MMM scheduled for Tuesday, July 15th, at 10AM, by teleconference.

Item 5 (GW Network Optimization Memos) – Additional optimization memos will be submitted with RACRs before agency evaluation is expected.

Item 6 (LHAAP-29 Final RI/FS Addenda Work Plan) – Complete. Will be transmitted today or tomorrow.

Item 7 (LHAAP-17 PDI WP, LHAAP-16 RD WP, LHAAP-03 RD/RAWP, LHAAP-04 RD, LHAAP-47 RD) – Placeholder for sites on hold due to dispute.

Item 8 (August RAB) – Scheduled for August 7th at 6PM. Will include a discussion of treatability testing to RAB briefing. Associated MMM will be held that morning at 10AM.

Item 9 (GWTP O&M) – Normal maintenance on-going. FBR performance issues continue. Direct-read instrument with 700 µg/L detection limit for perchlorate has been purchased to provide an indication of perchlorate exceedances which have typically been in the thousands of µg/L. Additional granular activated carbon has been purchased and will be added to the FBR in the next two weeks. Mr. Mayer asked if treated groundwater is being discharged to the bayou. Mr. Wacker will advise the group on the status of discharge to Harrison Bayou by email.

Item 10 (Admin Record Update) – AR Update for 1st Quarter 2014 is being prepared. 4th Quarter 2013 AR Update should be received shortly.

Item 11 (BERA Addendum) –Final change sheets will be going out to the agencies, and the final version of the document will be placed in the AR.

Item 12 – (Nutrient Issue for HB and INF) – Discussed earlier in meeting.

Item 13 – (Website) – Website will be opened up to agencies for feedback soon.

Item 14 – (CRP/CIP) – Placeholder maintained in the tracker as a reminder that these requirements and recommendations are applicable to our work going forward.

Item 15 (LHAAP-12 RAO Report) – Per the 5-Year Review findings, the group will be seeing a proposal for the addition of a new plume well. An attempt will be made to install this well before demobilization of the current field event.

Item 16 (Surface Water Sampling approach) – Will document the MMM's May visit to LHAAP-50 surface water monitoring locations and develop an approach to go forward with.

Defense Environmental Restoration Program (DERP) PBR Update (continued) AECOM

- Upcoming document submissions to regulators (see Document and Issue Tracking table)
- Upcoming field work
 - LHAAP-18/24 - All field work described in the LHAAP-18/24 PSI WP has been completed, with the exception of removal and analysis of the Bio-Trap units (planned for early August). The additional field work identified in the field variance memo has not yet been completed: abandonment of 18CPTMW22, installation of an upper Wilcox well at that location, and soil sampling in lieu of monitoring well installation at the shallow zone 18WW23. (Analysis of soil perchlorate at the 18WW23 location has been completed, but additional sampling of the underlying clay at that location is also proposed.) All CPT/MIP work and confirmatory soil sampling has been completed to define DNAPL extent. Rough maps of DNAPL are being generated.
 - LHAAP-29 – CPT/MIP could not penetrate the lithology so characterization at depth is being accomplished by hollow-stem auger, which has delayed the progress. Work will likely continue through the middle of July.
- Monthly data – no submittal this month due to limited validated data receipt
- Groundwater Treatment Plant

MMRP Update – No update

Army

Other Environmental Restoration

Army

- Vault at LHAAP-67 –discussed earlier in the meeting
- Site 37 Bioplug – Aberdeen Test Center will be watching dissolved oxygen levels. There is the potential to consider extending the Bio-plug trial beyond October 2014. Decision will be made upon review of upcoming results and then presented to the group for consideration.
- Quarterly Reporting and Requirements
 - GWTP Evaluation with air monitoring data – discussed earlier in the meeting

- Surface Water/Perimeter Well Quarterly Update – an agenda item will be added to the document tracker for this update
- Administrative Record Update – discussed earlier in the meeting
- Annual Reporting
 - LUC Management Plan Update (due September 2015)
 - CRP/CIP Revision (Biennial) and questionnaire October 2015

Programmatic Issues

RMZ/RM/AP

- Status of Dispute – Rich said there were indications the decision would come soon.

USFWS Update

RMZ/PB

- Environmental Restoration Issues with Transfer Schedule Impact – no update
- USFWS Comments on Documents – no update

Schedule Next Managers' Meeting – Tuesday, July 15th at 10AM, by teleconference.

New Action Items

AECOM

- Provide boring logs for all borings tapping into clay at bottom of shallow zone at LHAAP-67, LHAAP-37 and LHAAP-50.
- Send proposed LUC boundaries to Army for review immediately upon definition.
- Add quarterly perimeter well/surface water submittal to the tracker.
- Provide to the MMM group the status of GWTP's ability to discharge to Harrison Bayou.

EPA

- Provide a date for EPA's contractor sampling event.

Adjourn

ACRONYM LIST

AEC	United States Army Environmental Command
AECOM	AECOM Technology Services, Inc.
AP	April Palmie
AR	Administrative Record
BERA	Baseline Ecological Risk Assessment
BRAC	Base Realignment and Closure
CPT/MIP	Cone Penetration Test/Membrane Interface Probe
CRP/CIP	Community Relations Plan/Community Involvement Plan
DERP	Defense Environmental Restoration Program
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	United States Environmental Protection Agency
FBR	Fluidized Bed Reactor
FFA	Federal Facility Agreement
FS	Feasibility Study
GWTP	Ground Water Treatment Plant
HB	Harrison Bayou
INF	Intermediate-Range Nuclear Forces

LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MMM	Monthly Managers' Meeting
MMRP	Military Munitions Response Program
PB	Paul Bruckwicki
PBR	Performance-Based Remediation
PDI	Pre-Design Investigation
PSI	Post-Screening Investigation
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RAO	Remedial Action Operation
RAWP	Remedial Action Work Plan
RD	Remedial Design
RI	Remedial Investigation
RM	Rich Mayer
RMZ	Rose M. Zeiler
RTC	Response to Comments
TCEQ	Texas Commission on Environmental Quality
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
WP	Work Plan