Subject: Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting
Longhorn Army Ammunition Plant (LHAAP)
Location of Meeting: Conference Call
Date of Meeting: July 15, 2020, 6:00 PM Central Daylight Time (CDT)

Meeting Participants:

Army BRAC:	Rose M. Zeiler
USACE:	Aaron Williams
USAEC:	Andrew Maly
Bhate:	Kim Nemmers
APTIM:	Bill Foss
HDR, Inc.	Philip Werner
USEPA Region 6:	Janetta Coats, Bill Rhotenberry, and Kent Becher-USGS Liaison
TCEQ:	April Palmie
USFWS:	Paul Bruckwicki
RAB:	Present: Judy VanDeventer, Deon Hall, John Fortune, Charles Dixon, Richard LeTourneau, and Sharron McAvoy Absent: Terry Britt; John Pollard, Jr., Tom Walker, and Nigel R. Shivers
Public:	Laura-Ashley Overdyke (Executive Director of the Caddo Lake Institute [CLI]); George Rice (CLI)

An agenda for the RAB meeting, a color copy of the Bhate Environmental Associates, Inc. (Bhate) slide presentation, and handouts (see list at end of meeting minutes) were provided for meeting attendees via electronic mail (e-mail).

Welcome and Introduction

Ms. Rose Zeiler, the RAB Co-Chair, called the meeting to order at 6:05 pm. Ms. Zeiler stated that each slide number would be called out by the presenter to help everyone but also asked that everyone state their name at the beginning of their discussion since we cannot see one another. Ms. Zeiler stated that the agenda was on Slide 4/Page 4 of the presentation.

Ms. Zeiler presented Slide 5, stating that the RAB is held every 3 months, and explained the mission of the RAB is to promote community awareness and obtain constructive community review and comments on environmental restoration activities. Given that there were no new attendees, Ms. Zeiler skipped Slide 6 though she explained the purpose of the slide.

Ms. Zeiler encouraged everyone to visit the website (www.longhornaap.com) where information is available for upcoming field work in July and August. For Slide 7, Ms. Zeiler asked if anyone had heard from John Pollard. Ms. Sharron McAvoy stated that she had not heard anything. Ms. Judy VanDeventer joined later in the call and also stated she had not heard anything. An action was taken by Ms. Zeiler to write Mr. Pollard a letter asking about his continued interested in being a member of the RAB. The letter is to be sent certified to verify receipt.

Ms. Zeiler asked if the RAB members had reviewed the January 2020 RAB meeting minutes. Mr.

Richard LeTourneau made a motion to approve the January 2020 meeting minutes. Mr. John Fortune seconded the motion.

RAB Meeting Format and Presentation

Ms. Zeiler explained that it is unknown if the October 2020 RAB meeting will be able to be held in person. Ms. Zeiler asked for input assuming that the option to meet in person is still not allowable. Ms. Janetta Coats, from the community perspective, suggested that people needing hard copies should make a request for a hard copy. Mr. LeTourneau and Ms. VanDeventer requested hard copies. Ms. Zeiler stated that Mr. Pollard was sent a hard copy because he receives RAB material by regular mail, but that her assumption that having e-mail meant having a computer may not be correct. Ms. VanDeventer was asked to poll the RAB members to determine whether a teleconference platform like Zoom was requested or if the call in option was acceptable and then who needed hard copies prior to the meeting in October 2020. Ms. April Palmie asked if the current format was acceptable if everyone had copies of the slides whether hard copy (paper) or electronic and can call in. Ms. Zeiler stated that hard copies will be printed in the future and could be left at a location for the public to pick up or be mailed in sufficient time to receive it. Ms. Kim Nemmers asked for actual mailing addresses from those wanting a hard copy to allow for sending via overnight mail via Federal Express. Ms. Zeiler concluded the discussion that we will keep the lines of communication open to determine the best approach for the next meeting.

Ms. Zeiler asked if anyone knew of anyone interested in joining the RAB. Mr. Fortune said he would keep his ears open and didn't know that new RAB members were needed. Ms. Zeiler stated that the Army is always looking for more RAB members.

COVID-19 Status Update

Ms. Nemmers stated that a combination of an Executive Order and Proclamation issued by the Texas governor on July 2, 2020, required wearing face coverings in public spaces, maintaining 6 feet of social distancing, and minimizing group sizes to 10 people or less. Ms. Nemmers explained that these requirements may be less strict in areas with decreasing trends but overall does apply to a majority of the State. Regardless, Ms. Nemmers explained that the reason for the meeting being done remotely is to ensure everyone's safety and still communicate the information for LHAAP.

Defense Environmental Restoration

Overview of Sites

Ms. Nemmers discussed the documents currently in progress. Ms. Nemmers explained that Remedial Action Operation (RA-O) Reports are being prepared for LHAAP-12, LHAAP-46, and LHAAP-58. Ms. Nemmers stated that RA-O occurs following remedy implementation at a site. In addition, Ms. Nemmers stated that there are several Remedial Action Completion Reports (RACRs) being prepared for remedies implemented at LHAAP-04, LHAAP-16, and LHAAP-50. Ms. Nemmers explained that the remedies at LHAAP-04 and LHAAP-16 were completed last year but that the remedy implementation at LHAAP-50 was completed this spring. Ms. Nemmers stated that the other document in process is the quarterly report for the groundwater treatment plant

(GWTP).

Ms. Nemmers stated that the field work completed since the RAB meeting in January 2020 included a new well installed at LHAAP-46 to define the plume. Ms. Nemmers stated that the new monitoring well was just sampled in July 2020. Ms. Nemmers stated that groundwater sampling had been completed at several sites, including LHAAP-04 to assess the remedy implemented, and that surface water sampling had been completed. Ms. Nemmers explained that injections had been completed at LHAAP-50 as the remedial action.

LHAAP-04

Mr. Bill Foss provided an update on groundwater sampling at LHAAP-04 to assess the performance of the injections completed. Mr. Foss stated that the site is a former wastewater treatment plant site that has perchlorate above the Protective Concentration Level (PCL.) Mr. Foss stated that the purple dots on the Slide 11 figure are the November 2019 injection points. Mr. Foss stated that two monitoring events (February and May 2020) have been completed since the injections were completed. On Slide 12, Mr. Foss explained that each of the five monitoring wells that previously had perchlorate present are demonstrating that perchlorate is detected below the PCLs in the May 2020 event, which is good news but will need to be verified in subsequent quarterly monitoring events.

LHAAP-50

Mr. Foss then discussed LHAAP-50, explaining that the Record of Decision (ROD) had selected a remedy of Monitored Natural Attenuation (MNA). After years of sampling, MNA was determined to not be successful, and so the contingency remedy of in-situ enhanced bio remediation (ISEB) was selected as the contingency remedy via an Explanation of Significant Difference (ESD). The injections for the ISEB were completed in March 2020. Emulsified vegetable oil, nutrients and microbes were injected into 12 locations. Mr. Foss explained that six of the injections were from 18 to 60 feet below ground surface (bgs) and that the other six injections were 1 foot bgs to 35 feet bgs. Mr. Foss stated that the first quarterly performance sampling was completed a week prior to the meeting. On Slide 14, Mr. Foss pointed out the location of the injections as the yellow dots with arrows and explained that the injections were focused on the heart of the plume. Mr. Foss said that the remedy performance would be presented at later RAB meetings.

LHAAP-46

Mr. Foss explained that monitoring well LHSMW21 had solvents detected that required additional delineation. Mr. Foss pointed out that the groundwater flow is generally straight east. So, a new monitoring well was installed as shown on Slide 15 about a month ago and that a groundwater sample was collected earlier in the month of July 2020. Mr. Foss stated that the data will be used to determine if the plume is defined.

Look Ahead

Ms. Nemmers then discussed the 3-month look ahead for LHAAP field work. Ms. Nemmers explained that LHAAP-03 required some additional excavation and then backfilling to be completed once weather allowed. Ms. Nemmers said that LHAAP-17 had the same issue where

it required backfilling, weather allowing. Ms. Nemmers said that RA-O sampling was completed at LHAAP-50 and that RA-O sampling was in progress at LHAAP-16. Ms. Nemmers stated that RA-O sampling at LHAAP-04 was planned for August 2020.

Ms. Nemmers discussed the document look-ahead and explained that several of the documents that were presented before would be finalized in the coming months. Ms. Nemmers stated that the Land Use Control (LUC) Management Plan is updated annually as sites progress. Ms. Nemmers explained that the LUC Management Plan Update could be pushed back to allow for the recordation of two new LUC boundaries this year as the document is usually prepared in September. Ms. Nemmers explained that the quarterly reports sometimes include the LHAAP-18/24 groundwater data and the one for the Second Quarter will include the June 2020 semi-annual sampling information. Ms. Nemmers explained that the GWTP treats extracted groundwater from site LHAAP-18/24 though it has treated groundwater from LHAAP-16 in the past, prior to the recent remedy implementation.

Groundwater Treatment Plant

On Slide 18, Ms. Nemmers explained that the data is included in a handout. Ms. Nemmers explained that the graph shows water treated and discharged to the Harrison Bayou. Ms. Nemmers stated that there have not been any issues with the GWTP as evidenced by the similar volumes of water of a little over 400,000 gallons discharged in the recent months. Ms. Nemmers pointed out that the higher volumes of water discharged include water discharged from the INF Pond.

Surface Water Sampling

Ms. Nemmers said that Slide 19 includes the surface water results from the first two quarters of 2020 and that perchlorate detections are low level.

Status of Regulation of Perchlorate under the Safe Drinking Water Act

Ms. Zeiler explained that the Environmental Protection Agency (EPA) issued a final action on perchlorate under the Safe Drinking Water Act (SDWA) in June 2020. Ms. Zeiler explained that the 2011 determination to regulate perchlorate was withdrawn. As stated in Slide 20, Ms. Zeiler explained that the EPA's determination to not regulate perchlorate is based upon perchlorate not occurring frequently and at levels of public health concern in drinking water and that regulation would not provide a "meaningful opportunity for health risk reduction for persons served by public water systems." Ms. Zeiler then shared that LHAAP will continue to the use Texas Commission on Environmental Quality (TCEQ) PCL of 17 micrograms per liter (µg/L) at sites with RODs signed after the dispute was resolved and for LHAAP-50. Ms. Zeiler then presented Slides 21 and 22 as shown. Ms. VanDeventer, Mr. Fortune, and Ms. Laura-Ashley Overdyke (on half of the Caddo Lake Institute) requested copies of the EPA document entitled "Perchlorate Recommendations for Public Water Systems" to which Ms. Zeiler agreed to send. Ms. Zeiler explained that Slide 23 is from EPA headquarters (HQ). Mr. Bill Rhotenberry stated that the EPA HQ is stating that the EPA is still regulating perchlorate via the health advisory despite a maximum contaminant level (MCL) not being developed.

LHAAP-18/24, LHAAP-29, and LHAAP-47

Mr. Aaron Williams stated that he was on Slide 24 that showed the three sites to be discussed and then introduced Mr. Philip Werner as the Project Manager for HDR, Inc., who is managing the other three sites at LHAAP (LHAAP-18/24, LHAAP-29, and LHAAP-47) that required a ROD. Mr. Werner started with Slide 27 for LHAAP-47 explaining that field work commenced on May 27, 2020, and will finish up no later than July 29, 2020. Mr. Werner explained that the ongoing work is follow-on to two prior investigations at LHAAP-47. Mr. Werner explained that a new well had been installed to replace a dry well that previously had high levels of trichloroethylene (TCE). Based upon the results from that monitoring well, additional investigation was scoped. The first investigation was done in November 2019 and corroborated the summer 2018 field results. The ongoing investigation includes an additional 27 direct push technology soil borings and collection of 110 soil samples and 33 groundwater samples. Mr. Werner explained that there were approximately 4 soil samples per soil boring within both saturated and unsaturated zones, and then groundwater grab samples were also collected. Mr. Werner explained that in some soil borings, two grab groundwater samples were collected, such as one from the shallow aquifer and one from the upper intermediate aquifer. Mr. Werner explained that the purpose of the investigation is to identify the source, extent, and potential presence of residual dense non-aqueous phase liquid (DNAPL). Mr. Werner stated that groundwater samples were collected from 6 of 7 existing monitoring wells dating back to 2008 to evaluate groundwater contamination. Mr. Werner stated that 7 of the 8 new monitoring wells have been installed. Based on data collected in the field, an upper intermediate well was installed in place of the deep well that had been planned. The other six monitoring wells included three shallow zone and upper intermediate zone wells. Mr. Werner explained that the wells would be developed and then sampled.

On Slide 28, the soil results for TCE are presented from the June 2020 field effort. An onsite mobile laboratory was used to collect real-time data. Initially eight locations were pre-selected. A total of 27 soil borings were eventually advanced. Mr. Werner explained that the results led the investigation to extend to the northeast and to the south and southwest from Building 46A. Mr. Werner said that high hits of TCE were detected.

On Slide 29, Mr. Werner explained that the groundwater plume is based upon direct push technology shallow groundwater grab samples for TCE.

On Slide 30, Mr. Werner explained that the results are for TCE in grab groundwater samples for the Upper Intermediate groundwater zone aquifer. Again, Mr. Werner explained that the results mimic the information from the shallow groundwater grab samples. Mr. Werner pointed out that some of these direct push technology points within this plume actually came up dry and the plume will be refined in the report presenting the information.

On Slide 31, Mr. Werner stated that the slide shows TCE results in the shallow and upper intermediate zone wells. Mr. Werner stated that the blue locations are the new wells that are being installed in July.

Mr. George Rice asked if DNAPL had been detected at LHAAP-47. Ms. Zeiler explained that DNAPL itself had not been identified but that residual DNAPL appears to be present due to the high levels of TCE. Ms. Zeiler said that based on Dr. John Cherry's rule of thumb the concentrations are within the 10-percent range of solubility, which is indicative of DNAPL.

Mr. Werner then presented Slide 25 explaining that HDR, Inc., had finalized the Proposed Plan and RODs for LHAAP-18/24 and LHAAP-29. The LHAAP-18/24 ROD was signed and distributed on March 2, 2020. Initial LUC notifications and public notices were completed in March 2020 as presented on Slide 25. Mr. Werner said that the Pre-Design Investigation Work Plans for LHAAP-18/24 and LHAAP-29 will hopefully start soon for issuance as draft in November 2020 and January 2021 respectively. The ROD was signed for LHAAP-29 in September 2019.

Next RAB Meeting Schedule and Closing Remarks

Ms. Zeiler then discussed the next meeting with the RAB members. It was decided that the next RAB Meeting will be held on **Wednesday, October 21, 2020,** with the **meeting starting at 6:00 pm CDT**. Ms. Zeiler assumes we will be meeting by teleconference. Ms. Zeiler said that Ms. VanDeventer will poll the RAB members to identify preferences for using Zoom or other methods or continue with a teleconference. Ms. Zeiler said that we know of three RAB members that want hard copies but will explore alternatives for providing hard copies to the public. Ms. Zeiler suggested a mid-September deadline for making decisions on the RAB format and documents.

Adjourn

The meeting adjourned at 7:05 pm CDT.

July 2020 Meeting Attachments and Handouts:

- Color Copy of Bhate Presentation Slides
- GWTP – Processed Groundwater Volumes Handout
- Surface Water Sampling Handout

Longhorn Army Ammunition Plant Quarterly Restoration Advisory Board Meeting

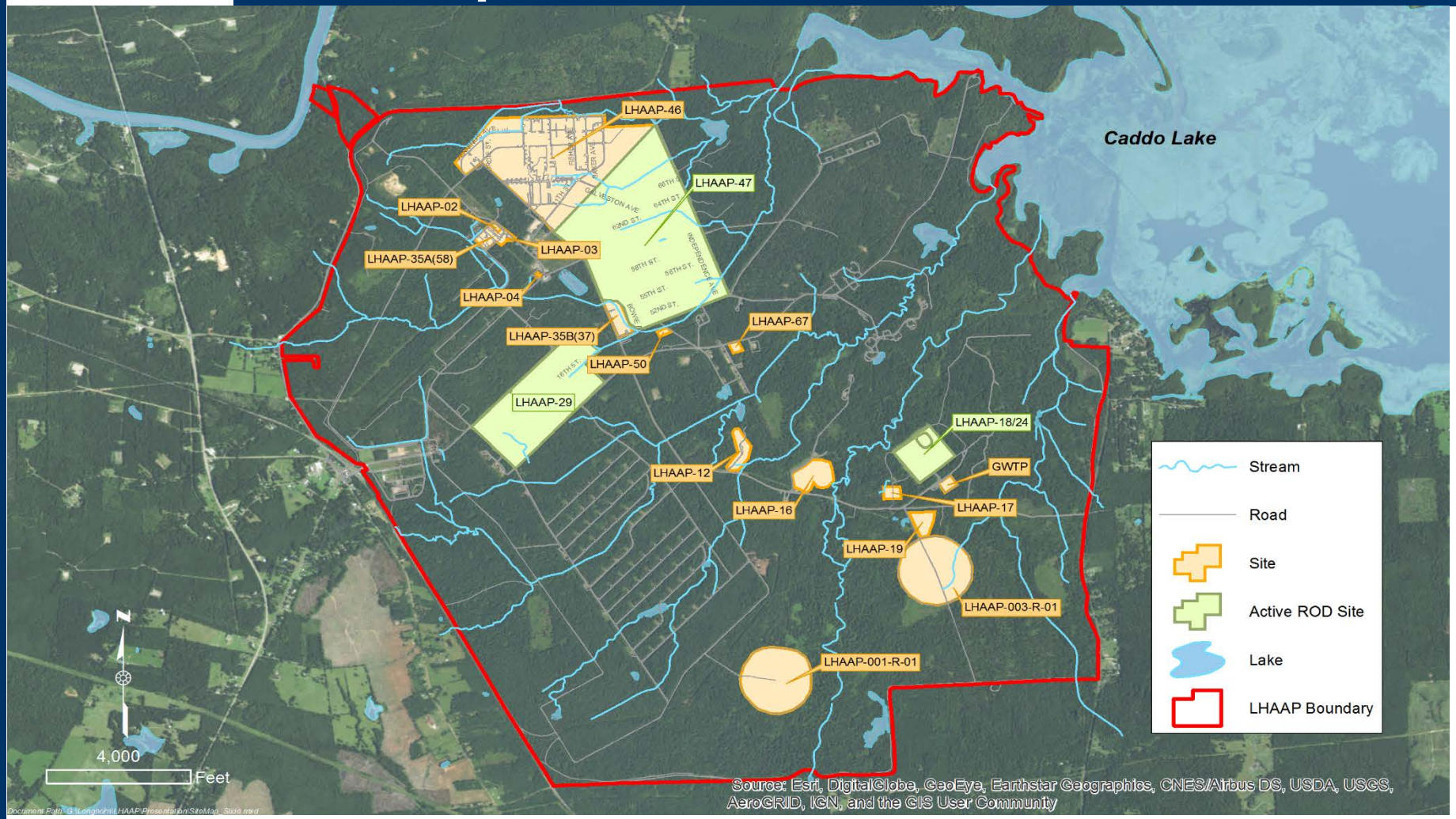
Karnack Community Center
July 15, 2020
6:00 PM CDT

APTIM

bhate

Restoration Advisory Board Meeting

Site Map



Abbreviations and Acronyms

µg/L	Micrograms per liter
AR	Administrative Record
COC	Chemical of Concern
DERP	Defense Environmental Restoration Program
DNAPL	Dense Non-Aqueous Phase Liquid
DPT	Direct Push Technology
EPA	Environmental Protection Agency
GPW	Goose Prairie Creek Water Sample
GW-Ind	Industrial Groundwater
GWTP	Groundwater Treatment Plant
HBW	Harrison Bayou Water Sample
HRL	Health Reference Level
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MSC	Medium-Specific Concentration
NPDWR	National Primary Drinking Water Regulation
PCL	Protective Concentration Level
PDI	Pre-Design Investigation
PSI	Pre-Screening Investigation
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RA(O)	Remedial Action Operation
RfD	Reference Dose
ROD	Record of Decision
RRR	Risk Reduction Rule
SDWA	Safe Drinking Water Act
TCE	Trichloroethylene
TRRP	Texas Risk Reduction Program
UCMR	Unregulated Contaminant Monitoring Rule

Restoration Advisory Board Meeting

Agenda

06:00 Welcome and Introduction

06:05 Open Items {RMZ}

- Purpose of the Restoration Advisory Board (RAB) Meeting
- Ongoing Outreach/Website
- RAB Administrative Issues
  - Membership Update
  - Minutes (January 2020 RAB Meeting)
- Update on COVID and RAB meetings

06:15 Defense Environmental Restoration Program (DERP) Update {Bhate}

- Documents and Field Work Completed since last RAB
  - LHAAP-04 Performance Sampling
  - Remedial Action Completion at LHAAP-50
  - Plume delineation at LHAAP-46
- Three Month Look ahead
- Groundwater Treatment Plant (GWTP) Update
- Update on the Regulation of Perchlorate under the Safe Drinking Water Act

06:45 Other DERP Update {RMZ}

- LHAAP-18/24 and -29 Document Status
- LHAAP-47 Additional Pre-Screening Investigation (PSI) Data and Revised Schedule for the Record of Decision (ROD)

06:55 Next RAB Meeting Schedule and Closing Remarks {RMZ}

Purpose of the RAB Meeting

- Held every 3 months
- The mission of the Longhorn Army Ammunition Plant (LHAAP) RAB is to promote community awareness and obtain constructive community review and comments on environmental restoration activities at the former LHAAP

The Army Wants You to be Informed

- The Army is committed to protecting human health and the environment; key to that commitment is engaging the community and increasing public participation in environmental restoration at LHAAP
- You are encouraged to:
  - Attend RAB Meetings and/or become a member of the RAB
  - Visit the Longhorn environmental website at www.longhornaap.com. The website is regularly updated to indicate the upcoming field events at each site including groundwater sampling, monitoring well installations, soil sampling, or remediation activities.
  - Make suggestions for improving communication – the Army welcomes and appreciates community feedback

RAB Administrative Issues

- Membership Update
- Minutes (January 2020 RAB Meeting)

COVID-19 Status Update

- Executive Order/Proclamation issued on 2 July 2020 from Governor of Texas
  - Wear face coverings in public spaces
  - People cannot be in groups large than ten and must maintain six feet of social distancing from others.
- October 2020 RAB Meeting via Telecom

Documents in Process

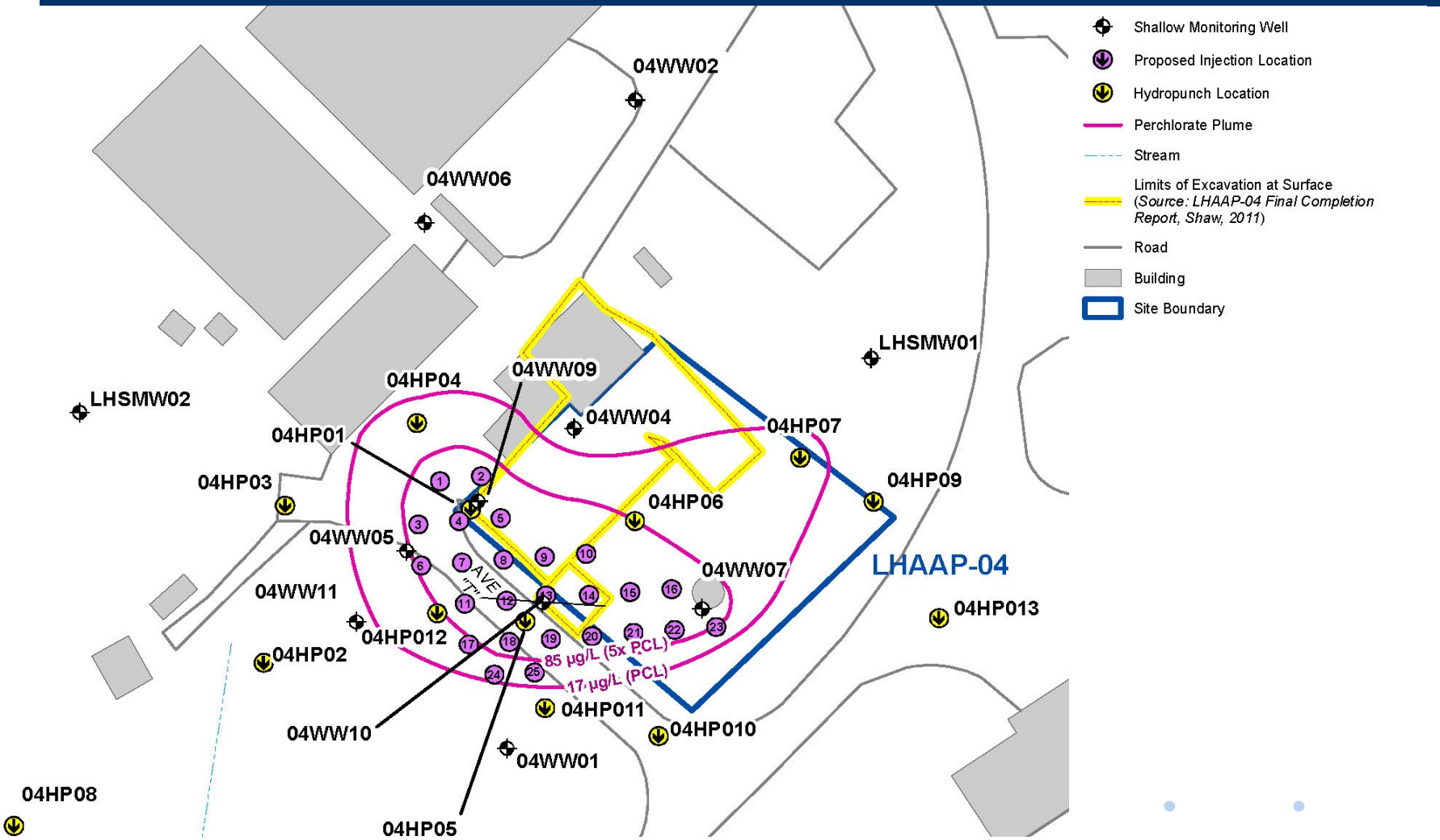
Site	Document
LHAAP-04	Remedial Action Completion Report
LHAAP-12	Annual Remedial Action Operation [RA(O)] Report
LHAAP-16	Remedial Action Completion Report
LHAAP-46	Annual RA(O) Report
LHAAP-50	Remedial Action Completion Report
LHAAP-58	Annual RA(O) Report
GWTP	Quarterly Evaluation Report: Third Quarter (April – June 2020)

Completed Field Work Since Last RAB Meeting

Site	Activity
LHAAP-04	Remedial Action Update (Year 1, Quarters 1 & 2 Data)
LHAAP-46	New Well Installation
LHAAP-50	Remedial Action (Injections Complete)
LHAAP-58	RA(O) Sampling –March and June 2020
LHAAP-18/24	RA(O) Sampling – June 2020 Surface Water Sampling

Restoration Advisory Board Meeting

LHAAP-04 Performance Sampling



LHAAP-04 Performance Sampling

Pre-Injection, Year 1 Quarter 1, and Year 1 Quarter 2 Sampling Results in Key Monitoring Locations

Location Code			04WW01			04WW05			04WW07			04WW09			04WW10		
Sample Date			1/22/2019	2/4/2020	5/4/2020	1/22/2019	2/4/2020	5/5/2020	1/22/2019	2/4/2020	5/5/2020	1/22/2019	2/4/2020	5/5/2020	1/22/2019	2/4/2020	5/5/2020
Analyte	Units	PCL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perchlorate																	
Perchlorate	µg/L	17	< 2	19	< 0.05	78	< 2	< 0.05	110	86	3.51	2,100	18	11.1	10,000	< 2	< 0.05
Field Parameters																	
Dissolved Oxygen	mg/L	NV	0.15	0.03	0.04	1.62	0.09	0.22	1.83	0.05	2.12	5.78	0.08	0.04	3.59	5.54	2.72
Oxidation-Reduction Potential	mV	NV	327	-52	-135	163	-88	-90	338	-260	-314	326	-74	-16	333	-79	-286

Notes:

Blue highlighting indicates concentrations above the PCL.

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

µg/L - micrograms per liter

mg/L - milligrams per liter

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

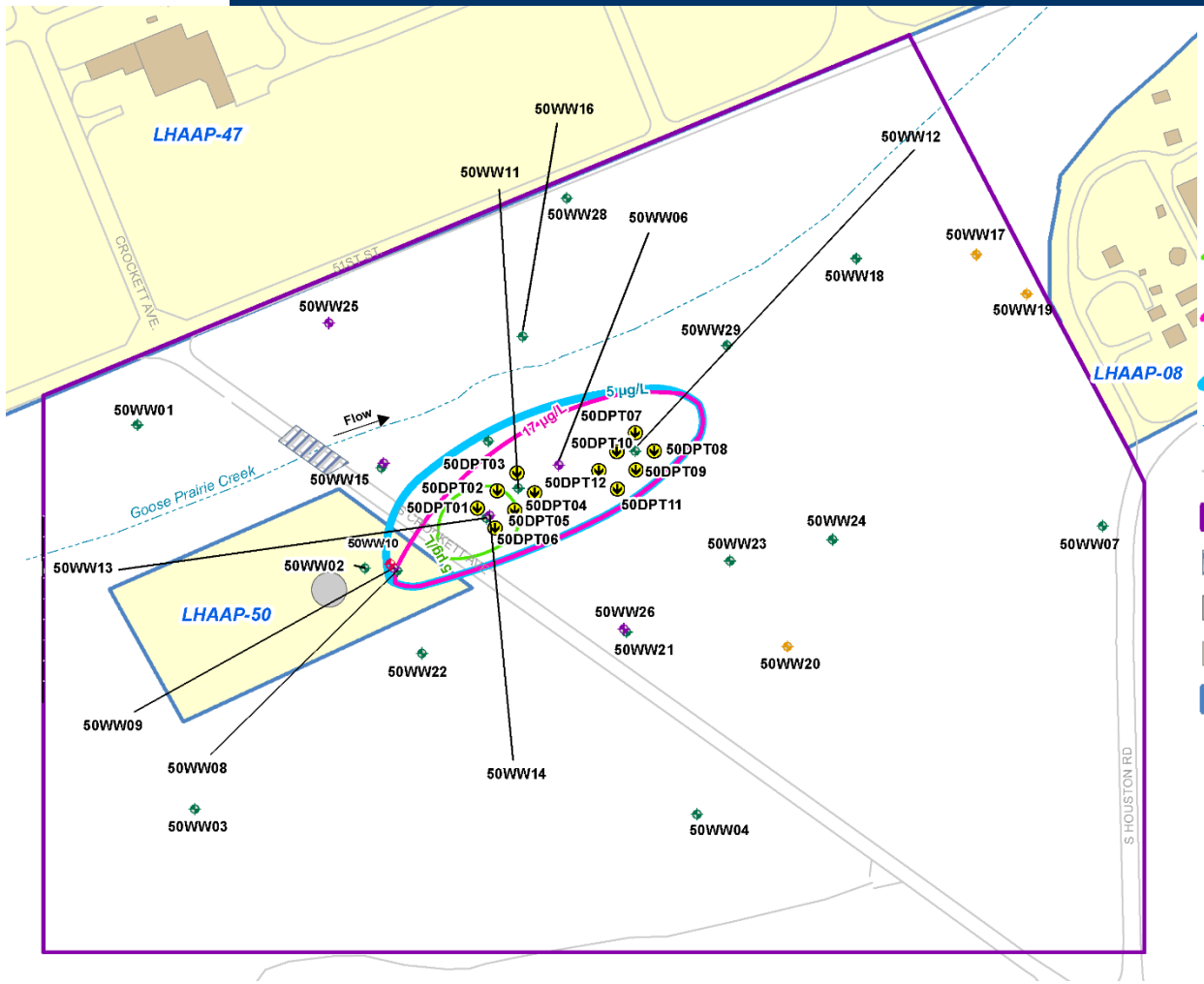
PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level.

mV - millivolts

LHAAP-50 Remedial Action Completion

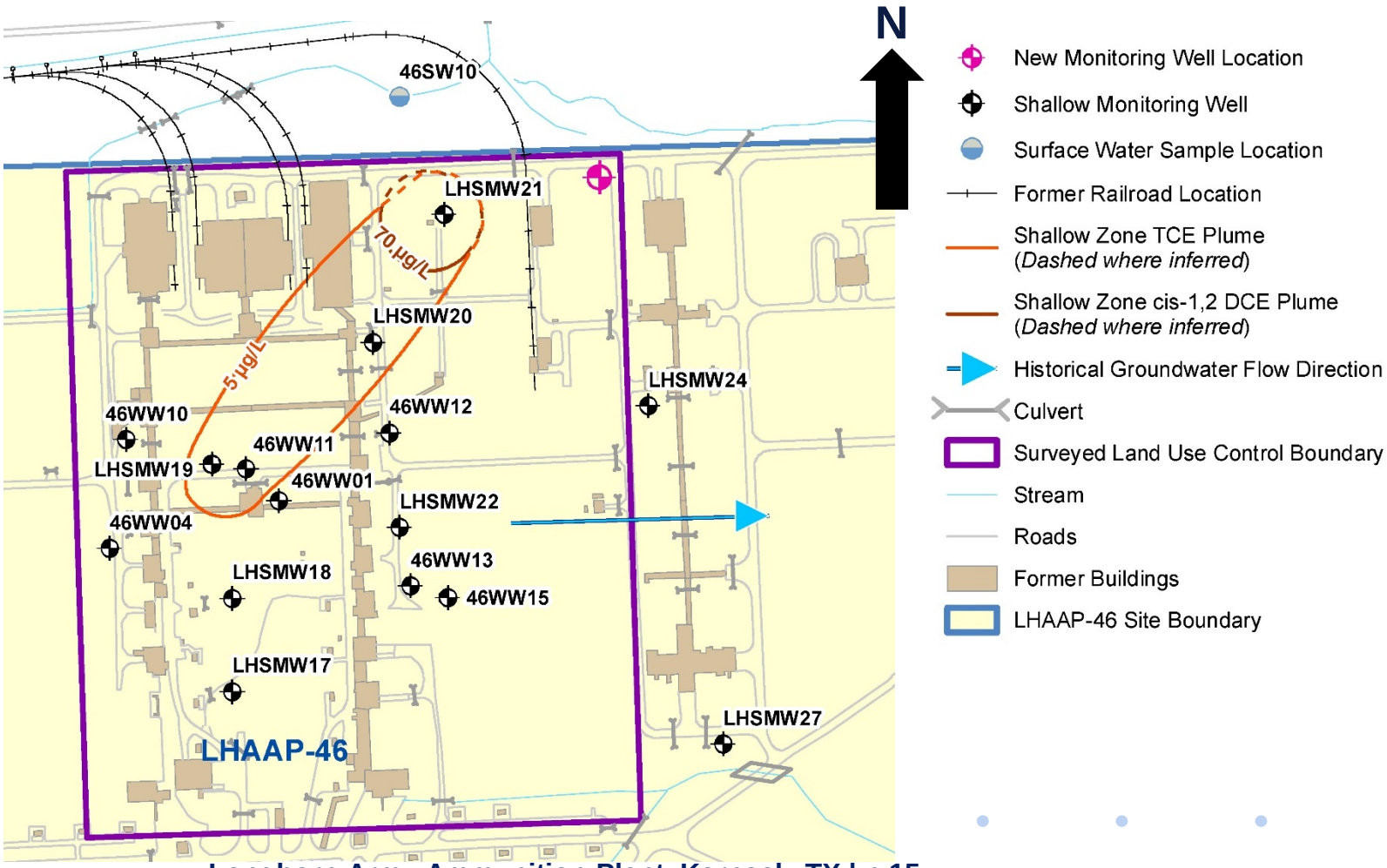
- In Situ Enhanced Bioremediation Injections Performed in March 2020
- Injected Emulsified Vegetable Oil (1,050 gallons), water (42,774 gallons), nutrients, and SDC-9™ bioaugmentation culture
- Twelve injection locations using direct push technology
  - 6 injections from 18-60 feet
  - 6 injections from 17-35 feet
- Injections completed in late March 2020
- First Quarterly Performance Sampling in Early July 2020

LHAAP-50 Remedial Action Completion



Restoration Advisory Board Meeting

LHAAP-46 New Well Installation



3 Month Look Ahead - Field Work by Bhate Team

Site	Activity
LHAAP-03	Complete excavation backfill
LHAAP-04	Performance monitoring – August 2020
LHAAP-16	Performance monitoring – July 2020
LHAAP-17	Complete excavation backfill
LHAAP-46	New Well Sampling – July 2020
LHAAP-50	Performance monitoring – July 2020

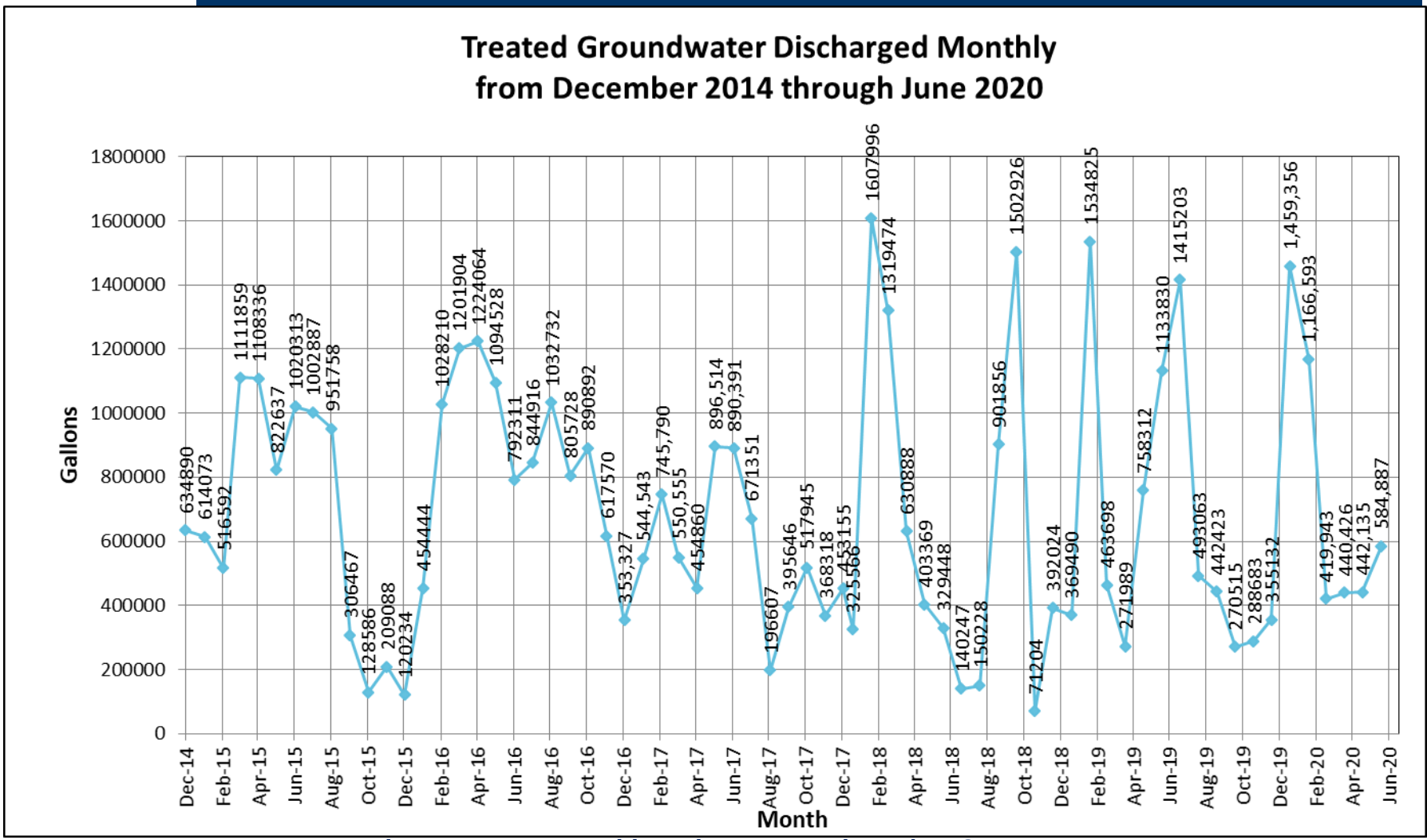
Restoration Advisory Board Meeting

3 Month Look Ahead – Documents by Bhate Team

Site	Document
LHAAP-04	Remedial Action Completion Report (RACR) to Regulators
LHAAP-16	RACR to Regulators
LHAAP-37	Year 3 RA(O) Report to Regulators
LHAAP-46	Year 6 RA(O) Report to Regulators
LHAAP-50	RACR to Regulators Year 6 RA(O) Report to Regulators
LHAAP-58	Year 6 RA(O) Report to Regulators
LHAAP-67	Year 6 RA(O) Report to Regulators
Land Use Control (LUC) Sites	LUC Management Plan
GWTP and LHAAP-18/24	Quarterly Evaluation Report: Second Quarter (April – June 2020) Quarterly Evaluation Report: Third Quarter (July –September 2020)

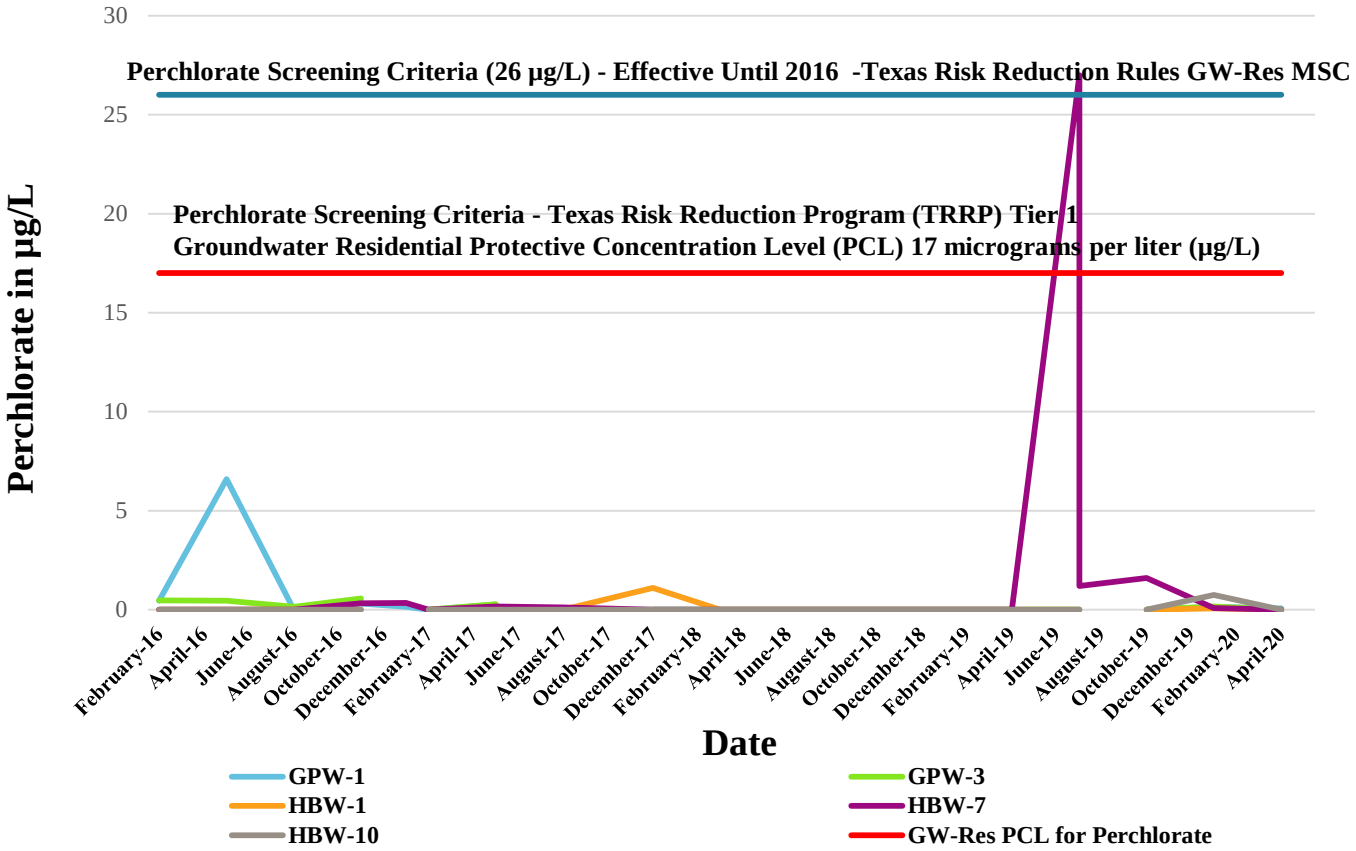
Restoration Advisory Board Meeting

GWTP Update



Restoration Advisory Board Meeting

Surface Water Sample Results



Note: Surface water at HBW-7 had a detection of 27 micrograms per liter (µg/L) from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later (30 July 2019) with a detection of 1.2 J µg/L.

Status of Regulation of Perchlorate under Safe Drinking Water Act

Determination:

Environmental Protection Agency (EPA) issued its final action regarding the regulation of perchlorate under the Safe Drinking Water Act (SDWA) on June 18, 2020 announcing its withdrawal of the 2011 determination to regulate perchlorate in accordance with the SDWA.

EPA made its final determination not to regulate perchlorate stating:

Perchlorate “does not occur with a frequency and at levels of public health concern”

Regulation does not present a “meaningful opportunity for health risk reduction for persons served by public water system” in the Administrator’s judgment.

LHAAP will continue to use the TCEQ PCL (17 µg/L) for those sites with RODs signed after the dispute was resolved and at LHAAP-50.

Status of Regulation of Perchlorate Continued

Background:

This determination is the result of EPA's 2019 proposed national primary drinking water regulation (NPDWR) for perchlorate (56 µg/L) and request for public comments on it and other alternative actions, including

- Two alternative Maximum Contaminant Level (MCL)/Maximum Containment Level Goal (MCLGs) of 18 µg/L and 90 µg/L
- The alternative of withdrawing the 2011 regulatory determination for perchlorate based on new information.

History:

2008 EPA published a preliminary regulatory determination not to regulate perchlorate in drinking water, but derived and used a Health Reference Level (HRL) of 15 µg/L.

2011 EPA published a Federal Register document in which the Agency determined that perchlorate met the SDWA's criteria for regulating a contaminant, proposing a MCL of 15 µg/L.

2013 EPA's Science Advisory Board model results indicated a reference dose (RfD) 6 to 48 times higher than the one used to generate the 15 µg/L proposed MCL.

Status of Regulation of Perchlorate Continued

The EPA's analysis presented in the 2019 proposal demonstrates that a National Primary Drinking Water Regulation (NPDWR) for perchlorate does not present a meaningful opportunity for health risk reduction for persons served by public water systems. EPA found that:

- Perchlorate occurs with very low frequency at levels of public health concern.
- Based on updated Unregulated Contaminant Monitoring rule (UCMR) 1 occurrence information, there were 15 water systems (0.03% of all water systems in the U.S.) that detected perchlorate in drinking water above the lowest proposed alternative MCLG of 18 µg/L.
- Only 1 system had a detection above the proposed alternative MCLG of 90 µg/L.
- The number of people who may be potentially consuming water containing perchlorate at levels that could exceed the levels of concern for perchlorate (18 – 90 µg/L) could range between 26,000 and 620,000.

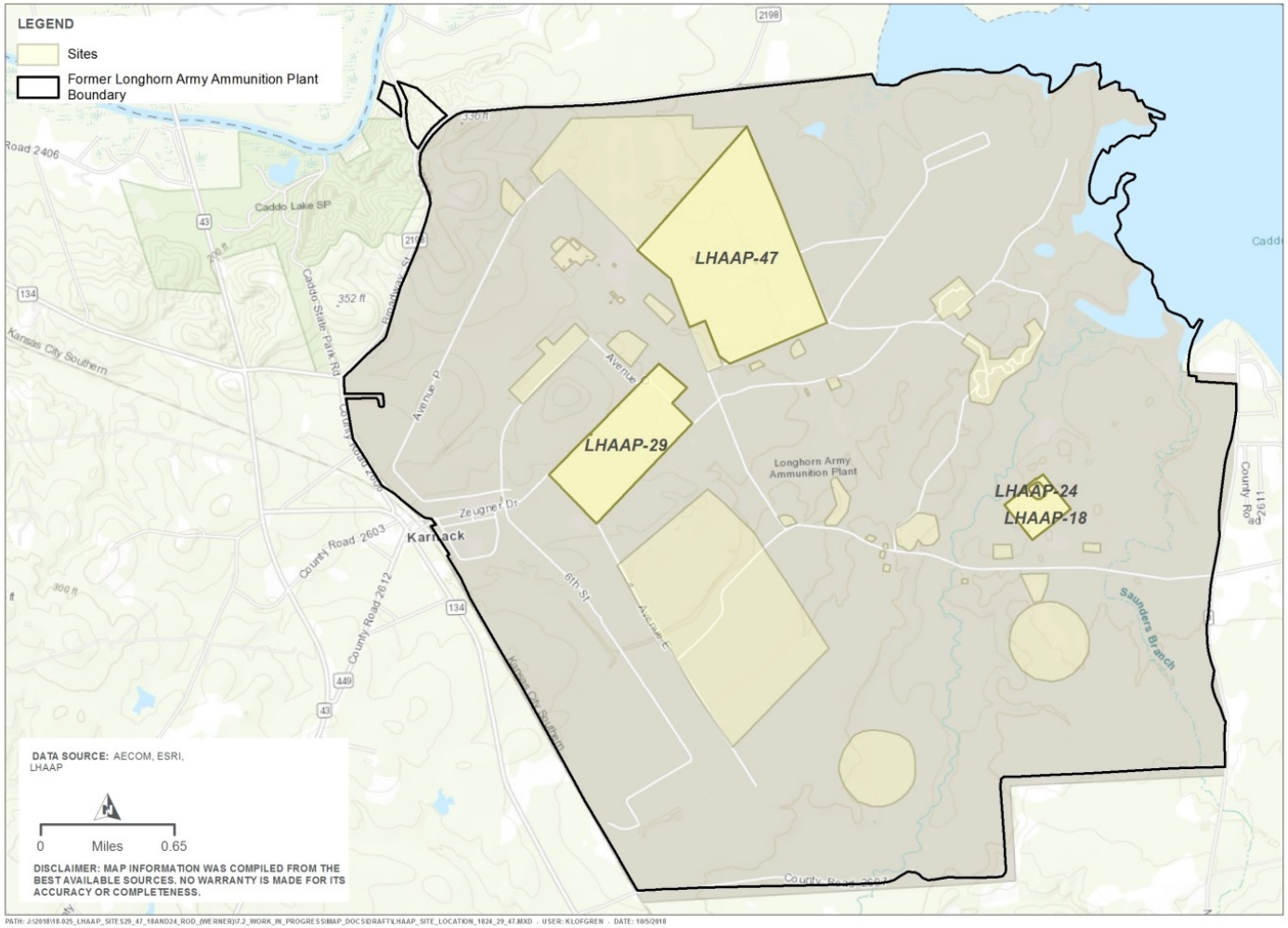
EPA has issued a document entitled "Perchlorate Recommendations for Public Water Systems" which provides recommendations for actions that systems may take if there are concerns about perchlorate (USEPA, 2020b).

Status of Regulation of Perchlorate Continued

- "The Office of Water/EPA determination to not move forward with an MCL is based on frequency of occurrence in public water systems. It has nothing to do with the health risk associated with perchlorate. The health advisory is still in play as well." -***EPA Headquarters***

Restoration Advisory Board Meeting

LHAAP-18/24, 29, 47 Status Update

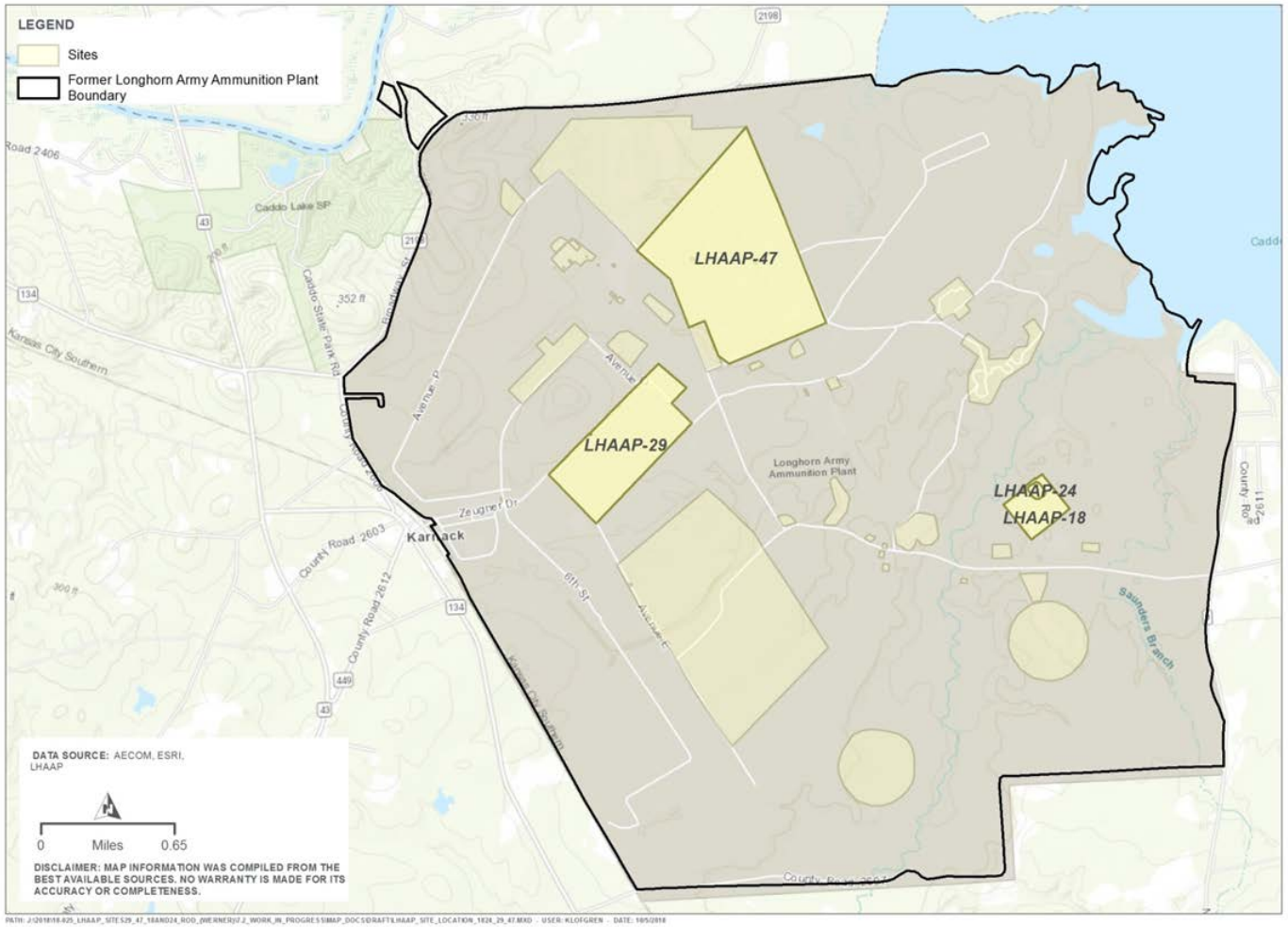


LHAAP-18/24 and -29 Document Status

- LHAAP-18/24
  - The Final LHAAP-18/24 ROD was signed and distributed March 2, 2020.
  - LHAAP-18/24 Post-ROD Requirements
    - Initial LUC Notifications were made March 16, 2020
    - ROD Public Notice was published in the Marshall Messenger on March 8 and in the Shreveport Times March 9
    - Notice of Target and Deadline Dates for Post-ROD Documents was made March 19, 2020
  - The Draft Pre-Design Investigation (PDI) Work Plan submittal is planned for November 2020.

- LHAAP-29
  - The ROD was signed September 19, 2019 and has been placed into the Administrative Record (AR)
  - The Draft PDI Work Plan submittal is planned for January 2021.

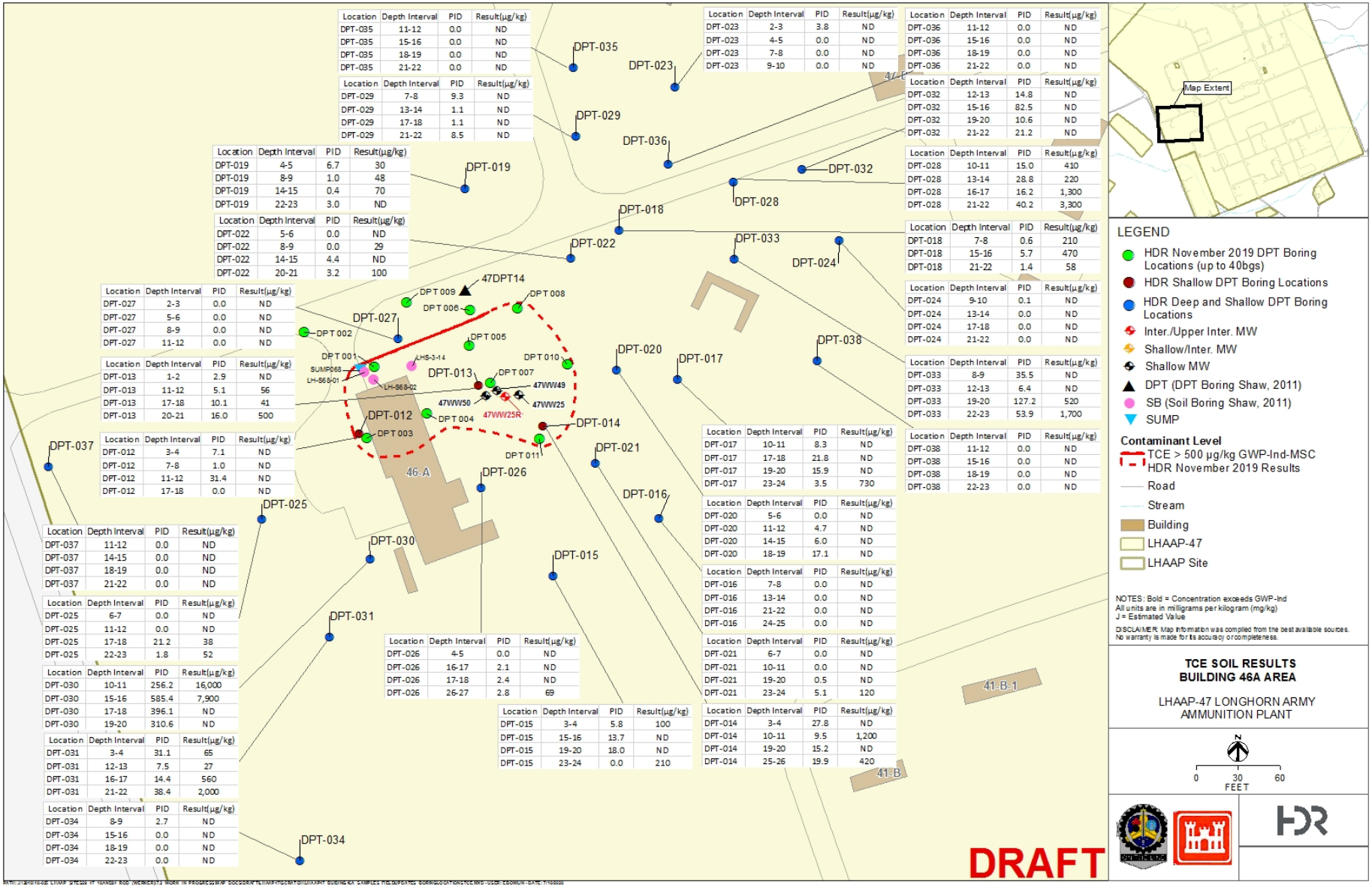
LHAAP-47 Building 46A Status Update



LHAAP-47 Building 46A Area Field Work, June 2020

- **Work Completed to Date**
  - LHAAP-47 Building 46A field work is a follow-on from the November 2019 field effort
  - 27 Direct Push Technology (DPT) borings completed
  - 110 soil samples and 33 groundwater samples collected from DPT borings to identify source, extent, and presence of residual dense non-aqueous phase liquid (DNAPL)
  - Groundwater samples collected from 6 of 7 existing wells to determine presence of trichloroethylene (TCE) impacted Shallow Zone and Upper Intermediate Zone groundwater
- **Remaining Field Activities to Complete**
  - Installation, Development, and Sampling of 8 New Wells
  - 3 Shallow Zone Wells
  - 3 Upper Intermediate Zone Wells
  - 1 Intermediate Zone Well
  - 1 Deep Well

LHAAP-47 Building 46A Area DPT Soil TCE Results, June 2020



Location	Depth Interval	PID	Result(µg/kg)
DPT-035	11-12	0.0	ND
DPT-035	15-16	0.0	ND
DPT-035	18-19	0.0	ND
DPT-035	21-22	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-029	7-8	9.3	ND
DPT-029	13-14	1.1	ND
DPT-029	17-18	1.1	ND
DPT-029	21-22	8.5	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-023	2-3	3.8	ND
DPT-023	4-5	0.0	ND
DPT-023	7-8	0.0	ND
DPT-023	9-10	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-036	11-12	0.0	ND
DPT-036	15-16	0.0	ND
DPT-036	18-19	0.0	ND
DPT-036	21-22	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-032	12-13	14.8	ND
DPT-032	15-16	82.5	ND
DPT-032	19-20	10.6	ND
DPT-032	21-22	21.2	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-019	4-5	6.7	30
DPT-019	8-9	1.0	48
DPT-019	14-15	0.4	70
DPT-019	22-23	3.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-028	10-11	15.0	410
DPT-028	13-14	28.8	220
DPT-028	16-17	16.2	1,300
DPT-028	21-22	40.2	3,300

Location	Depth Interval	PID	Result(µg/kg)
DPT-022	5-6	0.0	ND
DPT-022	8-9	0.0	29
DPT-022	14-15	4.4	ND
DPT-022	20-21	3.2	100

Location	Depth Interval	PID	Result(µg/kg)
DPT-018	7-8	0.6	210
DPT-018	15-16	5.7	470
DPT-018	21-22	1.4	58

Location	Depth Interval	PID	Result(µg/kg)
DPT-027	2-3	0.0	ND
DPT-027	5-6	0.0	ND
DPT-027	8-9	0.0	ND
DPT-027	11-12	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-024	9-10	0.1	ND
DPT-024	13-14	0.0	ND
DPT-024	17-18	0.0	ND
DPT-024	21-22	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-013	1-2	2.9	ND
DPT-013	11-12	5.1	56
DPT-013	17-18	10.1	41
DPT-013	20-21	16.0	500

Location	Depth Interval	PID	Result(µg/kg)
DPT-033	8-9	35.5	ND
DPT-033	12-13	6.4	ND
DPT-033	19-20	127.2	520
DPT-033	22-23	53.9	1,700

Location	Depth Interval	PID	Result(µg/kg)
DPT-012	3-4	7.1	ND
DPT-012	7-8	1.0	ND
DPT-012	11-12	31.4	ND
DPT-012	17-18	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-038	11-12	0.0	ND
DPT-038	15-16	0.0	ND
DPT-038	18-19	0.0	ND
DPT-038	22-23	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-017	10-11	8.3	ND
DPT-017	17-18	21.8	ND
DPT-017	19-20	15.9	ND
DPT-017	23-24	3.5	730

Location	Depth Interval	PID	Result(µg/kg)
DPT-037	11-12	0.0	ND
DPT-037	14-15	0.0	ND
DPT-037	18-19	0.0	ND
DPT-037	21-22	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-020	5-6	0.0	ND
DPT-020	11-12	4.7	ND
DPT-020	14-15	6.0	ND
DPT-020	18-19	17.1	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-025	6-7	0.0	ND
DPT-025	11-12	0.0	ND
DPT-025	17-18	21.2	38
DPT-025	22-23	1.8	52

Location	Depth Interval	PID	Result(µg/kg)
DPT-016	7-8	0.0	ND
DPT-016	13-14	0.0	ND
DPT-016	21-22	0.0	ND
DPT-016	24-25	0.0	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-030	10-11	256.2	16,000
DPT-030	15-16	585.4	7,900
DPT-030	17-18	396.1	ND
DPT-030	19-20	310.6	ND

Location	Depth Interval	PID	Result(µg/kg)
DPT-021	6-7	0.0	ND
DPT-021	10-11	0.0	ND
DPT-021	19-20	0.5	ND
DPT-021	23-24	5.1	120

Location	Depth Interval	PID	Result(µg/kg)
DPT-026	4-5	0.0	ND
DPT-026	16-17	2.1	ND
DPT-026	17-18	2.4	ND
DPT-026	26-27	2.8	69

Location	Depth Interval	PID	Result(µg/kg)
DPT-031	3-4	31.1	65
DPT-031	12-13	7.5	27
DPT-031	16-17	14.4	560
DPT-031	21-22	38.4	2,000

Location	Depth Interval	PID	Result(µg/kg)
DPT-015	3-4	5.8	100
DPT-015	15-16	13.7	ND
DPT-015	19-20	18.0	ND
DPT-015	23-24	0.0	210

Location	Depth Interval	PID	Result(µg/kg)
DPT-014	3-4	27.8	ND
DPT-014	10-11	9.5	1,200
DPT-014	19-20	15.2	ND
DPT-014	25-26	19.9	420

Location	Depth Interval	PID	Result(µg/kg)
DPT-034	8-9	2.7	ND
DPT-034	15-16	0.0	ND
DPT-034	18-19	0.0	ND
DPT-034	22-23	0.0	ND

LEGEND

- HDR November 2019 DPT Boring Locations (up to 40bgs)
- HDR Shallow DPT Boring Locations
- HDR Deep and Shallow DPT Boring Locations
- Inter./Upper Inter. MW
- Shallow/Inter. MW
- Shallow MW
- DPT (DPT Boring Shaw, 2011)
- SB (Soil Boring Shaw, 2011)
- SUMP

Contaminant Level

- TCE > 500 µg/kg GWP-Ind-MSC HDR November 2019 Results
- Road
- Stream
- Building
- LHAAP-47
- LHAAP Site

NOTES: Bold = Concentration exceeds GWP-Ind
All units are in milligrams per kilogram (mg/kg)
J = Estimated Value

DISCLAIMER: Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

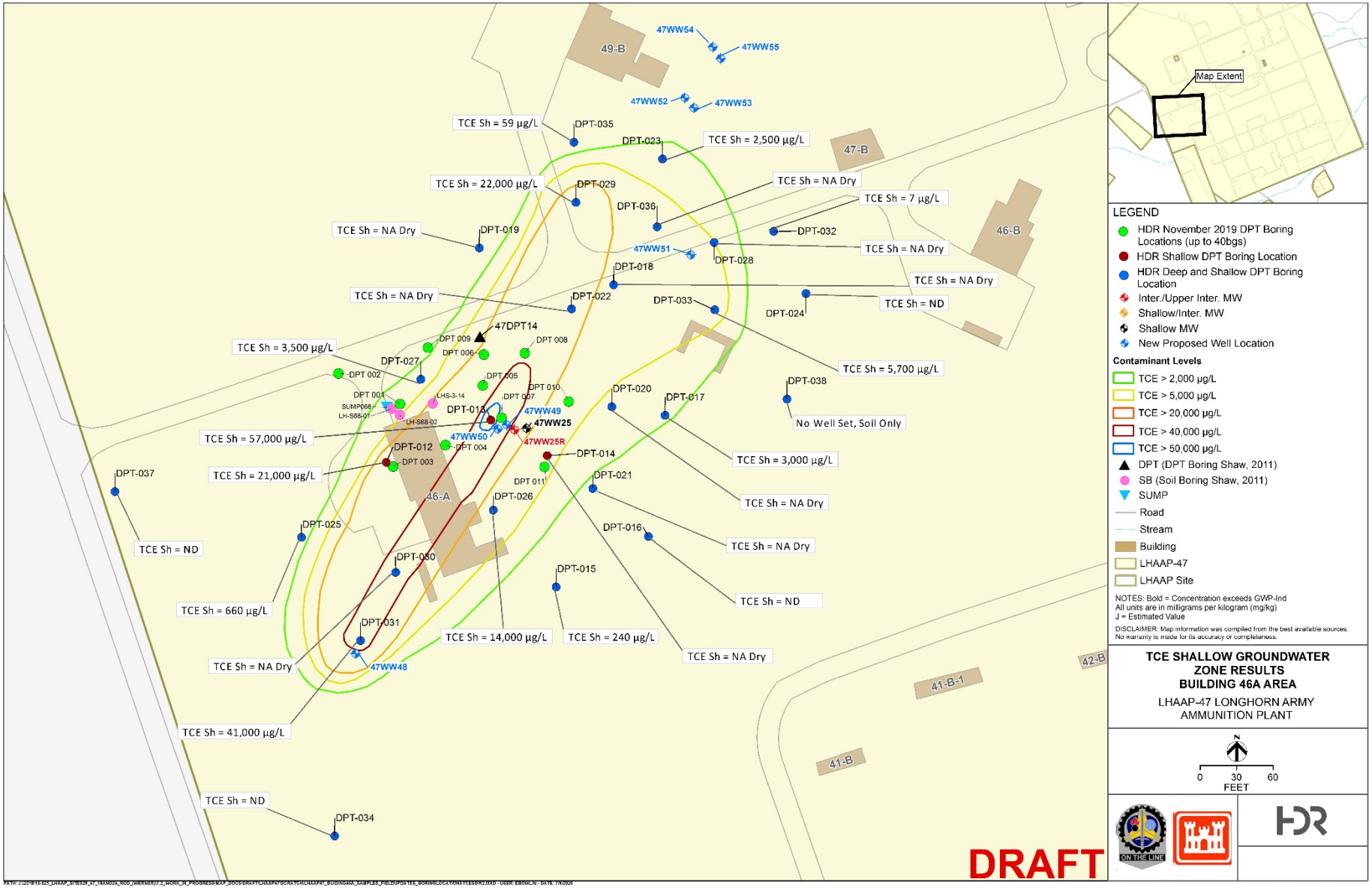
TCE SOIL RESULTS BUILDING 46A AREA

LHAAP-47 LONGHORN ARMY AMMUNITION PLANT

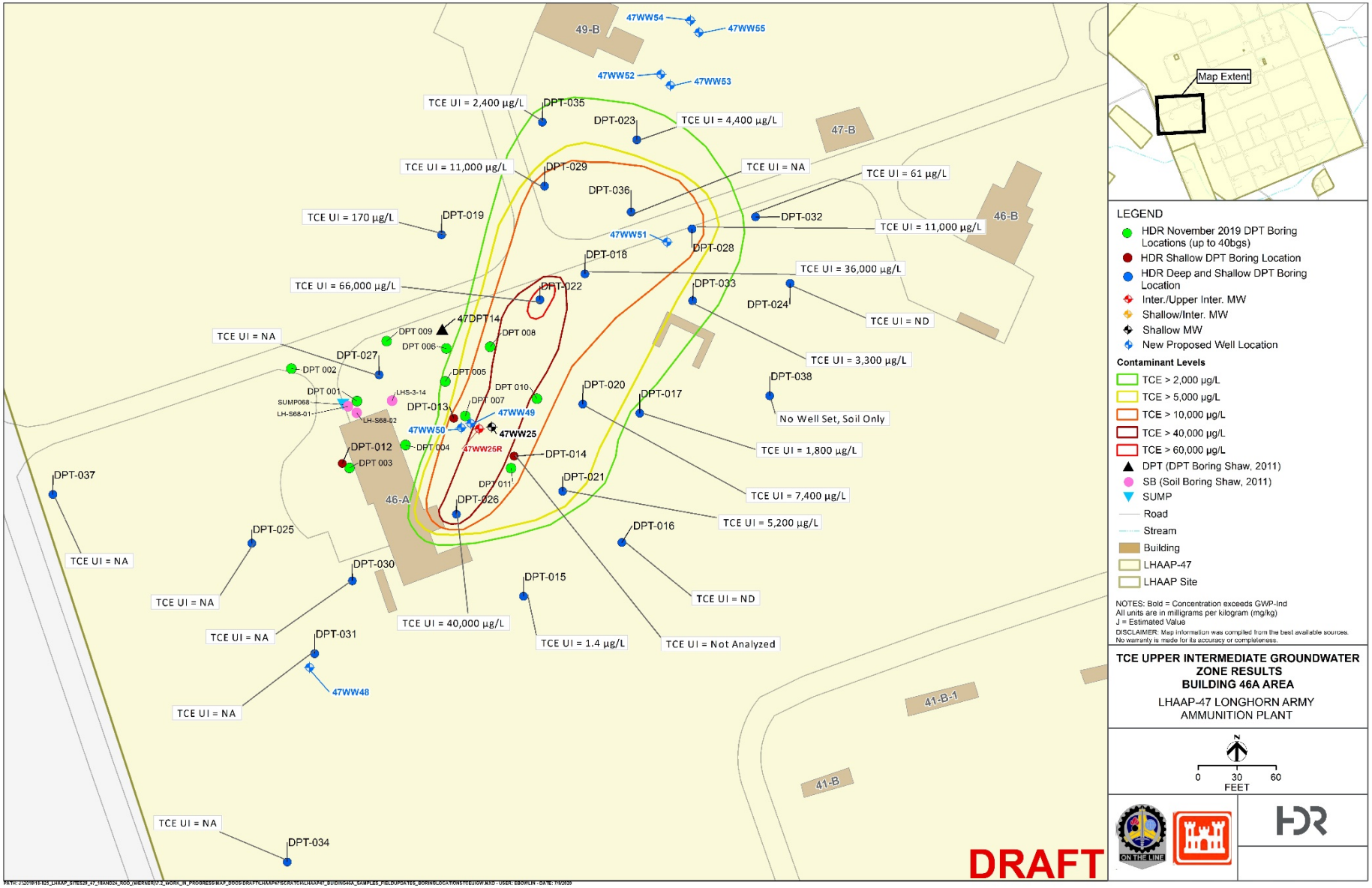
N

0 30 60
FEET

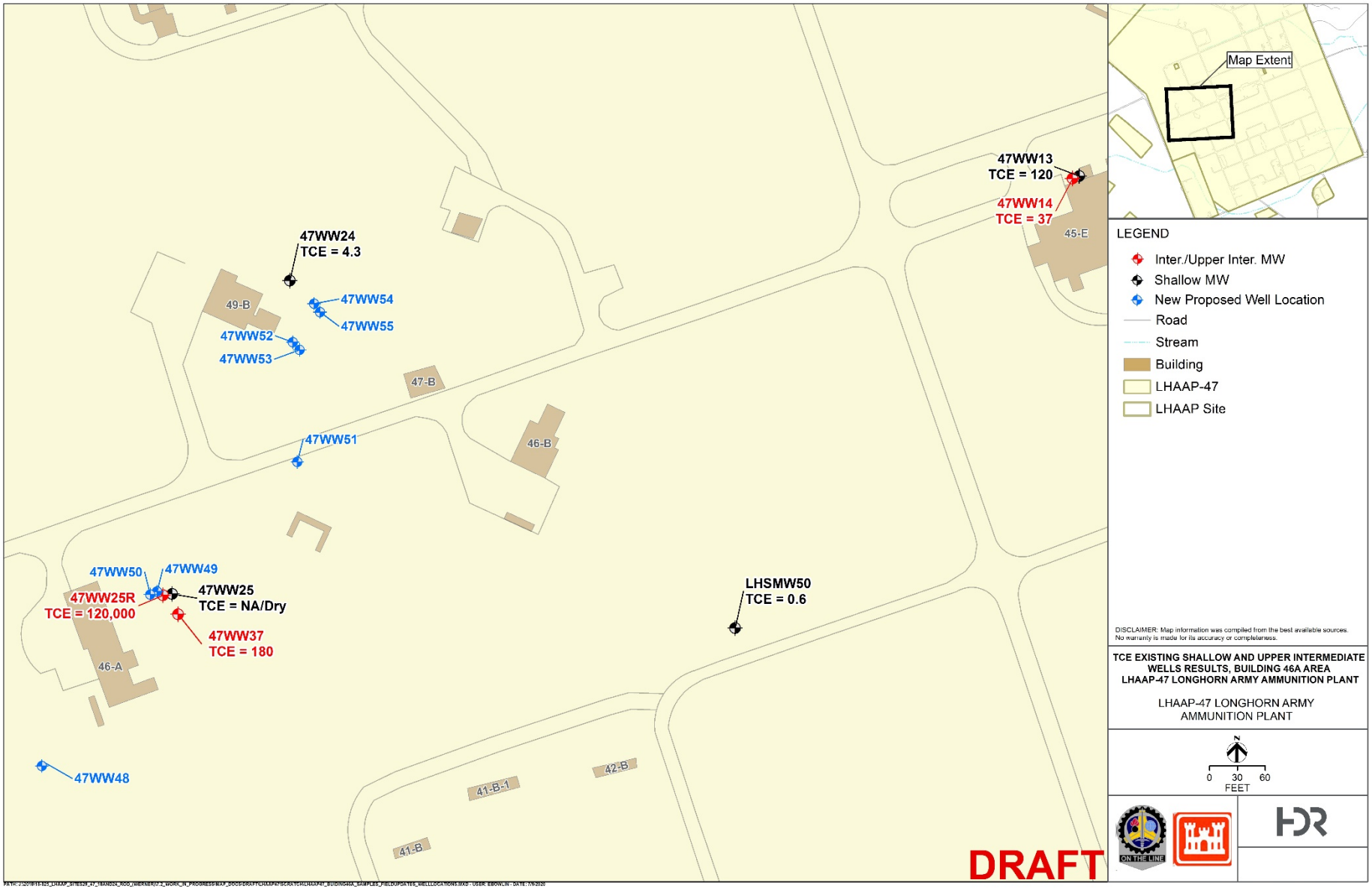
LHAAP-47 Building 46A Area DPT Shallow Zone Groundwater TCE Results, June 2020



LHAAP-47 Building 46A Area DPT Upper Intermediate Zone Groundwater TCE Results, June 2020



LHAAP-47 Building 46A Area Existing Shallow and Upper Intermediate Zone Wells TCE Results, June 2020



Next RAB Meeting Schedule & Closing Remarks

- Schedule October 2020 RAB Meeting
- Other Issues/Remarks
- Thank you for coming

Groundwater Treatment Plant - Processed Groundwater Volumes

The amount of groundwater treated is determined by measuring the number of gallons of processed water discharged.

Processed Water Discharged Data (in gallons)

Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08
1,041,491	848,356	804,822	792,148	665,883	818,872	791,306	568,812	776,904	748,377	690,052	617,199

Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09
655,059	619,274	726,118	552,299	598,144	433,800	488,807	526,958	387,644	0	414,853	735,716

Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10
808,322	636,306	727,492	391,898	695,343	802,656	894,731	962,121	1,257,977	1,314,924	1,041,495	1,136,547

Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
956,567	705,805	849,712	811,679	668,281	1,090,348	817,325	900,338	916,552	784,369	652,524	733,456

Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12
748,102	658,250	684,903	865,453	725,000*	730,000*	980,000*	630,000*	0	0	0	349,012

Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
617,037	607,610	560,436	869,710	751,213	641,708	699,776	746,885	392,719	962,890	843,913	716,057

Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14
813,974	727,442	706,416	552,657	738,691	844,095	811,346	972,913	611,505	626,253	573,601	575,376

Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
440,877	572,479	634,890	614,073	516,592	1,111,859	1,108,336	822,637	1,020,313	1,002,887	951,758	306,467

Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
128,586	209,088	120,234	454,444	1,028,210	1,201,904	1,224,064	1,094,528	792,311	844,916	1,032,732	805,728

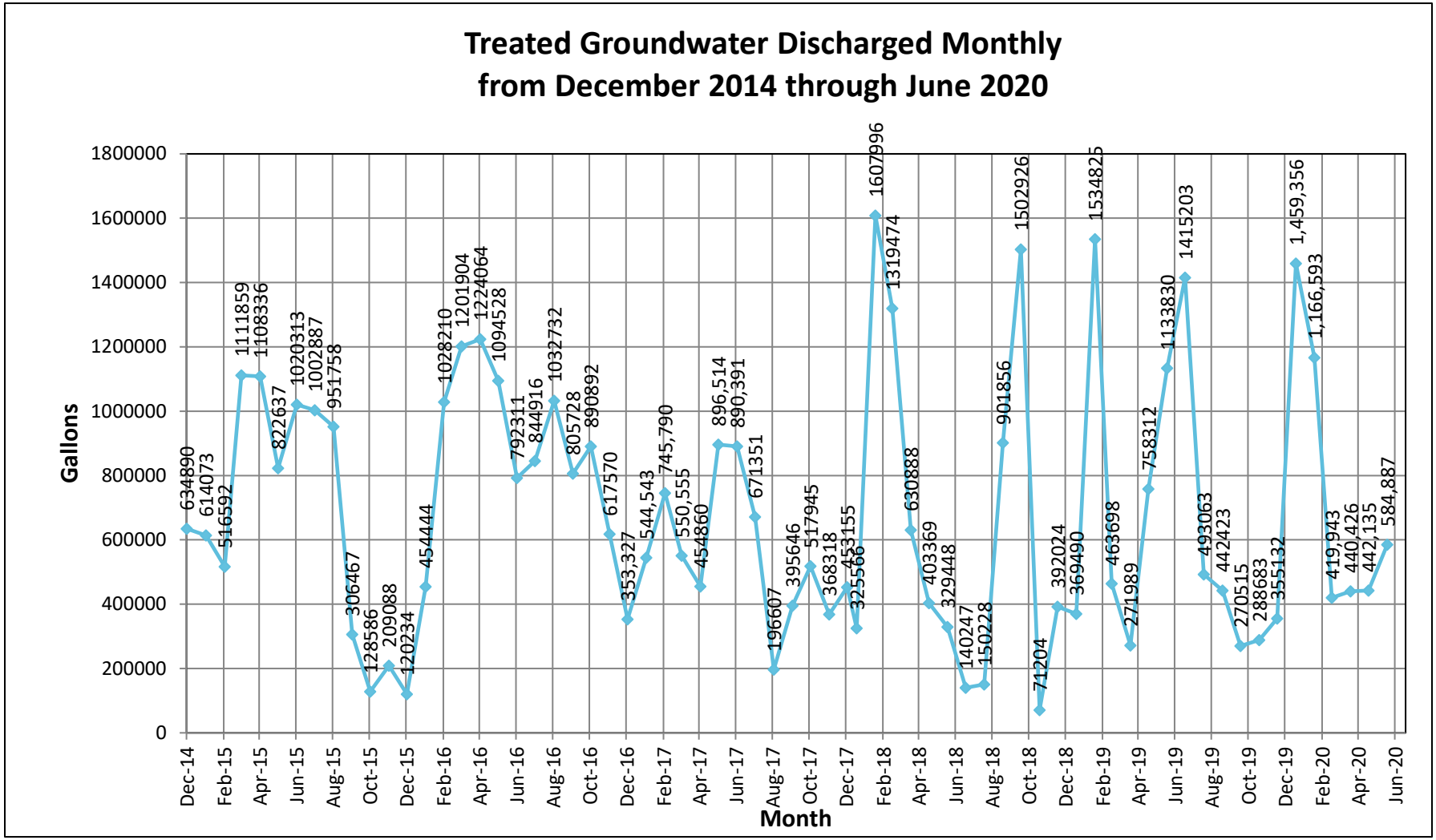
Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
890,892	617,570	353,327	544,543	745,790	550,555	454,860	896,514	890,391	528,538	195,198	961,324

Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul - 18	Aug-18	Sep-18
517,945	368,318	453,155	325,566	1,607,996	1,319,474	630,888	403,369	329,448	140,247	150,228	901,856

Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	June-19	Jul - 19	Aug-19	Sep-19
1,502,926	71,204	392,024	369,490	1,534,825	463,698	271,989	758,312	1,133,830	1,415,203	493,063	442,423

Oct-19	Nov-19	Dec-19	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	June 2020
270,515	288,683	355,132	1,459,356	1,166,593	419,943	440,426	442,135	584,887

*Indicates Estimate


Treated Groundwater Discharged Monthly
from December 2014 through June 2020
Gallons
Month
0
200000
400000
600000
800000
1000000
1200000
1400000
1600000
1800000
Dec-14
Feb-15
Apr-15
Jun-15
Aug-15
Oct-15
Dec-15
Feb-16
Apr-16
Jun-16
Aug-16
Oct-16
Dec-16
Feb-17
Apr-17
Jun-17
Aug-17
Oct-17
Dec-17
Feb-18
Apr-18
Jun-18
Aug-18
Oct-18
Dec-18
Feb-19
Apr-19
Jun-19
Aug-19
Oct-19
Dec-19
Feb-20
Apr-20
Jun-20
634890
614073
516592
1111859
1108336
822637
1020313
1002887
951758
306467
128586
209088
120234
454444
1028210
1201904
1224064
1094528
792311
844916
1032732
805728
890892
617570
353,327
544,543
745,790
550,555
454860
896,514
890,391
671351
196607
395646
517945
368318
453155
325566
1607996
1319474
630888
403369
329448
140247
150228
901856
1502926
71204
392024
369490
1534825
463698
271989
758312
1133830
1415203
493063
442423
270515
288683
355132
1,459,356
1,166,593
419,943
440,426
442,135
584,887

Water Discharge Location and Volume (Gallons)

Month	Total Combined to Harrison Bayou	LHAAP-18/24 Sprinklers	GWTP To INF Pond	INF Pond to Harrison Bayou	Contract Hauled Off-Site
Dec-16	0	236,688	0	0	0
Jan-17	0	0	0	0	0
Feb-17	0	0	0	0	14,355
Mar-17	127,242	0	0	0	14,400
Apr-17	113,038	0	236,821	0	0
May-17	0	0	534,155	0	0
Jun-17	958,404	0	294,550	490,574	0
Jul-17	0	0	528,538	0	0
Aug-17	0	0	195,197	0	0
Sep-17	651,434	0	309,980	651,434	0
Oct-17	0	0	517,945	0	0
Nov-17	0	0	368,318	0	0
Dec-17	560,350	0	453,155	560,350	0
Jan-18	325,566	0	253,177	325,566	0
Feb-18	1,607,996	0	62,017	1,430,634	0
Mar-18	1,319,474	0	0	870,816	0
Apr-18	630,888	0	0	630,888	0
May-18	403,369	0	0	403,369	0
Jun-18	193,669	0	135,779	0	0
Jul -18	0	0	140,247	0	0
Aug -18	49,409	0	100,819	0	0
Sep-18	585,397	0	316,459	524,484	0
Oct-18	1,409,106	0	93,820	1,016,285	0
Nov-18	71,204	0	0	0	0
Dec-18	392,024	0	0	0	0
Jan-19	369,490	0	0	369,490	0
Feb-19	1,534,825	0	0	1,326,485	0
Mar-19	463,698	0	0	83,250	0
Apr-19	271,989	0	0	0	0
May-19	758,312	0	0	253,817	0
Jun-19	1,133,830	0	0	847,918	0

Month	Total Combined to Harrison Bayou	LHAAP-18/24 Sprinklers	GWTP To INF Pond	INF Pond to Harrison Bayou	Contract Hauled Off-Site
Jul -19	1,415,203	0	0	903,001	0
Aug-19	374,629	0	118,434	0	0
Sep-19	0	0	442,423	0	0
Oct-19	0	0	270,515	0	0
Nov-19	115,503	0	173,180	0	0
Dec-19	318,248	0	36,884	0	0
Jan 2020	1,459,396	0	0	1,115,183	0
Feb 2020	1,166,593	0	0	741,954	0
Mar 2020	419,943	0	0	0	0
Apr 2020	440,426	0	0	0	0
May 2020	442,135	0	0	0	0
June 2020	584,887	0	0	0	0

Harrison Bayou and Goose Prairie Creek – Perchlorate Data

Surface water samples are collected quarterly from each location in Harrison Bayou and Goose Prairie Creek, unless the sampling location is dry.

Surface Water Sample Data (in micrograms per liter)

Quarter	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
Creek Sample ID	**Jul 1999**	**Sep 1999**	**Feb 2000**	**Apr 2000**	**Aug 2000**	**Dec 2000**	**Feb 2001**	**Apr 2001**	**July 2001**	**Oct 2001**	**Jan 2002**
GPW-1	<1.0U	-	4	<4.0 U	<4.0 U	<4.0 U	-	2.65	<4.0 U	<4.0 U	<4.0 U
GPW-3	<1.0U	<4.0 U	17	8	<4.0 U	<4.0 U	-	2.28	<4.0 U	<4.0 U	<4.0 U
HBW-1	-	<80.0 U	310	23	-	-	<4.0 U	-	<4.0 U	<4.0 U	<4.0 U
HBW-7	-	<8.0 U	370	110	-	-	<4.0 U	-	<4.0 U	<4.0 U	<4.0 U
HBW-10	-	<8.0 U	905	650	<4.0 U	-	<4.0 U	-	<4.0 U	-	-

Quarter	2nd	3rd	4th	1st	2nd	3rd	3rd	4th	2nd	3rd	4th
Creek Sample ID	**June 2002**	**Sept 2002**	**Dec 2002**	**Feb 2003**	**June 2003**	**Aug 2003**	**July 2004**	**Dec 2006**	**May 2007**	**Aug 2007**	**Dec 2007**
GPW-1	<4.0 U	<4.0 U	18.3	18.6	59.9	-	2.25	-	<1.0 U	<1.0 U	10.7
GPW-3	<4.0 U	<4.0 U	5.49	12.6	14.7	-	2.2	-	<1.0 U	<1.0 U	7.48
HBW-1	<4.0 U	<4.0 U	<4.0 U	-	<4.0 U	99.3	<0.2U	<1.0 U	<1.0 U	122	<1.0 U
HBW-7	<4.0 U	<4.0 U	<4.0 U	-	<4.0 U	<4.0 U	<0.2U	<1.0 U	<1.0 U	1.02	<1.0 U
HBW-10	<4.0 U	<4.0 U	<4.0 U	-	<4.0 U	-	<0.2U	<1.0 U	<1.0 U	<1.0 U	<1.0 U

Quarter	1st	2nd	3rd	4th	2nd	3rd	3rd	3rd	4th	1st	2nd
Creek Sample ID	**Mar 2008**	**Jun 2008**	**Sep 2008**	**Dec 2008**	**May 2009**	**Jul 2009**	**Aug 2009**	**Sep 2009**	**Dec 2009**	**Mar 2010**	**Jun 2010**
GPW-1	27	<0.5U	<0.5U	<0.22U	16	<4U	NS	<1.2U	3.7	1.3J	<0.6U
GPW-3	21.9	9.42	1.1	<0.22U	8.9	<4U	NS	<0.6U	2.8	1.8J	<0.6U
HBW-1	<0.5U	<0.5U	<0.5U	<0.22U	<0.55U	<4U	NS	<1.5U	<0.275U	1.5U	<0.6U
HBW-7	<0.5U	<0.5U	<0.5U	<0.22U	<0.55U	<4U	24	<1.2U	<0.275U	1.5U	<0.6U
HBW-10	<0.5U	<0.5U	<0.5U	<0.22U	<0.55U	<4U	NS	<1.5U	<0.275U	1.2U	<0.6U

Quarter	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
Creek Sample ID	**Sep 2010**	**Dec 2010**	**Mar 2011**	**Jun 2011**	**Sep 2011**	**Dec 2011**	**Mar 2012**	**Jun 2012**	**Not Applicable**	**Jan & Feb 2013**	**Mar 2013**
GPW-1	dry	<0.1U	8.7	dry	dry	1.76	0.163J	dry	NS	1.65	0.735
GPW-3	dry	0.199J	0.673	dry	dry	1.31	0.261	dry	NS	1.74	0.754
HBW-1	dry	<0.1U	<0.2U	dry	dry	<0.1U	0.1U	dry	NS	<0.2U	<0.2U
HBW-7	dry	<0.1U	<0.2U	dry	dry	0.171J	0.1U	dry	NS	<0.2U	<0.2U
HBW-10	dry	<0.1U	<0.2U	dry	dry	<0.1U	0.1U	dry	NS	<0.2U	<0.2U

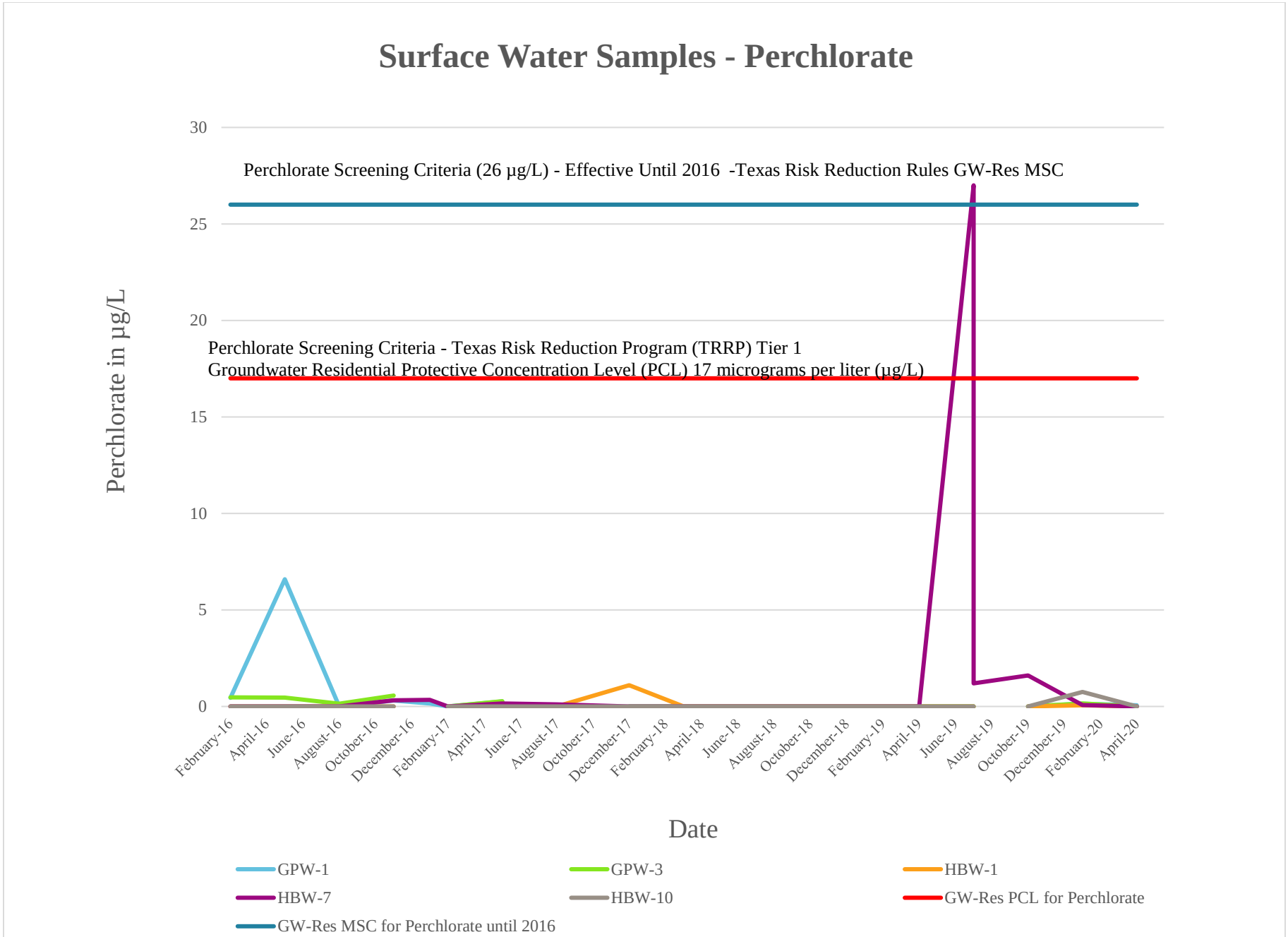
Quarter	2nd	3rd	4th	1st	2nd	3nd	4th	1st	2nd	3rd	4th
Creek Sample ID	**Jun 2013**	**Sept 2013**	**Dec 2013**	**Feb 2014**	**May 2014**	**Aug 2014**	**Nov 2014**	**Feb 2015**	**May 2015**	**Aug 2015**	**Nov 2015**
GPW-1	dry	<0.2 U	dry	0.766	dry	dry	0.244 J	0.311 J	0.156J	dry	0.142 J
GPW-3	dry	<0.2 U	dry	1.15	dry	dry	0.276 J	0.344 J	dry	dry	0.311 J
HBW-1	<0.2U	<0.2 U	dry	<0.2 U	dry	dry	<0.2 U	<0.2 U	dry	dry	<0.2 U
HBW-7	<0.2U	<0.2 U	dry	0.201 J	dry	dry	<0.2 U	0.124 J	dry	dry	<0.2 U
HBW-10	<0.2U	<0.2 U	dry	<0.2 U	dry	dry	<0.2 U	<0.2 U	dry	dry	<0.2 U

Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd
Creek Sample ID	**Feb 2016**	**May 2016**	**Aug 2016**	**Nov 2016**	**Feb 2017**	**May 2017**	**Aug 2017**	**Dec 2017**	**Mar 2018**	**June 2018**	**August 2018**
GPW-1	0.447	6.59	<0.2 U	0.301 J	<1 U	0.263	dry	<4.0 U	<4.0 U	dry	<2.0 U
GPW-3	0.474	0.457	0.141	0.563	<1 U	0.274	dry	<4.0 U	<4.0 U	dry	<2.0 U
HBW-1	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<1 U	<0.2 U	<0.2 U	1.1 J	<4.0 U	dry	<2.0 U
HBW-7	<0.2 U	<0.2 U	<0.2 U	0.318 J	<1 U	0.155	<0.2 U	<4.0 U	<4.0 U	dry	<2.0 U
HBW-10	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<1 U	<0.2 U	0.111J	<4.0 U	<4.0 U	dry	<2.0 U

NS – not sampled U – non-detect J – Estimated Dry – no surface water

Quarter	4th	1st	2nd	3rd	4th	1st	2nd
Creek Sample ID	**Oct 2018**	**Jan 2019**	**April 2019**	**July 2019**	**Oct 2019**	**Jan 2020**	**Apr 2020**
GPW-1	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.146	0.0589 J
GPW-3	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.156	<0.05 U
HBW-1	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.0600 J	<0.05 U
HBW-7	<2.0 U	<2.0 U	<2.0 U	27 (initial)/ 1.2 J (resample)	1.6 J	0.0761 J	<0.05 U
HBW-10	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.0752 J	<0.05 U

NS – not sampled U – non-detect J – Estimated Dry – no surface water



Note: Surface water at HBW-7 had a detection of 27 µg/L from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later.

Longhorn Army Ammuntion Plant Creek Sampling Locations