SIXTH FIVE-YEAR REVIEW REPORT FOR HIGHLANDS ACID PIT SUPERFUND SITE HARRIS COUNTY, TEXAS

JUNE 2023

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2022

Prepared by

U.S. Environmental Protection Agency
Region 6
Dallas, Texas

SIXTH FIVE-YEAR REVIEW REPORT
HIGHLANDS ACID PIT SUPERFUND SITE
HARRIS COUNTY, TEXAS
EPA ID#: TXD980514996

This memorandum documents the U.S. Environmental Protection Agency's performance, determinations and approval of the sixth five-year review for the Highlands Acid Pit Superfund site (Site) under Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S. Code Section 9621(c), as provided in the attached sixth Five-Year Review Report.

Summary of the Sixth Five-Year Review Report

The Site's remedy consisted of excavation of waste and contaminated soil to the approximate groundwater level with off-site disposal and backfilling excavated areas with clean fill. The long-term remedy for groundwater included installation of groundwater monitoring wells and a 30-year monitoring program for groundwater, surface water and sediments. Monitoring is ongoing. No institutional controls have been filed for the Site. The Site is not currently in use.

This Site is located within the 10-year floodplain and protectiveness of the remedy may be vulnerable to potential impacts of climate change. A climate vulnerability assessment is recommended to be completed prior to the next five-year review to determine if changes in climate may affect remedy protectiveness and whether adaptation measures are required.

This Site is not located within an environmental justice (EJ) impacted community. The EJ Screen report was run on February 7, 2023, using a 1-mile buffer around the Site (see Appendix H). None of the 12 environmental justice indexes exceeded the 80th percentile threshold denoting an EJ community. The highest reported index from the EJ Screen report was the EJ Index for Superfund Proximity at the national level (76th percentile).

Actions Needed

The following actions must be taken for the remedy to be protective in the long term:

- Complete a climate vulnerability assessment to determine if changes in climate may affect remedy protectiveness and whether adaptation measures are required.
- Determine the need for institutional controls and implement the institutional controls, as appropriate.
- Collect additional surface water and sediment samples (including background samples) to determine if the contaminated upper aquifer is impacting areas beyond the Site.
- Evaluate the current extent of contamination in the upper aquifer and determine impacts to long-term protectiveness.
- Determine whether the Site poses a vapor intrusion concern for nearby properties with a focus on the planned redevelopment of the former sand pit property.

Determination

I have determined that the status of the remedy for the Highlands Acid Pit Superfund Site is short-term protective. This five-year review report specifies the actions that need to be taken for the remedy to be protective over the long term.

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Lisa Price
Acting Director, Superfund and Emergency Management Division

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ISSUES/RECOMMENDATIONS

SIXTH FIVE-YEAR REVIEW REPORT
HIGHLANDS ACID PIT SUPERFUND SITE
HARRIS COUNTY, TEXAS
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Issues and Recommendations Identified in the FYR:

OU(s): 1, 2	**Issue Category: Other**			
	Issue: This site is located within the 10-year floodplain and protectiveness of the remedy may be vulnerable to potential impacts of climate change.			
	Recommendation: Complete a climate vulnerability assessment to determine if changes in climate may affect remedy protectiveness and whether adaptation measures are required to ensure remedy protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/31/2027

OU(s): 1, 2	**Issue Category: Institutional Controls**			
	Issue: The OU1 and OU2 RODs did not require institutional controls. However, soil contamination remains below 8 feet and groundwater concentrations exceed standards in the upper and middle aquifers.			
	Recommendation: Determine the need for institutional controls and implement the institutional controls, as appropriate.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

OU(s): 2	**Issue Category: Remedy Performance**			
	Issue: During this FYR period, surface water concentrations from three locations were detected above both human health and ecological standards. In June 2022, concentrations were not detected above the laboratory detection limit for all three locations.			
	Recommendation: Collect additional surface water and sediment samples (including background samples) to determine if the contaminated upper aquifer is impacting areas beyond the Site.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

OU(s): 2	Issue Category: Remedy Performance			
	Issue: Groundwater contamination remains in the upper aquifer and concentrations suggest that remaining source material continues to affect the upper aquifer. Upper aquifer monitoring well UA-12 has the highest concentrations of arsenic and benzene and is located at the site boundary. In the middle aquifer, limited contamination in excess of PCLs was detected in two wells.			
	Recommendation: Evaluate the current extent of contamination in the upper aquifer and determine impacts to long-term protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

OU(s): 2	Issue Category: Changed Site Conditions			
	Issue: The adjacent property, including the former sand pit, is currently being developed. The upper aquifer groundwater contamination is not delineated and may extend onto this property. A vapor intrusion screening-level assessment indicates the potential for vapor intrusion on this property.			
	Recommendation: Determine whether the Site poses a vapor intrusion concern for nearby properties with a focus on the planned redevelopment of the former sand pit property.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
DA	Deep Aquifer
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FYR	Five-Year Review
HCWCID #1	Harris County Water Control & Improvement District #1
HQ	Hazard Quotient
IC	Institutional Control
MA	Middle Aquifer
MCL	Maximum Contaminant Level
mg/L	Milligrams per Liter
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCL	Protective Concentration Level
PCS	Pollution Control Services
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RV	Recreational Vehicle
TCEQ	Texas Commission on Environmental Quality
TDWR	Texas Department of Water Resources
TRRP	Texas Risk Reduction Program
UA	Upper Aquifer
UU/UE	Unlimited Use/Unrestricted Exposure
VISL	Vapor Intrusion Screening Level
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)) and considering EPA policy.

This is the sixth FYR for the Highlands Acid Pit Superfund site (Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two operable units (OUs). OU1 addresses source control of waste and contaminated soil. OU2 addresses contaminated groundwater and monitoring of surface water and sediment. This FYR Report addresses both OUs.

EPA remedial project manager (RPM) Stephen Pereira led the FYR. Participants included EPA community involvement coordinator (CIC) Adam Weece, Adam Nichols from the Texas Commission on Environmental Quality (TCEQ), and Hagai Nassau and Ali Cattani from EPA FYR contractor Skeo. The review began on 9/15/2022.

Appendix A lists the resources referenced during the development of this FYR Report. Appendix B provides a chronology of major site events.

Site Background

The 3.3-acre Site is located at the end of Clear Lake Road in Highlands, Harris County, Texas (Figure 1). Early in the 1950s, the site owner allowed disposal of an unknown quantity of industrial waste sludge, believed to be spent sulfuric acid, from oil and gas refining processes. The sludge may have been transported to the Site by barge. Waste sludges were placed in an excavated sand pit (or pits) at the Site. After disposal, the sludge was reportedly covered with sand. The waste disposal activities contaminated soil and the shallow groundwater aquifer (also referred to as the upper aquifer) with hazardous chemicals.

The Site is on a peninsula in the San Jacinto River's 10-year floodplain. The current average elevation of the Site is 5 feet to 10 feet above mean sea level. There is historical subsidence at the Site. Nearly 5 feet of subsidence was recorded at the Site between 1890 and 1973. Since 1964, the Site has subsided at least 2.4 feet. The Site is vacant with the exception of monitoring wells and fencing. Future development is not foreseen at the Site due to its location in the 10-year floodplain, but the current owner has expressed interest in selling the property for possible development. The Site is bordered by two adjacent active oil/gas production wells and a petroleum distribution center, Baytown Boat Club to the north, flooded former sand pits to the east, Clear Lake to the south, and the Grennel Slough to the west. The property east of the Site was recently cleared of vegetation to prepare for development. The nearest permanent residence is about 1,000 feet north of the Site. Recreational vehicles are 275 feet north of the site entrance gate. It is unknown if the recreational vehicles are occupied year-round.

Groundwater occurs in three zones at the Site – the upper, the middle and the deep aquifers. Groundwater in the upper aquifer flows radially from the Site and discharges to Grennel Slough, Clear Lake and the adjacent former sand pits. The flow direction in the upper aquifer is variable due to tidal fluctuations. Flow in the middle aquifer is

generally toward the northwest and in the deep aquifer is to the south-southeast. The 2018 FYR Report and other site documents provide more information about the area's geology and hydrogeology. Previous site documents indicate the area immediately surrounding the Site receives its drinking water from the municipal water supply. Based on this FYR's review of Texas Water Development Board well databases, the closest private drinking water well is about 2 miles northeast of the Site. See Question C of this FYR Report for additional information.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Highlands Acid Pit		
EPA ID: TXD980514996		
Region: 6	**State:** Texas	**City/County:** Highlands/Harris
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the Site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Stephen Pereira, with additional support provided by Skeo		
Author affiliation: EPA Region 6		
Review period: 9/15/2022 – 5/24/2023		
Date of site inspection: 12/5/2022		
Type of review: Statutory		
Review number: 6		
Triggering action date: 5/24/2018		
Due date *(five years after triggering action date)*: 5/24/2023		

Figure 1: Site Vicinity Map

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In 1978, the Texas Department of Water Resources (TDWR) received a complaint concerning the Site (known locally as the Acid Pit). TDWR collected waste sludge, sediment, stormwater and groundwater samples. TDWR found waste materials at the Site characterized by low pH and elevated total organic carbon, sulfate, heavy metals and organics, including benzene, toluene, xylene and phenols. Based on these results, EPA proposed listing the Site on the Superfund program's National Priorities List (NPL) in 1982. EPA finalized the Site's listing on the NPL in September 1983.

State-led site investigation work finished in July 1983. The Site's feasibility study was completed in December 1983. Exposure pathways of greatest concern identified during these investigations were inhalation, ingestion and absorption of contaminants in site soils; migration of contaminants to surrounding surface waters; and downward migration of contaminants in the upper aquifer to the middle aquifer. Human contact with existing contamination was likely, as evidenced by records of trespassing, garbage disposal activities and recreational uses of adjacent properties and water bodies. Soil contaminants would have continued to migrate off-site through wind and surface water erosion. The contaminants of concern (COCs) were identified in EPA's Record of Decision (ROD) for each OU (Table 1).

Table 1: Site COCs, by Media

COC	Media
Metals (lead, chromium, beryllium, manganese)	Soil[a]
Volatile organic compounds (VOCs) (benzene, toluene, xylene)	
Metals (arsenic, cadmium, lead, chromium, manganese)	Groundwater[b]
VOC (benzene)	
Semi-VOC (pyridine)	
Notes: a. *Source:* Table 3, 1984 ROD. b. *Source:* Table 1, 1987 ROD.	

Response Actions

OU1 – Source Control of Waste and Contaminated Soil

EPA selected the OU1 remedy in the Site's 1984 ROD.

The OU1 ROD identified the following remedial action objectives (RAOs) for the Site:

- Control off-site migration of wastes by surface and subsurface pathways to mitigate future environmental impacts on surface waters and groundwater.
- Minimize potential for human contact with waste materials.

The remedy included:

- Excavation of contaminated soils and waste material to an approximate depth of 8 feet below ground surface (the approximate groundwater level).
- Transportation of waste to a permitted Class I hazardous waste disposal facility.
- Backfilling the excavated area with clean fill.
- Construction of a temporary site perimeter fence with warning signs.
- Installation of a groundwater monitoring system, and monitoring groundwater for at least 30 years after cleanup.

EPA estimated that excavation would remove about 19,000 cubic yards of material above the water table. During excavation, if contaminated soil and material (e.g., black soil) was observed beyond the defined lateral limit of excavation, it would also be removed during cleanup. An estimated 58,000 cubic yards of waste and contaminated sand and soil beneath the water table would not be excavated during cleanup.

OU2 – Groundwater and Monitoring of Surface Water and Sediment
EPA selected the OU2 groundwater remedy in the Site's 1987 ROD.

The RAOs for OU2 were to:

- Characterize contaminant migration to surface waters, area environment and deeper groundwater.
- Determine potential impacts on potential receptors.
- Evaluate the need for groundwater corrective action at the Site.

The OU2 remedy was a "no action" remedy with long-term monitoring of the surface environment and groundwater to track attenuation. The OU2 ROD selected no further action because OU1 cleanup would eliminate the potential for surface water contamination and EPA sampling at the time did not detect COCs in the middle or deep aquifers.

The OU2 ROD stated that "upon completion of the Source Control Remedial Action [OU1], surface water contamination from runoff will be eliminated; natural flow of groundwater will cleanse the pore spaces within the shallow aquifer over time; groundwater flow to surface water bodies will continue to carry some contaminants to the surface environment, but the heavy metals are not mobile at the pH of the transition region for groundwater flow to surface water bodies, the organics are volatile upon contact with the atmosphere, and in view of the dynamics of the river and properties of the contaminants, the San Jacinto River should not be affected." It also stated that "attenuation of contaminants down to nondetectable levels within the upper aquifer should take about 350 years."

No numeric cleanup goals were established for the upper aquifer in either ROD for the Site. The 1987 ROD states that, based on the Site's 1987 Groundwater Contamination Evaluation, a well survey of the area had determined that the upper aquifer was not considered a source of potable water. The 1984 OU1 ROD identified Clean Water Act water quality criteria as applicable or relevant and appropriate requirements (ARARs) for potential surface water impacts from site soils or lateral movement of shallow groundwater. The 1987 OU2 ROD identified Safe Drinking Water Act maximum contaminant levels (MCLs) as ARARs for the middle and deep aquifers. Texas Risk Reduction Program (TRRP) tier 1 industrial groundwater protective concentration levels (PCLs) and MCLs are currently equivalent for groundwater COCs at the Site.

Status of Implementation

OU1 – Source Control of Waste and Contaminated Soil
EPA's contractor conducted construction activities for the OU1 remedy between February and July 1987. Cleanup included excavating waste and contaminated soil to an approximate depth of 8 feet and conveying the material to the Chemical Waste Management disposal site in Louisiana. Excavated areas were backfilled with clean soil, including 6 inches of topsoil that was seeded, mulched and fertilized. Excavated areas were also contoured to mitigate on-site flooding. The Site is partially fenced as shown in Figure F-1 in Appendix F.

During OU1 cleanup activities and subsequently during the operational and functional period, more monitoring wells were installed to assess whether groundwater was moving laterally.

OU2 – Groundwater and Monitoring of Surface Water and Sediment
The OU2 ROD called for no action other than long-term monitoring of surface water, sediment and groundwater.

TCEQ currently undertakes groundwater sampling of the shallow, middle and deep aquifers, adjacent surface water, and sediment semi-annually.

In 2001, the groundwater monitoring network at the Site consisted of 21 wells. In 2002, one middle aquifer monitoring well (MA-08) and one deep aquifer monitoring well (DA-08) were plugged and abandoned due to suspected cross contamination between the upper and the middle and deep aquifers. Replacement wells were installed (MA-08A and DA-08A). In addition, three wells (UA-03, UA-13 and MA-04), which were considered redundant by TCEQ, were plugged and abandoned in 2002. The monitoring network currently includes seven wells in the upper aquifer, six wells in the middle aquifer and five wells in the deep aquifer.

TCEQ continues to conduct semi-annual monitoring of groundwater, surface water and sediment. Groundwater contaminant concentrations remain above the TRRP PCLs in the upper aquifer. Arsenic has been persistently detected in the middle aquifer since 2012, with PCLs exceeded in three of six middle-aquifer wells since 2012. Benzene exceeded the PCL in one deep aquifer well in 2016. The Data Review section of this FYR Report includes the data collected from 2018 through 2022. EPA is evaluating if more remedial action is needed to prevent contaminated groundwater migration from the upper aquifer to the middle and deep aquifers.

Institutional Control (IC) Review

The Site's decision documents did not call for institutional controls. However, institutional controls are needed because contaminated soil and groundwater remain at the Site. In 2007, EPA prepared a draft institutional control for the Site in the form of a deed notice. However, this deed notice was never filed. The draft deed notice states that "any reuse or redevelopment involving subsurface utilities, excavation, fence removal, trenching, or well installation requires prior approval by TCEQ, EPA, and the four property owners." The Site is part of a larger 100-acre parcel. The draft deed notice only applies to the 3.3 acres that make up the Site (Figure 2). Further evaluation of the institutional controls required for the Site is necessary. There are no site-related institutional controls associated with any adjacent parcels.

Based on the historic and current surface water monitoring results, there are exceedances of both human health and ecological standards in the former sand pit, the Grennel Slough and Clear Lake. EPA is in the process of determining if groundwater contamination extends off-site. The status of institutional controls at the Site are shown in Table 2.

Table 2: Summary of Planned and/or Implemented Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	No	The Site, which is part of a parcel with four parcel numbers (0410390000204, 0410390000205, 0410390000206, 0410390000207). Possibly off-site areas (to be determined)	Restrict groundwater use.	To be determined

Soil	Yes	No	Site	Restrict reuse or redevelopment involving subsurface utilities, excavation, fence removal, trenching or well installation without prior approval.	To be determined

Figure 2: Institutional Control Map

Systems Operations/Operation and Maintenance (O&M)

TCEQ's contractor conducts O&M activities and monitoring in accordance with the Site's 2011 O&M Plan. The 2011 O&M Plan includes the following requirements:

- Sampling 18 on-site wells semi-annually, evaluating groundwater data and submitting reports to EPA and TCEQ.
- Inspecting site security and replacing and/or repairing security features as approved by TCEQ (i.e., signage, fencing, gates and locks, road access).
- Inspecting the Site to determine whether subsidence has occurred or if site benchmarks have been removed or damaged.
- Inspecting the Site for the effectiveness and extent of vegetative cover, erosion, cap and benchmark settling, heaving, and site run-on/runoff.
- Conducting grass mowing, vegetation clearing and debris removal, including inspecting the Site for conditions that may indicate that soil erosion has occurred.
- Managing investigation-derived waste generated during O&M activities.
- Performing regular sediment and surface water sampling as part of O&M activities.

TCEQ's contractor conducted site inspection and maintenance activities semi-annually in conjunction with the monitoring activities. Mowing was conducted as needed. The most recent site survey finished in 2018. Per the O&M Plan, the Site must be resurveyed every five years to assess potential subsidence and cap integrity. The next site survey will need to be completed in 2023.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the 2018 FYR Report (Table 3) as well as the recommendations from the 2018 FYR Report and the status of those recommendations (Table 4).

Table 3: Protectiveness Determinations/Statements from the 2018 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The remedy for OU1 is currently protective of human health and the environment. The OU1 remedy included excavation of waste material and contaminated soil to a depth of 8 feet below ground surface and disposal at an off-site hazardous waste facility, backfilling of the excavated area with clean soil, establishing vegetation, and installation of a security fence. EPA completed source removal of site soils in 1987. For the OU1 remedy to be protective over the long term, revisit the draft institutional control instrument to ensure long-term protectiveness.
2	Short-term Protective	The remedy for OU2 is currently protective of human health and the environment. The OU2 remedy was a "no further action" remedy with long-term monitoring of surface water and groundwater. For the remedy to be protective over the long term: 1) collect additional surface water and sediment samples in the former sand pit adjunct to the Site to determine if the contaminated upper aquifer is impacting areas beyond the Site and take appropriate measures to ensure protectiveness; 2) revisit the draft institutional control instrument to ensure long-term protectiveness; 3) continue to monitor and evaluate contaminants of concern (COCs) being detected more frequently in the middle and deep aquifers and determine impacts to long-term protectiveness; 4) compare surface water and sediment sample data to ecological benchmarks and to appropriate human health screening values to determine if further study is needed.

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Short-term Protective	The Site remedy is currently protective of human health and the environment. For the remedy to be protective over the long term: collect additional surface water and sediment samples in the former sand pit adjunct to the Site to determine if the contaminated upper aquifer is impacting areas beyond the Site and take appropriate measures to ensure protectiveness; revisit the draft institutional control instrument to ensure long-term protectiveness; continue to monitor and evaluate contaminants of concern (COCs) being detected more frequently in the middle and deep aquifers and determine impacts to long-term protectiveness; compare surface water and sediment sample data to ecological benchmarks and to appropriate human health screening values to determine if further study is needed.

Table 4: Status of Recommendations from the 2018 FYR Report

OU #	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
2	Data on the current extent of the groundwater contamination in the upper aquifer are not available.	Because of the high benzene concentrations in well UA-12 at the eastern boundary of the Site, collect more surface water and sediment samples in the former sand pit adjunct to the Site to determine if the contaminated upper aquifer is impacting areas beyond the Site. Take appropriate measures to ensure protectiveness.	Ongoing	TCEQ collected samples from sampling locations SW-3/SD-3 until June 2022 (not sampled in December 2022 due to lack of access permission). The results are provided in the Data Review section of this FYR Report. Surface water data from SW-3 during this FYR period showed exceedances of human health criteria and ecological benchmarks (lead). During this FYR period there were no criteria or benchmark exceedances in sediment samples. TCEQ re-established access to this monitoring point and collected a sample in May 2023; the results were not available for this FYR.	Not applicable
1, 2	No deed notice was recorded on file with Harris County. The draft deed notice contains limited information, which may not provide sufficient protection from source material left in place during excavation and contaminated groundwater.	Revisit and update the institutional control instrument to strengthen language and ensure long-term protectiveness (e.g., make sure the institutional control runs with the land, prevents exposure to contaminated groundwater).	Ongoing	Areas to apply institutional controls may need to be expanded pending further characterization of extent of groundwater contamination and potential for vapor intrusion exposure.	Target date to implement institutional controls: May 2025
2	Arsenic and benzene have been persistently detected in the middle aquifer and periodically detected in the deep aquifer since the previous FYR.	Continue to monitor and evaluate COCs being detected more frequently in the middle and deep aquifers and determine impacts on long-term protectiveness.	Ongoing	Monitoring is ongoing.	Not applicable

OU #	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
2	Perform regular sediment and surface water sampling as part of site O&M activities. Surface water and sediment data have not been compared to ecological benchmarks. Local residents are presumed to use the adjacent sand pit area for recreational purposes (swimming and fishing).	Compare surface water and sediment sample data to ecological benchmarks, or equivalent, and to appropriate human health screening values to determine if further study is needed.	Ongoing	EPA compared surface water and sediment to ecological benchmarks. Surface water data during this FYR period showed some exceedances of human health criteria (benzene and lead) and ecological benchmarks (lead). During this FYR period there were no criteria or benchmark exceedances in sediment samples. The results are provided in the Data Review Section of this FYR period.	Target date to complete additional sampling of surface water and sediment: May 2025

In addition to the issues and recommendations, the 2018 FYR Report included several other findings:

- The OU2 ROD identified MCLs as ARARs for the middle and deep aquifers. Recent monitoring reports have compared groundwater sampling results to TRRP Tier I PCLs. The TRRP Tier I PCLs are the same as MCLs.
    - Annual reports continue to compare groundwater results to TRRP PCLs.
- Use the most recent TRRP Tier I PCLs to compare groundwater sampling analytic results in the O&M Plan. The August 2016 Annual Groundwater Monitoring Report used the May 2011 TRRP Tier I PCLs for residential groundwater to evaluate analytical results. TCEQ issued updated PCLs in March 2016. However, there were no changes to PCLs in 2016 that affected the most recent sampling analytical results.
    - Annual reports use current TRRP PCLs.
- Based on semi-annual monitoring data, some upper aquifer wells (e.g., UA-16) appear to be influenced by seasonal variations or tidal changes. More study would help identify potential tidal or seasonal influences on upper aquifer groundwater.
    - No progress was made on this finding during this FYR period.
- Ensure all monitoring well covers are locked, make repairs as necessary to barbed wire along the top of the fencing surrounding wells and repost warning signs on monitoring well fences. While the main entrance gate is locked, fencing surrounds about 50% of the Site. Consider fencing the entire site perimeter, including the shoreline along Grennel Slough, to discourage trespassers entering the Site from adjacent water bodies.
    - The Site is partially fenced. All wells are in locked fenced areas. Most wells are locked, although some wells were not locked during the FYR site inspection (see Section IV of this FYR Report).

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was made available by a newspaper posting in the *Highlands Star Crosby Courier* on 10/27/2022, in both English and Spanish (Appendix C). It stated that the FYR was underway and invited the public to submit any comments to EPA. The results of the review and the report will be made available at the Site's information repository, Highlands Public Library – Stratford Branch, located at 509 Stratford Street in Highlands, Texas.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy implemented to date. The interviews are summarized below.

During the FYR site inspection, the EPA and TCEQ project managers visited homes near the Site to interview residents. They spoke with four residents. Residents indicated very little, if any, knowledge of the Site. All residences are connected to the municipal water supply. One resident indicated that they have independently tested their city water. Results indicated the presence of arsenic and benzene. While these are site COCs, the drinking water provided by the city is not affected by the Site. The EPA project manager attempted to follow up with this resident via postal mail to discuss their drinking water concern, but the resident did not reply. During the May 2023 sampling event, EPA and TCEQ visited the resident again. The resident indicated they no longer have a copy of the results but have added a treatment system to their water.

Adam Nichols, the TCEQ project manager, stated that the remedy needs further evaluation to ensure continued protectiveness of human health and the environment. He said that shallow groundwater and surface water contamination needs to be better delineated and evaluated for health and ecological risks on off-site properties that are adjacent to the Site. He also stated that the adjacent property that was recently cleared should be investigated for potential vapor intrusion risk. He stated that institutional controls need to be filed to restrict on-site land use or groundwater use.

Dr. Latrice Babin, Executive Director at the Office of Harris County Pollution Control Services (PCS) indicated that PCS is aware of the Site and the cleanup activities. PCS would like to receive more information about the Site and be included on communications in the future. PCS recommended that site fact sheets be available on the EPA website and that EPA hold community meetings to raise awareness. PCS also recommended that EPA verify institutional controls and draft updated institutional controls if needed. PCS also indicated that signage and gate adjustments should be addressed as needed. PCS indicated they were concerned with the protectiveness of the remedy since groundwater in the upper aquifer transmits to surface water, which can be ingested by people and organisms.

Data Review

In accordance with decision documents, the 2017 Quality Assurance Project Plan and the 2012 Sampling and Analysis Plan, TCEQ conducted groundwater, surface water and sediment sampling semi-annually during this FYR period. Figure 3 shows the sampling locations. Results are reported in annual reports. This FYR Report reviewed groundwater, surface water and sediment data collected from 2018 through 2022 (the most recent data available for review).

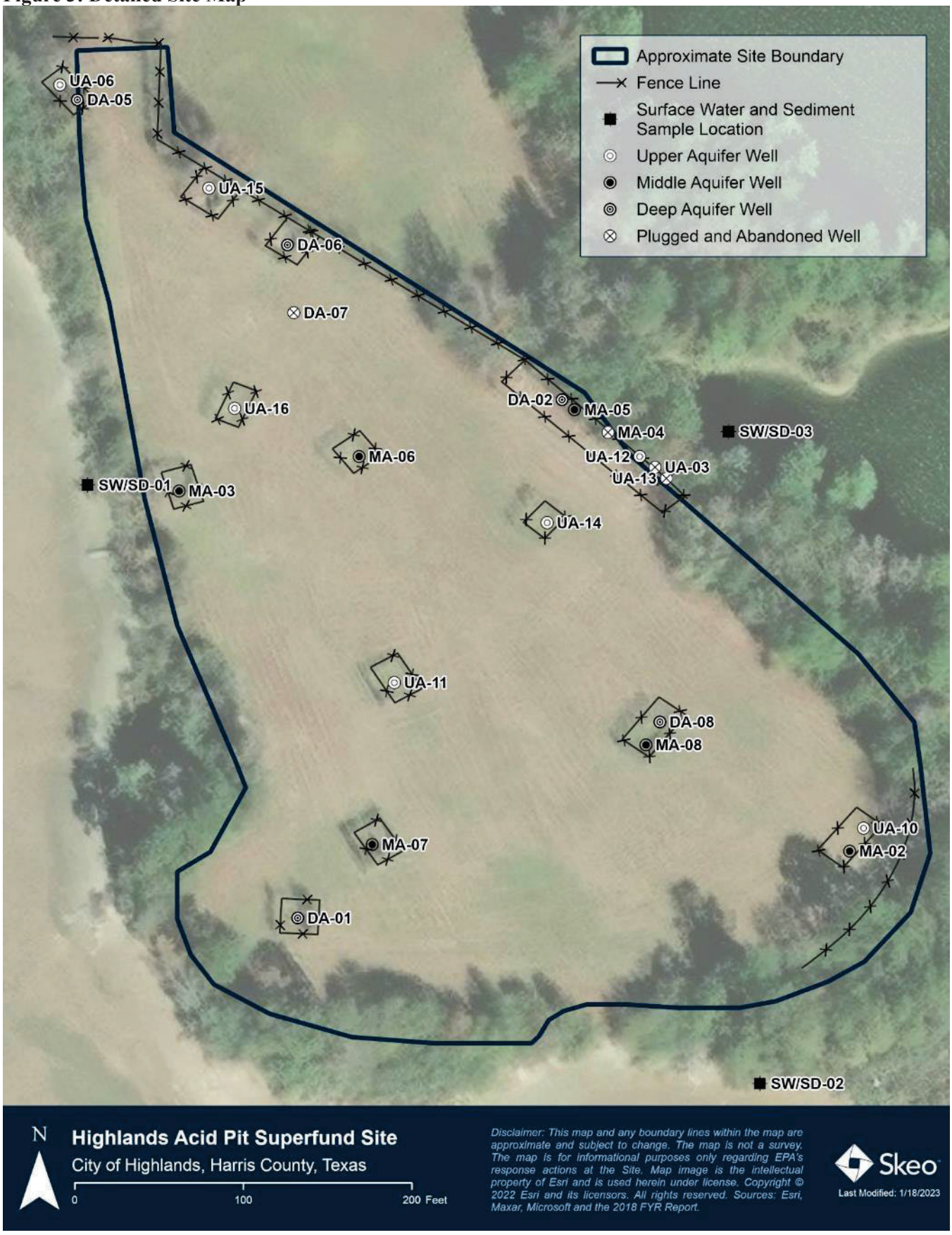
Overall, the data show the following:

- The groundwater data collected during this FYR period indicates groundwater contamination remains in the upper aquifer and concentrations suggest that remaining source material continues to impact the upper aquifer. Monitoring well UA-12 has the highest concentrations for both benzene and arsenic (the primary COCs above PCLs). UA-12 is located farthest downgradient under some flow conditions (last observed in November 2020). Currently, there are no monitoring wells located off-site; additional wells may be needed to determine the extent of the groundwater contamination.

- In the middle aquifer, concentrations above PCLs were detected primarily in two wells: MA-03 and MA-06. During this FYR period, there were no MCL/PCL exceedances in the deep aquifer.

- Surface water data during this FYR period showed some exceedances of human health criteria (benzene and lead) and ecological benchmarks (lead). During this FYR period, there were no criteria or benchmark exceedances in sediment samples.

Figure 3: Detailed Site Map



Groundwater
The semi-annual groundwater monitoring events include gauging and sampling 18 monitoring wells. Samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver), phenol and pyridine, total dissolved solids and sulfate. The results are provided below, by aquifer zone.

Upper Aquifer
Based on the depth to groundwater in the upper aquifer monitoring wells, the general flow direction in the upper aquifer appears to vary, flowing toward the former sand pit (northeast) as well as toward the Grennel Slough (northwest). Figure F-2 in Appendix F shows the most recent (June 2022) potentiometric surface map for the upper aquifer. It continues to be likely that the upper aquifer is influenced by river and sand pit water levels.

During this FYR period, the following contaminants exceeded the MCL/PCL in the upper aquifer: benzene, pyridine, arsenic, barium, cadmium, lead, selenium and chromium. Benzene and arsenic are the most prevalent COCs and have the highest concentrations relative to their PCLs; they exceeded PCLs in all upper aquifer wells during this FYR period. Lead also frequently exceeded its PCL in the upper aquifer monitoring wells. As shown in Table 5, concentrations in select upper aquifer wells vary. In 2020, benzene concentrations increased in UA-12. Metals concentrations in UA-12 also increased in 2020. In 2021 and 2022, concentrations generally decreased but remained above PCLs for benzene and arsenic. Figure F-5 shows the benzene and arsenic concentrations in the upper aquifer in 2022. Table F-1 in Appendix F includes groundwater data collected through 2022.

As noted in the 2018 FYR Report, the current benzene and arsenic concentrations in the upper aquifer suggest that remaining source material continues to impact the upper aquifer. Concentrations likely fluctuate due to the tidal influence at the Site. Depending on those influences, groundwater flow varies. Monitoring well UA-12 is farthest downgradient under some flow conditions and has the highest concentrations for both benzene and arsenic.

Middle Aquifer
In the middle aquifer, groundwater generally flows northwest toward the Grennel Slough. Figure F-3 in Appendix F provides the most recent (June 2022) potentiometric surface map for the middle aquifer.

During this FYR period, two contaminants exceeded their respective PCLs in two wells in the middle aquifer. Middle aquifer well MA-03 exceeded the arsenic PCL of 0.010 milligrams per liter (mg/L) in June 2018 (concentration 0.0123 mg/L). Arsenic exceeded the PCL in this well consistently from 2012 through 2018. Since 2018, arsenic concentrations in MA-03 have decreased to below the PCL.

Benzene was detected above the PCL in MA-06 at a concentration of 0.012 mg/L in November 2020 (PCL = 0.005 mg/L). This is the first exceedance of the benzene PCL in the middle aquifer since December 2015. Prior to 2014, benzene was not detected above the laboratory method detection limit (0.0002 mg/L) in MA-06. In 2021, benzene decreased to below the detection limit once again. It is unclear what caused the increase in contaminant concentrations in MA-06 in 2020. Similar increases were also observed in the upper aquifer. MA-06 is upgradient of MA-03. Benzene has been below the detection limit at MA-03 since at least 2011.

Deep Aquifer
In the deep aquifer, groundwater generally flows to the south-southeast toward the river. Figure F-4 in Appendix F provides the most recent (June 2022) potentiometric surface map for the deep aquifer.

During this FYR period, there were no exceedances of the PCLs in the deep aquifer, which is consistent with historical results. While several COCs were detected, the concentrations were at least one order of magnitude below the PCLs; some results were several orders of magnitude less than the PCLs. Based on the deep aquifer concentrations observed during this FYR period, there is no indication of contaminant migration to the deep aquifer at levels of concern.

Table 5: Upper Aquifer Maximum Contaminant Concentrations Above PCLs, 2018 to 2022

Well/Sample Year	Maximum Concentration per Year (mg/L)		
	Benzene	Arsenic	Lead
PCL	**0.005**	**0.010**	**0.015**
UA-10			
2018	**2.4**	**0.0348**	**0.0169**
2019	**7.7**	**0.111**	**0.106**
2020	**17**	**0.164 JI-FD**	**0.102 JI-FD**
2021	**0.11**	**0.0144**	0.00816
2022	**1.9**	0.0104	0.00236
UA-11			
2018	**49 JI-FD**	**0.721 JI-FD**	**0.306 JI-FD**
2019	**14**	**0.348**	**0.26**
2020	**43**	**0.693**	**0.407**
2021	**1.4 JI-FD**	**0.0143 UH-RB**	0.0027 JI-FD
2022	**2.9**	0.00695	0.000643 J
UA-12			
2018	**69**	**0.255**	**0.0614**
2019	**39**	**0.329**	**0.077**
2020	**57**	**1.75**	**0.489**
2021	**12 JI-FD**	**0.0215**	0.00322
2022	**23**	**0.0139**	< 0.000600 U

Notes:
Source: Table 1A, 2022 Annual Groundwater Monitoring Report.
All results are the highest concentrations per year and include both parent and duplicate sample results.
mg/L = milligrams per liter
J = Estimated concentration
I = Bias in sample results is indeterminate
FD = Field duplicate evaluation criteria not met
U = Not detected
H = Bias in sample results is likely to be high
RB = Analyte was detected in associated rinsate/equipment blank
Bold = Exceeds PCL

Surface Water and Sediment

TCEQ conducts semi-annual surface water and sediment sampling at three locations (Figure 3). Samples are analyzed for BTEX, phenol and pyridine, and select metals. Surface water results are compared to the lower of the human health criteria (TRRP PCLs for groundwater and the human health surface water risk-based exposure limits) and the ecological surface water benchmark for freshwater chronic exposures. Analytical results for sediment are compared to the residential soil PCLs and the ecological sediment benchmarks for freshwater.

Surface Water

During this FYR period, lead and benzene concentrations in surface water were detected above one or more standards. Lead exceeded the human health surface water risk-based exposure limits and ecological surface water benchmark for freshwater chronic exposures and benzene exceeded the human health surface water risk-based exposure limits.

Lead exceeded the human health surface water risk-based exposure limit (0.0015 mg/L) and ecological benchmark (0.00117 mg/L) in all three sampling locations during this FYR period. The maximum concentration was observed in SW-03 at a concentration of 0.00378 mg/L (in December 2018). In June 2022, lead concentrations were below both the human health criteria and ecological benchmarks. These results are generally consistent with the previous FYR period.

During this FYR period, benzene exceeded the human health criteria (the PCL for groundwater and the human health surface water risk-based exposure limit are both 0.005 mg/L) at all locations in December 2021. At all sampling locations, prior exceedances occurred in 2017. From 2017 through 2020, benzene did not exceed any standard. In December 2021 benzene concentrations were 0.028 mg/L (SW-01), 0.027 mg/L (SW-02) and 0.024 mg/L (SW-03). In June 2022, concentrations for all locations were not detected above the laboratory detection limit. There were no exceedances of the benzene ecological surface water benchmark for freshwater chronic exposures (0.13 mg/L) during this FYR period.

There were no cadmium or silver detections during this FYR period; however, the laboratory detection limits for cadmium and silver were above their ecological benchmarks.

Once the May 2023 surface water and sediment sampling results are available, they will be provided to the new owner of the adjacent property including the former sand pit. The owner of that property will also be notified of additional sampling results from this FYR period showing exceedances of lead and benzene in surface water of the former sand pit (SW-03).

Sediment

Phenol, pyridine and various metals were detected in all three sediment samples. However, there were no criteria exceedances during this FYR period in sediment.

During the FYR site inspection, TCEQ indicated it has not been able to access surface water and sediment sampling location SW-3/SD-3 since June 2022 due to clearing and logging activities at the adjacent property. TCEQ re-established access to this sampling point in May 2023 and were able to collect a sample; the results were not available for this FYR.

Site Inspection

The site inspection took place on 12/5/2022. Participants included EPA RPM Stephen Pereira, CIC Adam Weece, TCEQ project manager Adam Nichols and Hagai Nassau with Skeo (EPA FYR contractor). The purpose of the inspection was to assess the protectiveness of the remedy. The current remedy consists of the maintenance of the capped area (OU1) and monitoring of groundwater, surface water and sediment (OU2). Site inspection participants inspected the OU1 capped area and the monitoring locations. There were no signs of erosion or ruts on the capped area. Some sections of the perimeter fence and some of the fences surrounding monitoring wells have vegetation and trees growing on and through them.

Site inspection participants observed that the chain link on the entrance gate had been repaired temporarily with cable ties and the gate had a new chain for locking. The TCEQ project manager explained that someone had recently cut the previous chain, and that someone had cut a hole in the gate; a permanent gate repair is planned. Site inspection participants observed that the adjacent property with the submerged former sand pit (northeast of the Site) was recently logged and cleared of vegetation, and a section of the hog wire fence was removed between the Site and that property. The TCEQ project manager indicated that surface water and sediment monitoring location SW-3/SD-3 is no longer marked; trees and brush were pushed into the flooded sand pit at that location during the logging and clearing activities. Participants located all wells, most of which were locked and surrounded by locked fences. Not all monitoring wells were labeled legibly. Following the inspection, participants visited nearby residents for interviews. Site photographs and the inspection checklist are provided in Appendix D and Appendix E, respectively.

As part of the site inspection, EPA's contractor visited the Site's information repository (Highlands Public Library – Stratford Branch, at 509 Stratford Street in Highlands, Texas) to determine whether site documents are available for public viewing. The library has paper copies of the Site's 1983 Feasibility Study and 1983 Site Inspection Report, and a compact disc sent by EPA in 2019 with documents dated 1978 to 1987. EPA will update the library with more recent documents.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:
The OU1 source control remedy has been implemented and is functioning to minimize human contact with waste material and eliminate contaminated surface water runoff into adjacent surface waters. However, the limited existing surface water monitoring data suggest that the OU1 source control remedy may not be achieving the remedial action objective of controlling off-site migration of wastes by subsurface pathways to mitigate future environmental impacts on surface waters and groundwater. In accordance with the OU1 ROD, the remedy included excavation of waste material and contaminated soil to an approximate depth of 8 feet below ground surface and disposal at an off-site hazardous waste facility, backfilling of the excavated area with clean soil, establishing vegetation, and installation of a security fence. However, soil contamination remains below 8 feet. Site vegetation is well established and maintained by ongoing O&M activities at the Site. The entrance to the Site is gated and locked. Warning signs are posted. During the FYR site inspection, several monitoring wells were not locked. In addition, due to neighboring property development, surface water and sediment monitoring location SW-3/SD-3 was not accessible from June 2022 until May 2023. TCEQ re-established access to this monitoring point and collected a sample in May 2023; the results were not available for this FYR.

The OU2 remedy included long-term monitoring of the surface environment (i.e., surface water and sediment) and groundwater to determine potential impacts on potential receptors and to evaluate the need for groundwater corrective action at the Site. The state O&M contractor has conducted water and sediment sampling semi-annually since 2011. The groundwater data collected during this FYR period indicate groundwater contamination remains in the upper aquifer and concentrations suggest that remaining source material continues to affect the upper aquifer. Monitoring well UA-12 is located farthest downgradient under some flow conditions and has the highest concentrations for both benzene and arsenic. This well is upgradient of the former sand pit. The former sand pit property is currently being developed; the planned future use is not known. In the middle aquifer, limited contamination was detected primarily in two wells, MA-03 and MA-06. Most recently, benzene exceeded its PCL in middle aquifer well MA-06 by an order of magnitude in 2020. In 2021, concentrations in both the upper and middle aquifers decreased. During this FYR period, there were no PCL exceedances in the deep aquifer.

Lead and benzene were detected in surface water above one or more standards during this FYR period, including surface water in the former sand pit on property adjacent to the Site that is apparently undergoing development.. Lead exceeded the human health surface water risk-based exposure limit and ecological surface water benchmark for freshwater chronic exposures. Benzene exceeded the human health surface water risk-based exposure limits. The surface water exceedances were noted in all three sampling locations. In the most recent sampling from June 2022, concentrations for all locations were below the laboratory detection limits. There were no exceedances of the benzene ecological surface water benchmark for freshwater chronic exposures during this FYR period. The previous FYR report indicated that recreation in the former sand pit may be occurring indicating a potential for human exposure to contaminated surface water. For sediment, there were no criteria exceedances during this FYR period. Once the May 2023 surface water and sediment sampling results are available, they will be provided to the new owner of the adjacent property including the former sand pit. The owner of that property will also be notified of additional sampling results from this FYR period showing exceedances of lead and benzene in surface water of the former sand pit (SW-03).

Due to the presence of contaminants above the PCLs in an upper aquifer monitoring well at the site boundary, the extent of the contaminated groundwater is not fully defined. Currently, there are no monitoring wells located off-site and more comprehensive sampling of surface water in the former sand pit has not occurred. Therefore, for the

OU2 remedy, additional assessment is needed to characterize the potential site contaminant migration to surface waters and groundwater and determining potential impacts on potential receptors.

EPA drafted a deed notice in 2007 that was not filed. Institutional controls need to be re-evaluated for the Site to ensure long-term protectiveness.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Question B Summary:
Cleanup levels and RAOs remain valid. However, some exposure assumptions have changed. While toxicity data and risk assessment methodology have been updated since the remedy was selected, these do not impact the protectiveness of the cleanup levels.

The OU1 and OU2 RODs did not identify numeric cleanup goals for soil, groundwater, surface water or sediment. Current groundwater monitoring efforts compare groundwater to current Texas PCLs and compare surface water and sediment to current TRRP values.

The OU2 ROD identified MCLs as ARARs for the middle and deep aquifers. Annual monitoring reports continue to compare groundwater sampling results to TRRP Tier 1 PCLs. PCLs and MCLs are currently equivalent for COCs at the Site. Clean Water Act water quality criteria were identified as surface water ARARs in the 1984 and 1987 RODs. Surface water is currently compared to TRRP Tier 1 groundwater PCLs and human health surface water risk-based exposure limits as well as surface water freshwater chronic benchmarks. Sampling and monitoring plans should be updated to clarify appropriate site action levels, as identified in the RODs, to evaluate groundwater, surface water and sediment analytical results.

Vapor intrusion to indoor air was not considered as a potential exposure pathway in either ROD for the Site. Current groundwater contamination data are not available to evaluate potential off-site vapor intrusion impacts. The maximum benzene concentration in the upper aquifer during this FYR period was observed in the farthest downgradient well, UA-12 (69 mg/L). This well is also closest to the recently observed development at the former sand pit property. Utilizing EPA's Vapor Intrusion Screening Level Calculator (VISL), the predicted vapor intrusion risk is well above EPA's acceptable cancer risk range and noncancer hazard quotient (Table 6). The Site and the adjacent properties are not currently in use. On site use is not likely because it is in the 10-year floodplain although the property owner has expressed interest in selling the Site property for development. The adjacent property with the former sand pit is currently under development.

Table 6: Vapor Intrusion Screening Risk Results – UA-12

Maximum Benzene Concentration at UA-12 (mg/L)	2023 VISL Calculator[a] Residential Exposure (average groundwater temperature 25° Celsius)	
	Cancer Risk	Noncancer HQ
69 (2018)	**4×10^{-2}**	**500**

Notes:
a. VISL calculator at: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator (accessed 1/10/2023).
Bold = noncancer HQs exceeds 1.0 or the cumulative cancer risk exceeds 1×10^{-4}.
HQ = noncancer hazard quotient

The current extent of the groundwater contamination in the upper aquifer and the potential for vapor intrusion for nearby properties needs to be evaluated. The vapor intrusion evaluation should focus on the planned redevelopment of the former sand pit property. **QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

Previous site documents indicate the area immediately surrounding the Site receives its drinking water from the municipal water supply. Based on this FYR's review of Texas Water Development Board well databases, the closest private well is about 2 miles northeast of the Site. However, this FYR contacted the Harris County Water

Control & Improvement District #1 (HCWCID #1) and staff indicated that the area immediately surrounding the Site is not within their service district. After further discussion, it was learned that several homes along Clear Lake Road near the Site are serviced by HCWCID #1 even though they are west of the service boundary shown on the HCWCID #1 website; however, the Baytown Boat Club and Red Ear River Boat and RV Park are not serviced by HCWCID #1. It is unclear where the boat club and RV park receive drinking water since they are not serviced by public water and do not appear to have a private well. The source of drinking water for these two properties as well as the residential properties along Clear Lake Road should be verified with a well survey. This Site is not located within an environmental justice (EJ) impacted community. The EJ Screen report was run on February 7, 2023, using a 1-mile buffer around the Site (see Appendix H). None of the 12 environmental justice indexes exceeded the 80th percentile threshold denoting an EJ community. The highest reported index from the EJ Screen report was the EJ Index for Superfund Proximity at the national level (76th percentile).

In 2022, a screening level assessment of the potential for climate change to affect the protectiveness of the remedy was completed. The Site has a current elevation of 5 to 10 feet above sea level, has subsided at least 2.4 feet since 1964, and is in a 10-year flood plain. The screening level assessment found that the site has high vulnerability to heavy precipitation, inland flooding, sea level rise, hurricane storm surge and wildfire.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
None

Issues and Recommendations Identified in the FYR:

OU(s): 1, 2	Issue Category: Other			
	Issue: This site is located within the 10-year floodplain and protectiveness of the remedy may be vulnerable to potential impacts of climate change.			
	Recommendation: Complete a climate vulnerability assessment to determine if changes in climate may affect remedy protectiveness and whether adaptation measures are required to ensure remedy protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/31/2027

OU(s): 1, 2	Issue Category: Institutional Controls			
	Issue: The OU1 and OU2 RODs did not require institutional controls. However, soil contamination remains below 8 feet and groundwater concentrations exceed in the upper and middle aquifers.			
	Recommendation: Determine the need for institutional controls and implement the institutional controls, as appropriate.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

OU(s): 2	Issue Category: Remedy Performance			
	Issue: During this FYR period, surface water concentrations from three locations were detected above both human health and ecological standards. In June 2022, concentrations were not detected above the laboratory detection limit for all three locations.			
	Recommendation: Collect additional surface water and sediment samples (including background samples) to determine if the contaminated upper aquifer is impacting areas beyond the Site.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

OU(s): 2	Issue Category: Remedy Performance			
	Issue: Groundwater contamination remains in the upper aquifer and concentrations suggest that remaining source material continues to affect the upper aquifer. Upper aquifer monitoring well UA-12 has the highest concentrations of arsenic and benzene and is at the site boundary. In the middle aquifer, limited contamination in excess of PCLs was detected in two wells.			
	Recommendation: Evaluate the current extent of contamination in the upper aquifer and determine impacts to long-term protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

OU(s): 2	Issue Category: Changed Site Conditions			
	Issue: The adjacent property, including the former sand pit, is currently being developed. The upper aquifer groundwater contamination is not delineated and may extend onto this property. A vapor intrusion screening-level assessment indicates the potential for vapor intrusion on this property.			
	Recommendation: Determine whether the Site poses a vapor intrusion concern for nearby properties with a focus on the planned redevelopment of the former sand pit property.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA	TCEQ	5/25/2025

OTHER FINDINGS

Several additional recommendations were identified during the FYR. These recommendations do not affect current and/or future protectiveness.

- Update the Site's Sampling and Analysis Plan to clarify the appropriate criteria for groundwater, surface water and sediment.
- Label all site monitoring wells.
- Conduct a well survey to determine if properties near the Site are using private well water.

VII. PROTECTIVENESS STATEMENTS

Protectiveness Statement	
Operable Unit: 1	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy for OU1 is currently protective of human health and the environment. The OU1 remedy included excavation of waste material and contaminated soil to a depth of 8 feet below ground surface and disposal at an off-site hazardous waste facility, backfilling of the excavated area with clean soil, establishing vegetation, and installation of a security fence. However, for the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness: complete a climate vulnerability assessment to determine if changes in climate may affect remedy protectiveness and whether adaptation measures are required to ensure remedy protectiveness and determine the need for institutional controls and implement the institutional controls, as appropriate.	

Protectiveness Statement	
Operable Unit: 2	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy for OU2 is currently protective of human health and the environment. The OU2 remedy was a "no further action" remedy with long-term monitoring. For the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness: collect additional surface water and sediment samples (including background samples) to determine if the contaminated upper aquifer is impacting areas beyond the Site and take appropriate measures to ensure protectiveness; revisit the draft institutional control instrument to ensure long-term protectiveness; evaluate the current extent of contamination in the upper aquifer and determine impacts to long-term protectiveness; continue to monitor and evaluate contaminants of concern in the middle and deep aquifer and determine impacts to long-term protectiveness; determine if the site poses a vapor intrusion concern for nearby properties.	

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The Site remedy is currently protective of human health and the environment. For the remedy to be protective over the long term, the following actions need to be taken to ensure protectiveness: complete a climate vulnerability assessment to determine if changes in climate may affect remedy protectiveness and whether adaptation measures are required to ensure remedy protectiveness; collect additional surface water and sediment samples around the Site to determine if the contaminated upper aquifer is impacting areas beyond the Site; determine the need for institutional controls and implement the institutional controls, as appropriate; evaluate the current extent of contamination in the upper aquifer and determine impacts to long-term protectiveness; and determine if the site poses a vapor intrusion concern for nearby properties.

VIII. NEXT REVIEW

The next FYR Report for the Highlands Acid Pit Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Annual Groundwater Monitoring Report December 2019 and June 2020 Sampling Events. Highlands Acid Pit Federal Superfund Site. Texas Commission on Environmental Quality. August 2020.

Annual Groundwater Monitoring Report November 2020 and June 2021 Sampling Events. Highlands Acid Pit Federal Superfund Site. Texas Commission on Environmental Quality. August 2021.

Final Report for Highlands Acid Pit, Highlands, Texas – Groundwater Contamination Evaluation. United States Environmental Protection Agency Region 6. April 1987.

First Five-Year Review, Highlands Acid Pit Superfund Site. United States Environmental Protection Agency Region 6. November 1995.

Fourth Five-Year Review Report for the Highlands Acid Pit Superfund site. United States Environmental Protection Agency Region 6. September 27, 2012.

Fifth Five-Year Review Report for the Highlands Acid Pit Superfund site. United States Environmental Protection Agency Region 6. September 27, 2012. May 24, 2018.

Health Assessment, Highland Acid Pit (NPL) Site. Highlands, Harris County, Texas. Agency for Toxic Substances and Disease Registry. December 7, 1988.

Operations and Maintenance Plan, September 2011, Highlands Acid Pit, State Superfund Site, Contract No. 582-10-91049, Work Order No. 246-0023. URS. September 23, 2011.

Record of Decision, Highlands Acid Pit, OU1. United States Environmental Protection Agency Region 6. June 25, 1984.

Record of Decision, Highlands Acid Pit, Groundwater Operable Unit. United States Environmental Protection Agency Region 6. June 26, 1987.

Remedial Action Feasibility Study, Highlands Acid Pit, Highlands, Texas. Texas Commission on Environmental Quality. December 1983.

Second Five-Year Review Report for the Highlands Acid Pit. United States Environmental Protection Agency Region 6. September 27, 2002.

Third Five-Year Review Report, Highlands Acid Pit Superfund Site. United States Environmental Protection Agency Region 6. September 28, 2007.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
TCEQ (formerly TDWR) received a telephone complaint concerning the Site	May 1978
TDWR analysis of sludge, sediment and stormwater samples found low pH, concentrations of metals, high chemical oxygen demand and high total organic carbon	September 1978
TDWR analysis of groundwater samples found VOCs and heavy metals	October 1981
EPA proposed the Site for listing on the NPL	June 1982
EPA and TCEQ entered into a Cooperative Agreement for a state-led remedial investigation and feasibility study	September 1982
EPA finalized the Site's listing on the NPL	September 1983
State-led Site Investigation Report indicated extensive contamination of site media with heavy metals and VOCs	December 1983
State completed the Site's Remedial Investigation/Feasibility Study Report	December 1983
EPA finalized the ROD for OU1	June 1984
EPA finalized the ROD for OU2	June 1987
TCEQ conducted O&M activities at the Site	July 1988 to July 1996
TCEQ assumed responsibility for 30 years of O&M activities at the Site	June 1993
EPA and TCEQ agreed on a revised well development plan, which proposed 10 more monitoring wells with a revised monitoring strategy and an expansion of the sampling analysis program	May 1996
EPA completed the Site's first FYR Report	June 1996
EPA contractor conducted more groundwater sampling activities at the Site	April 1997 to December 1999
TNRCC completed the Site's revised O&M Plan	September 2001
EPA completed the Site's second FYR Report	September 2002
EPA completed the Site's third FYR Report	September 2007
TCEQ selected URS as the Site's O&M contractor	2011
URS completed the Site's O&M Plan	September 2011
EPA completed the Site's fourth FYR Report	September 2012
EPA completed the Site's fifth FYR Report	May 2018

APPENDIX C – PRESS NOTICE

Highlands Acid Pit Superfund Site
Public Notice
U.S. Environmental Protection Agency, Region 6

October 2022

The U.S. Environmental Protection Agency Region 6 (EPA) will be conducting the sixth five-year review of remedy implementation and performance at the Highlands Acid Pit Superfund site (Site) in Highlands, Texas. In the early 1950s, the Site received an unknown amount of industrial waste sludge, believed to be spent sulfuric acid, from oil and gas refining processes. Waste disposal activities contaminated the soil and groundwater with hazardous chemicals. Cleanup included the excavation and off-site disposal of hazardous soil, backfilling of the excavated area with clean soil, establishment of vegetation and installation of a security fence. The remedy also included monitored natural attenuation and institution controls. Site maintenance and groundwater monitoring are ongoing. The five-year review will determine if the remedies are still protective of human health and the environment. The five-year review is scheduled for completion in May 2023.

The report will be made available to the public at the following local information repository:

Highlands Public Library, Stratford Branch
509 Stratford Street
Highlands, Texas 77562

Site status updates are available on the Internet at
https://www.epa.gov/superfund/highlands-acid-pit

All media inquiries should be directed
to the EPA Press Office at (214) 665-2200

For more information about the Site, contact:

Stephen Pereira/Remedial Project Manager
(214) 665-3137
or by email at pereira.stephen@epa.gov

Adam Weece/Community Involvement Coordinator
(214) 665-2264
or 1-800-887-6063 (toll free)
or by email at weece.adam@epa.gov

Sitio Superfund Highlands Acid Pit
Aviso Público
Región 6 de la Agencia de Protección Ambiental de los Estado Unidos

Octubre 2022

La Región 6 de la Agencia de Protección Ambiental (EPA, por sus siglas en inglés) llevará a cabo la sexta revisión de cinco años de la implementación y rendimiento del plan de limpieza del sitio Superfund Highlands Acid Pit (Sitio) en Highlands, Texas. A principios de la década de 1950, el Sitio recibió una cantidad desconocida de lodos de desecho industrial, que se cree que era ácido sulfúrico gastado, de los procesos de refinación de petróleo y gas. Las actividades de eliminación de desechos contaminaron el suelo y las aguas subterráneas con productos químicos peligrosos. La limpieza incluyó la excavación y la eliminación fuera del sitio de suelo peligroso, el relleno del área excavada con suelo limpio, el establecimiento de vegetación y la instalación de una cerca de seguridad. La acción correctiva también incluyó atenuación natural monitoreada y controles institucionales. El mantenimiento del Sitio y el monitoreo de las aguas subterráneas siguen en curso. La revisión de cinco años determinará si las acciones correctivas aún protegen la salud humana y el medio ambiente. La revisión de cinco años está programada para completarse en mayo de 2023.

El informe se pondrá a disposición del público en el siguiente repositorio de información local:

Biblioteca Pública de Highlands, Sucursal de Stratford
509 Stratford Street
Highlands, Texas 77562

Las actualizaciones del estado del Sitio están disponibles por Internet en https://www.epa.gov/superfund/highlands-acid-pit

Todas las preguntas de los medios deben dirigirse a la Oficina de la Prensa se la EPA al (214) 665-2200

Para obtener más información sobre el Sitio, comuníquese con:

Stephen Pereira/Gerente de Proyecto de Limpieza
(214) 665-3137
o por correo electrónico a pereira.stephen@epa.gov

Adam Weece/Coordinador de Participación Comunitaria
(214) 665-2264
o 1-800-887-6063 (número gratuito)
o por correo electrónico a weece.adam@epa.gov

APPENDIX D – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Highlands Acid Pit	**Date of Inspection:** 12/05/2022
Location and Region: Highlands, Texas, Region 6	**EPA ID:** TXD980514996
Agency, Office or Company Leading the Five-Year Review: EPA	**Weather/Temperature:** 80s, sunny

Remedy Includes: (check all that apply)

- ☐ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Surface water and sediment monitoring
- ☒ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

   Agency TCEQ
   Contact Adam Weece (Name) Project Manager (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency Harris County Pollution Control Services
   Contact Dr. Latrice Babin (Name) Executive Director (Title) 12/19/2022 (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone
Problems/suggestions ☐ Report attached:_____

4. **Other Interviews** (optional) ☐ Report attached: _____

Residents

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☒ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

2.	**Site-Specific Health and Safety Plan**	☐ Readily available	☐ Up to date	☒ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☒ Contractor for state

☐ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: Warning signs in Spanish and English posted at site entrance and on fencing surrounding the Site.

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☒ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☒ N/A

Type of monitoring (e.g., self-reporting, drive by): _____

Frequency: _____

Responsible party/agency: _____

Contact _____ _____ _____ _____

Name Title Date Phone

Reporting is up to date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☒ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A

Remarks: Draft deed notice has not been filed with the county. EPA and TCEQ will update the deed notice after determining if additional remedial action is needed.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off-site** ☐ N/A

Remarks: The former sand pit area is being redeveloped and the vegetation has been cleared.

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☒ N/A

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident

Area extent: _____ Depth: _____

Remarks: _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
Area extent: _____ Depth: _____
Remarks: _____

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established
☐ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)
Remarks: _____

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A
Remarks: _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
Area extent: _____ Height: _____
Remarks: _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas	☐ Location shown on site map	Area extent: _____
☐ Ponding	☐ Location shown on site map	Area extent: _____
☐ Seeps	☐ Location shown on site map	Area extent: _____
☐ Soft subgrade	☐ Location shown on site map	Area extent: _____

Remarks: _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map
☒ No evidence of slope instability
Area extent: _____
Remarks: _____

B. Benches ☐ Applicable ☒ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

C. Letdown Channels ☐ Applicable ☒ N/A
(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

D. Cover Penetrations ☒ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A
Remarks: _____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: Some monitoring wells were not labeled.

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A

Remarks: Benchmarks were surveyed in 2018.

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

F. Cover Drainage Layer ☐ Applicable ☒ N/A

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

H. Retaining Walls ☐ Applicable ☒ N/A

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☒ N/A

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A

C. Treatment System ☐ Applicable ☒ N/A

D. Monitoring Data

1. **Monitoring Data**

☐ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☒ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: Wells appear to be in good condition. All wells are surrounded by locked fences. Most well caps were also locked, although several wells did not have locks at the time of the inspection. Most wells were labeled. Some were weathered and difficult to read.

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS	
A.	**Implementation of the Remedy**
	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). The remedy includes soil excavation (to 8 feet below ground surface) and off-site disposal (OU1) and groundwater monitored natural attenuation and surface water and sediment sampling. Monitoring is ongoing. There have been detections and cleanup goal exceedances in the middle aquifer and detections in the deep aquifer. COC concentrations in the upper aquifer remain well above PCLs. These conditions indicate that there may be remaining source area that continues to contaminate groundwater on site. There is no exposure on site since the groundwater is not in use on site; this FYR recommends a well survey to confirm that groundwater is not used off site. Institutional controls were not required by site decision documents but should be implemented to prevent certain land uses and groundwater use. A draft deed notice has not been filed. EPA and TCEQ will update the deed notice and file it.
B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. TCEQ conducts O&M activities, which include semi-annual groundwater, surface water and sediment monitoring, site security and cover maintenance (including mowing). Generally, O&M activities are conducted as appropriate.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. None at this time.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. None at this time.

APPENDIX E – REMEDIAL ACTION AND SITE INSPECTION PHOTOS

After Cleanup

Gated entrance to the Site, circa 2001

Site Inspection Photos: December 2022

Gated site entrance

Fenced monitoring wells on site

Unlocked monitoring well DA-05

Unlocked monitoring well DA-06

Monitoring well UA-15

Monitoring well, with the Grennel Slough in background

Monitoring well MA-03, with signage for surface water sampling location SW-1


Cleared vegetation near the former sand pit

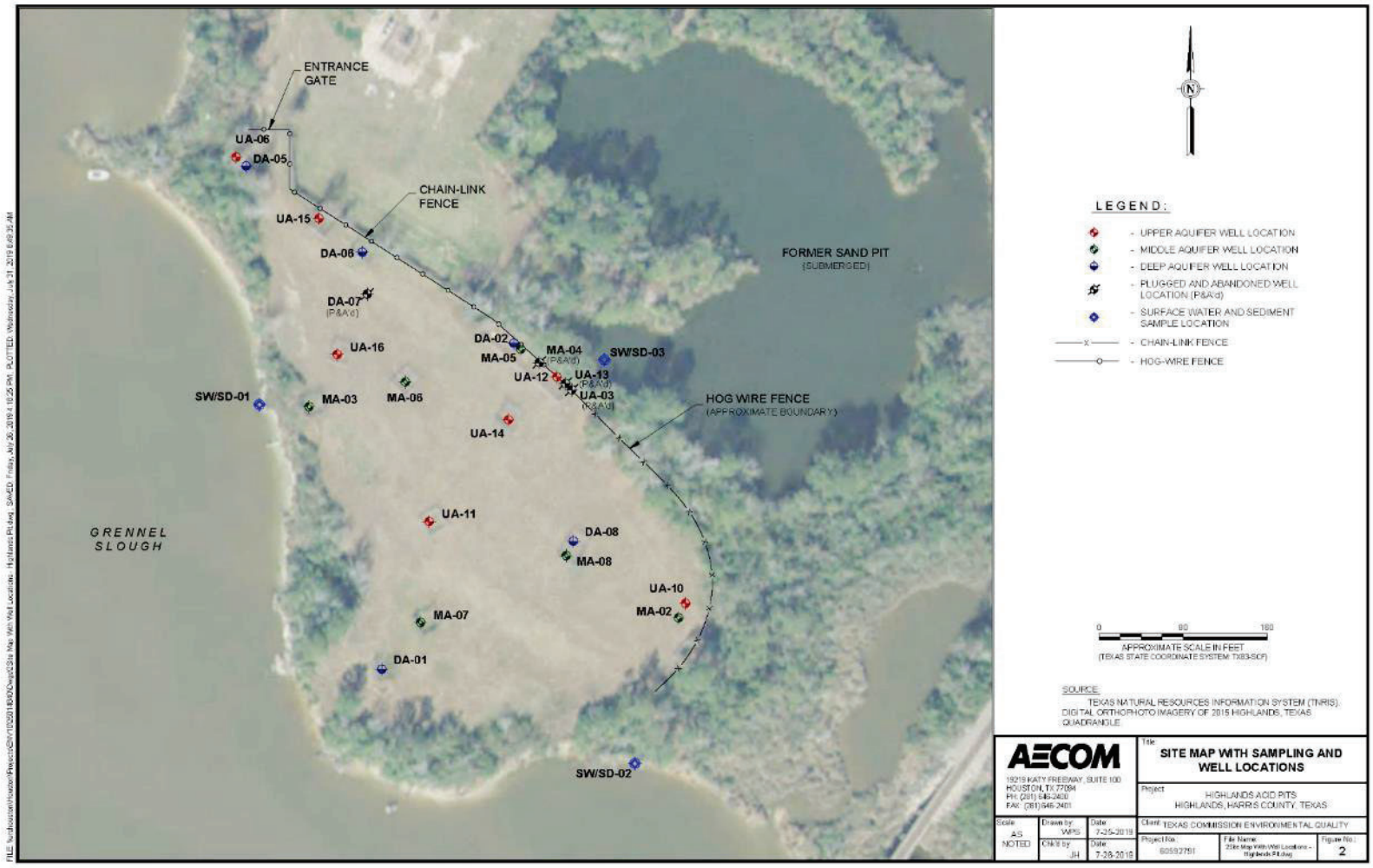
Surface water sampling location SW-2

Monitoring well UA-10

Mowed cover area

APPENDIX F – DATA REVIEW FIGURES AND TABLES[1]

Figure F-1: Site Map[2]



[1] All figures and tables are from the Annual Groundwater Monitoring Report, November/December 2021 and June 2022 Sampling Events

[2] Part of the hog wire fence was removed during the clearing of the adjacent property (see Figure 3 for the current extent of fencing)

Figure F-2: Upper Aquifer Potentiometric Surface Map – June 2022

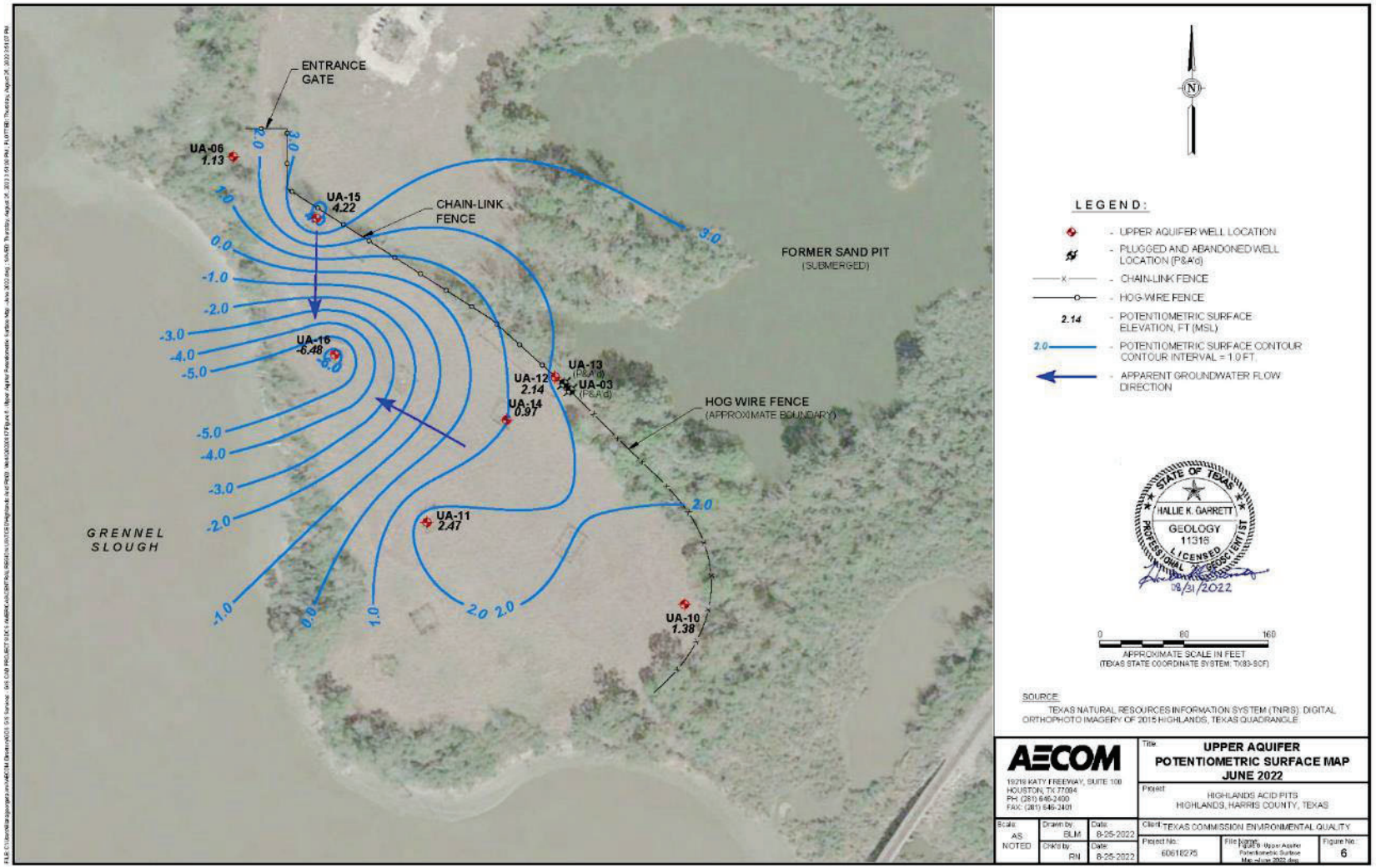


Figure F-3: Middle Aquifer Potentiometric Surface Map – June 2022

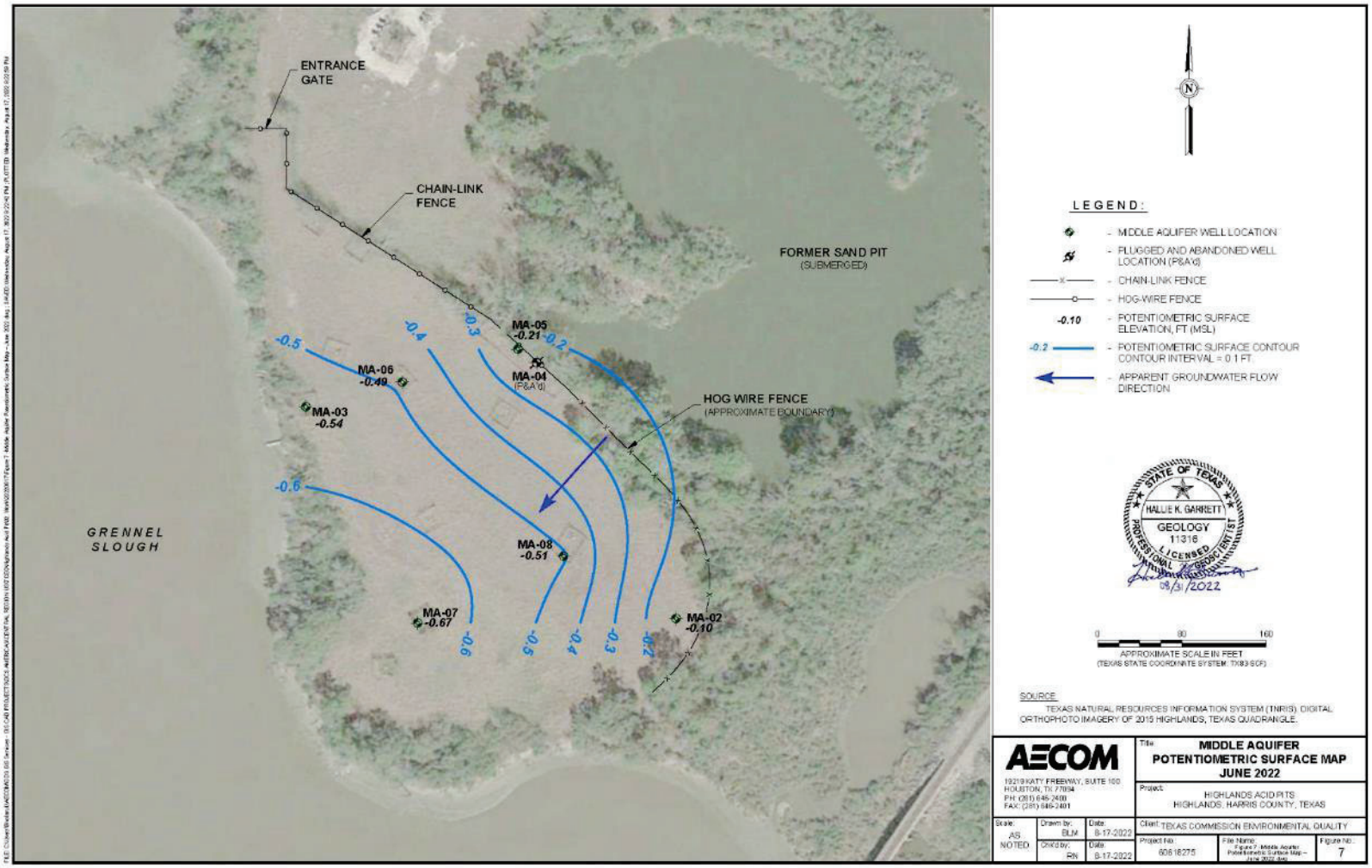


Figure F-4: Deep Aquifer Potentiometric Surface Map – June 2022

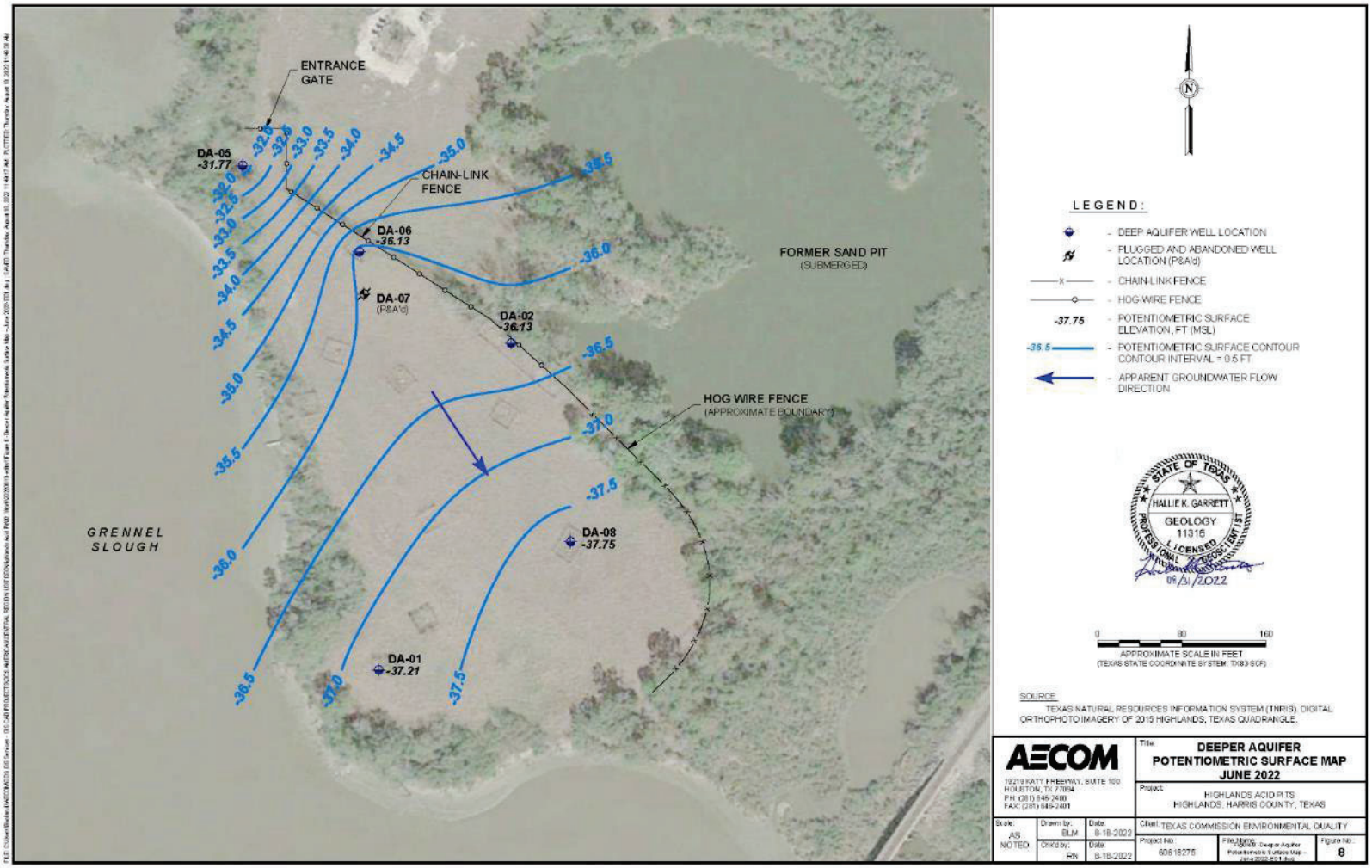


Figure F-5: Upper Aquifer Benzene and Arsenic Concentrations – June 2022

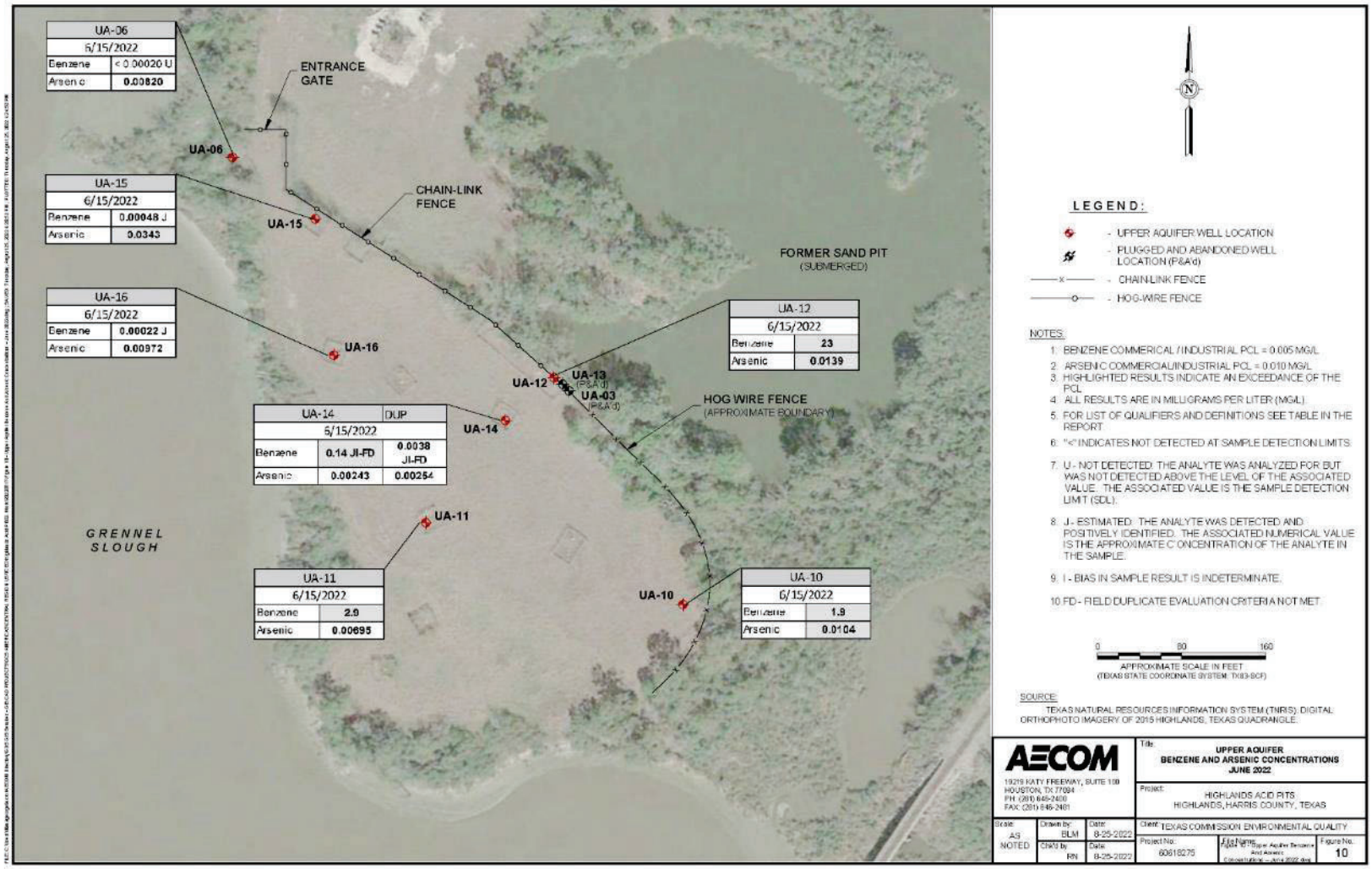


Figure F-6: Surface Water Benzene Concentration – November/December 2021

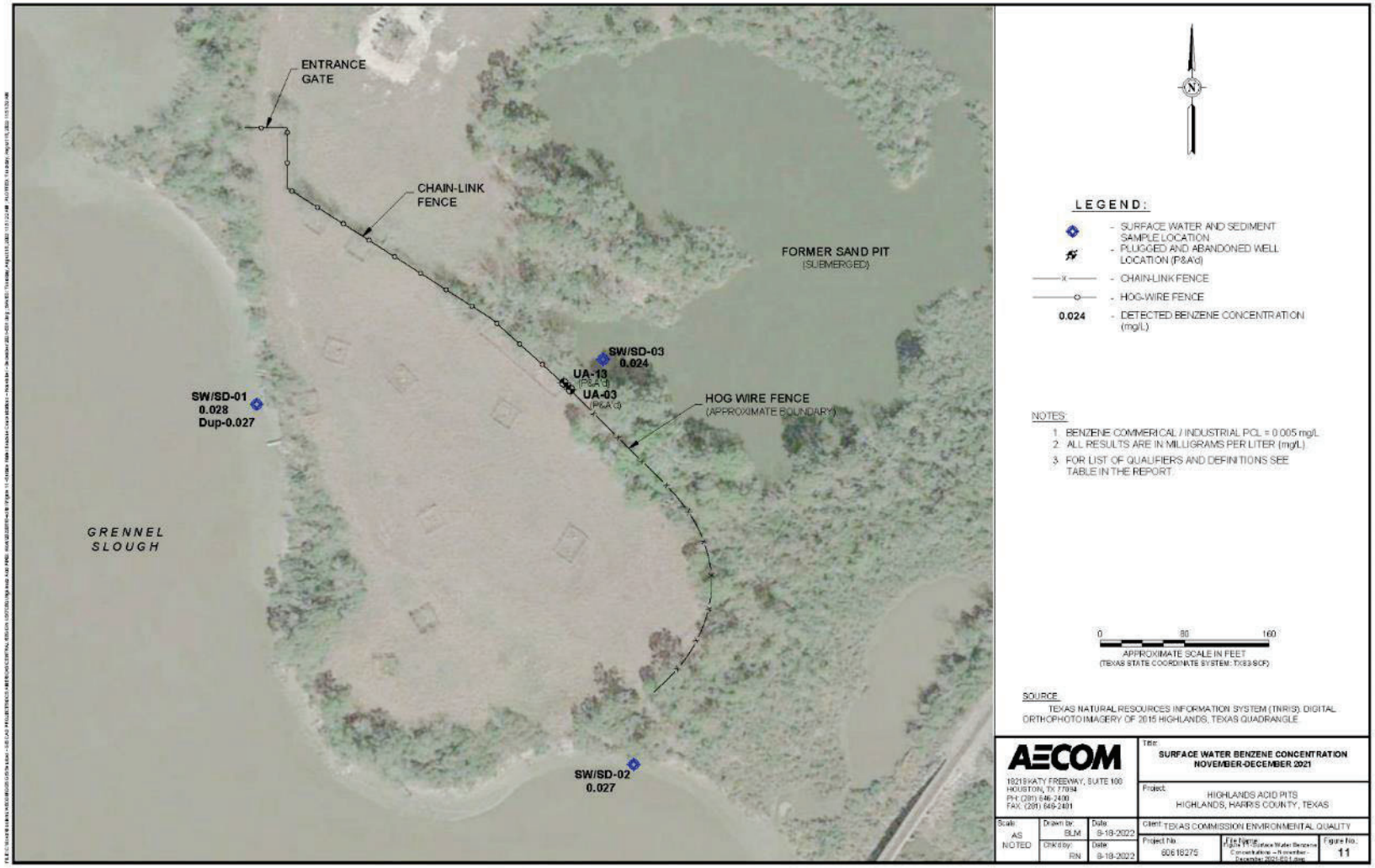


Table F-1: Upper Aquifer Groundwater Monitoring Results

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs* $^{GW}GW_{ING}$ mg/L	UA-06											
		HAPOM-UA-06 08/05/2011 1108225-05	HAPOM-UA-06-0 11/17/2011 1111650-05	HAP-UA06-070512-0 07/05/2012 1207231-03	HAP-UA06-112812-0 11/28/2012 12111017-20	HAP-UA06-061913-0 06/19/2013 1306861-01	HAP-UA06-NOV2013 02/19/2014 14021012-01	HAP-UA06-JUL2014 07/10/2014 14070538-12	HAP-UA06-080 11/13/2014 14110545-14	HAP-UA06-090 5/14/2015 15050876-14	HAP-UA06-100 12/17/2015 HS15120827-11	HAP-UA06-110 6/29/2016 HS16070019-16	HAP-UA06-120 11/30/2016 HS16120073-10
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	**0.5**	**0.93**	**0.11**	**1.0**	0.0088 UH*	**0.00093 J**	**0.0030**	<0.00020	**0.0002**	0.0016 UH-RB,FB	**0.0002 J**	**0.0050**
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	0.00013 UJ*	**0.00020 J**	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.0011 J**	**0.0022 J**	<0.00090	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	0.00028 UA*	**0.00081 J***	0.00011 U*	**0.0033 JL***	<0.000050	<0.000032	<0.00044 UJL*	<0.000026 UJL-HT*	<0.000035	<0.000035 U	<0.000035 U	<0.000035 UJL-MS/SD
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	**0.00062 J***	**0.00029 JL***	<0.00010	<0.000048	<0.0024 UJL*	<0.000040 UJL-HT*	<0.000030	<0.000030 U	<0.000030 UJL-MS/SD	**0.0042 JL-MS/SD**
METALS (mg/L)													
Arsenic	0.010	**0.00665**	**0.0136**	**0.00599**	**0.0226**	**0.0247**	**0.00362 J**	**0.0018**	**0.00385 J**	**0.0024 J**	**0.00442 J**	**0.0113 UH-RB**	**0.000811 J**
Barium	2.0	**0.052**	**0.0453**	**0.0510**	**0.0306**	**0.0493**	**0.1040**	**0.050**	**0.0775**	**0.160**	**0.140**	**0.113**	**0.0742**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	**0.00015 J**	<0.000800	<0.00080	<0.000200 U	**0.000202 J**	<0.000200 U
Chromium	0.10	**0.00137 J**	**0.00810**	**0.00192 J**	**0.0114**	**0.00191 J**	<0.0010	**0.00036 J**	<0.00100	<0.0010	0.000767 UH-MB,RB,CCB	**0.000954 UH-MB**	<0.000400 U
Lead	0.015	<0.00070	0.00344 U*	**0.00132 J**	**0.00493 J**	**0.00257 J**	**0.00305 J**	**0.00028 J**	<0.000700	**0.0014**	**0.00101 J**	**0.00136 J**	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	**0.000016 J**	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U
Selenium	0.050	**0.00905**	**0.00768**	**0.00396 J**	**0.0147**	0.00214 UH*	**0.00112 J**	<0.0011	<0.00100	0.0011	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	570	1,080	241	1,110	195	73	130	78.8	69.0	75.8	74.6	82.1
Total Dissolved Solids	NA	1,580	2,550	1,540	2,630	1,080	1,140	820	758	1,200	830	758	536

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs* $^{GW}GW_{ING}$ mg/L	UA-05											
		HAP-UA06-130 6/7/2017 HS17060588-17	HAP-UA06-140 12/21/2017 HS17121222-04	HAP-UA06-150 06/13/2018 HS18060737-03	HAP-UA06-160 12/19/2018 HS18121234-01	HAP-UA06-170 6/19/19 HS19061024-06	HAP-UA06-171 6/19/19 HS19061024-07	HAP-UA06-180 12/18/19 HS19121142-05	HAP-UA06-190 6/24/20 HS20061283-06	HAP-UA06-200 11/18/20 HS20110979-14	HAP-UA06-210 6/17/21 HS21061020-03	HAP-UA06-220 12/1/21 HS21120107-14	HAP-UA06-230 6/15/22 HS22060875-05
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	**0.00033 J**	**0.078**	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.0078**	<0.00020 U	< 0.00020 U	< 0.00020 U
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U
Xylenes, total	10	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS													
Phenol	7.3	**0.000038 JL-SUR**	**0.000094 JL-LCS**	<0.000035 UJL-SUR,LCS,MS/SD	<0.000035 U	<0.000035 U	<0.000035 U	<0.000035 U	<0.000036 U	<0.000035 UJL-LCS	<0.000035 U	< 0.000035 U	< 0.000035 U
Pyridine	0.024	<0.000031 U	<0.000030 UJL-LCS	<0.000030 UJL-LCS,MS/SD	<0.000030 U	<0.000030 U	<0.000030 U	<0.000030 U	<0.000031 U	<0.000030 UJL-LCS, MS/SD	<0.000030 U	< 0.000030 UJL-LCS, MS/SD	< 0.000030 U
METALS (mg/L)													
Arsenic	0.010	**0.00540**	**0.00160 J**	**0.0210**	**0.0111**	**0.0904**	**0.0249**	**0.00878**	**0.0964**	**0.025**	**0.0325**	**0.058**	**0.00820**
Barium	2.0	**0.0716**	**0.124**	**0.0737**	**0.0868**	**0.0754**	**0.0753**	**0.0793**	**0.165**	**0.087**	**0.0581** UH-RB	**0.0767**	**0.0522**
Cadmium	0.0050	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U
Chromium	0.10	**0.00702**	<0.000400 U	**0.00133 J**	<0.000400 U	**0.00136 J**	**0.001 J**	**0.00284 J**	**0.00307 J**	**0.00192** J	**0.0014** UH-RB	**0.00500**	**0.000644** J
Lead	0.015	**0.00152 J**	**0.000726 J**	**0.00714**	**0.00261**	**0.0079**	**0.0041**	**0.00125 J**	**0.0163**	**0.00299**	**0.00252**	**0.00681**	**0.000846** J
Mercury	0.0020	<0.0000300 U	0.0000300 UH-MB	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000310** J	< 0.0000300 U
Selenium	0.050	<0.0011 U	<0.00110 U	<0.00110 U	<0.00110 U	**0.00134 J**	<0.00110 U	<0.00110 U	**0.00447**	<0.00110 U	0.00118 J	< 0.00110 U	< 0.00110 U
Silver	0.12	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U
OTHER													
Sulfate	NA	86.5	69.7	91.5	80.3	82.8	81.1	73.4	75.1	**113**	**71.7**	**84.6**	**70.8**
Total Dissolved Solids	NA	664	534	576	488	590	560	496	438	**668**	**416**	**772**	**354**

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ING}$ mg/L	UA-10											
		HAPOM-UA-10 08/05/2011 1108225-06	HAPOM-UA-10-0 11/17/2011 1111650-11	HAPOM-UA-10-1 11/17/2011 1111650-12	HAP-UA10-070512-0 07/05/2012 1207231-11	HAP-UA10-070512-1 07/05/2012 1207231-12	HAP-UA10-112812-0 11/28/2012 12111017-14	HAP-UA10-061913-0 06/19/2013 1306861-12	HAP-UA10-NOV2013 02/19/2014 14021012-02	HAP-UA10-JUL2014 07/11/2014 14070538-19	HAP-UA10-080 11/14/2014 14110545-15	(DUP) HAP-UA10-081 11/14/2014 14110545-16	HAP-UA10-090 05/14/2015 15050676-22
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	9.9	1.2 J*	2.7 J*	2.3	2.8	5.0	4.8	0.61	6.1	3.1	2.9	0.00480
Ethylbenzene	0.70	<0.00010	<0.00050	<0.0010	<0.0015	<0.0015	<0.0015	<0.0015	<0.00030	<0.0030	<0.0030	<0.0030	<0.00030
Toluene	1.0	0.012 J	0.00083 J	0.0019 J	<0.0015	<0.0015	0.0056	0.0070	0.00037 J	0.0085 J	0.012	0.012	<0.00020
Xylenes, total	10	0.032 J	0.0051 J	0.011 J	0.0053 J	0.0079 J	0.011	0.012	0.0018	0.016	<0.0050	<0.0050	<0.00050
SEMI-VOLATILE ORGANIC COMPOUNDS													
Phenol	7.3	0.0026	0.0036 J*	0.0076 J*	0.015 J*	0.016 J*	0.0086 JL*	0.0073	0.0043	0.017 JL*	0.0025 JL-SUR, FD*	0.0055 JL-SUR, FD*	<0.000035 UJL-SUR,MS/SD
Pyridine	0.024	0.00075 J	0.00090 J*	0.0012 J*	0.21 J*	0.23 J*	0.0042 JL*	0.0076	0.037	0.29 JL*	0.038 JL-LCS, FD*	0.0097 JL-LCS, FD*	0.000044 JL-MS/SD
METALS (mg/L)													
Arsenic	0.010	0.0372 J	0.0142	0.0143	0.0130	0.0129	0.0427	0.0301	0.0208	0.0050	0.0639	0.0624	0.027
Barium	2.0	0.0443 J	0.0574	0.0537	0.0558	0.0540	0.0424	0.0706	0.0593	0.050	0.0730	0.0665	0.089
Cadmium	0.0050	<0.0080	<0.00080	<0.00080	<0.00080	<0.00080	0.00206	0.00177 J	<0.0015	0.00037 J	<0.00800	<0.00800	<0.00080
Chromium	0.10	0.180	0.0552	0.0544	0.0458	0.0463	0.183	0.175	0.081	0.106	0.276	0.273	0.021
Lead	0.015	0.0102 J	0.00283 U*	0.00218 U*	0.00181 J	0.00163 J	0.00345 J	0.00398 J	0.002 UH-MB*	0.0031	<0.00700	<0.00700	0.051
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	0.000053 J	<0.0000400	<0.0000400	0.00009 J
Selenium	0.050	0.0795	0.0146	0.0153	0.0138	0.0131	0.0582	0.0291	0.0467	0.0076	0.171	0.164	0.0043 J
Silver	0.12	<0.0080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.0016	<0.0018	<0.000056	<0.00800	<0.00800	<0.00080
OTHER													
Sulfate	NA	6,500	2,740	314	1,660	--	7,940	6,230	1,920	8,500	12,000	12,600	28
Total Dissolved Solids	NA	12,200	7,300	9,280	6,400	--	13,800	13,900	4,940	16,000	15,600	16,400	410

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ING}$ mg/L	UA-10											
		HAP-UA10-100 12/17/2015 HS15120827-12	HAP-UA10-110 6/30/2016 HS16070019-17	HAP-UA10-120 11/30/2016 HS16120073-11	HAP-UA10-130 5/7/2017 HS17060588-18	HAP-UA10-140 12/21/2017 HS17121222-05	HAP-UA10-150 06/13/2018 HS18060737-04	HAP-UA10-160 12/19/2018 HS18121234-02	HAP-UA10-161 12/19/2018 HS18121234-03	HAP-UA10-170 6/19/19 HS19061024-08	HAP-UA10-180 12/18/19 HS19121142-06	(DUP) HAP-UA10-181 12/18/19 HS19121142-07	HAP-UA10-190 6/24/20 HS20061381-01
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	2.4	0.076	0.11	0.55	0.15	2.3	2.1	2.4	4.3	7.7	4.7	6.6
Ethylbenzene	0.70	<0.0030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.0015 U	<0.0075 U	<0.0075 U	<0.0015 U	<0.0030 U	<0.0030 U	<0.0030 U
Toluene	1.0	0.013	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.0010 U	<0.0050 U	<0.0050 U	<0.0010 U	0.02	0.012	0.02
Xylenes, total	10	0.027 J	<0.00050 U	<0.00030 U	0.00066 J	<0.00030 U	<0.0015 U	<0.0075 U	<0.0075 U	0.0066	0.033	0.021	0.038
SEMI-VOLATILE ORGANIC COMPOUNDS													
Phenol	7.3	0.00028	<0.000035 U	<0.000035 UJL-MS/SD	<0.000035 UJL-SUR	<0.000035 UJL-LCS	0.00061 JL-SUR,MS/SD	0.0078	0.0023	0.0098	0.014	0.01	0.0098
Pyridine	0.024	0.020	<0.000030 UJL-MS/SD	0.025 JL-MS/SD	0.0057 JL-SUR,MS/SD	0.0031 JL-LCS	0.049 JL-LCS,MS/SD	0.022	0.029	0.0031	0.03	0.025	0.0026
METALS (mg/L)													
Arsenic	0.010	0.0339	0.00941 UH-MB,RB	0.00734	0.00815	0.00603	0.0120	0.0347	0.0348	0.026	0.0975	0.111	0.128
Barium	2.0	0.0603	0.0989	0.0808	0.0805	0.110	0.128	0.0544	0.101	0.063	0.105	0.205	0.268
Cadmium	0.0050	0.00201 J	0.000342 J	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	0.0016 J	0.00164 J	0.000595 J	0.00298	0.00401	0.00363
Chromium	0.10	0.243	0.0195	0.0161	0.0214	0.00969	0.0276	0.192	0.235	0.13	0.355	0.474	0.457
Lead	0.015	<0.00600 U	0.0169	0.00785	0.0105	0.00871	0.0122	0.0077	0.0169	0.00641	0.0465	0.106	0.0972
Mercury	0.0020	<0.0000400 U	0.000046 J	<0.0000300 U	<0.0000300 U	0.0000530 UH-MB	0.0000360 UH-MB	0.000041 J	0.000084 J	<0.0000300 U	0.000048 J	0.000069 J	<0.0000300 U
Selenium	0.050	0.0535	0.0022 J	0.00682 UH-CCB	0.00432 J	0.0126	0.00892	0.0452	0.0332	0.0194	0.163	0.132	0.147
Silver	0.12	<0.00100 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	0.000542 J	0.00123 J	0.00141 J
OTHER													
Sulfate	NA	6140	53.8	1290	282	351	1110	5330	5120	4830	8550	6170	8610
Total Dissolved Solids	NA	10200	528	2490	986	1020	2700	8370	7980	9430	15300	11000	14700

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs* $^{GW}GW_{ING}$ mg/L	UA-10										UA-11					
		HAP-UA10-200 11/18/20 HS20110979-17		(DUP) HAP-UA10-200 11/18/20 HS20110979-15		HAP-UA10-210 6/17/21 HS21061020-04		HAP-UA10-220 12/1/21 HS21120188-01		HAP-UA10-230 6/15/22 HS22060875-06		HAPOM-UA-11 08/05/2011 1108225-07	HAPOM-UA-11-0 11/17/2011 1111650-13	HAP-UA11-070612-0 07/06/2012 1207230-07	HAP-UA11-112912-0 11/29/2012 12111017-15	(DUP) HAP-UA11-112912-1 11/29/2012 12111017-16	HAP-UA11-062013-0 06/20/2013 1306861-23
ANALYTE																	
VOLATILE ORGANIC COMPOUNDS (mg/L)																	
Benzene	0.005	17		13		0.05		0.11		1.9		91	64	46	48	55	48
Ethylbenzene	0.70	<0.0030	U	0.0059	J	<0.00030	U	< 0.00030	U	< 0.00030	U	<0.00010	<0.010	<0.030	<0.030	<0.030	<0.015
Toluene	1.0	0.031	JI-FD	0.022	JI-FD	<0.00020	U	< 0.00020	U	0.00035	J	0.15 J	0.11	0.069 J	0.073 J	0.084 J	0.080
Xylenes, total	10	0.05		0.052		<0.00030	U	< 0.00030	U	0.0036		0.76 J	0.52	0.33	0.39	0.42	0.430
SEMI-VOLATILE ORGANIC COMPOUNDS																	
Phenol	7.3	0.025	JL-LCS,FD	0.017	JL-LCS,FD	<0.000035	U	< 0.000035	U	0.00025		0.027	0.22 J*	0.31 J*	0.17 JL*	0.24 JL*	0.39 JL*
Pyridine	0.024	0.022	JL-LCS, MS/SD,FD	0.015	JL-LCS, MS/SD,FD	<0.000030	U	0.0054	JL-LCS	< 0.000030	U	0.047 J*	0.023 J*	1.6 J*	0.022 JL*	0.034 JL*	0.53
METALS (mg/L)																	
Arsenic	0.010	0.164	JI-FD	0.116	JI-FD	0.00863	UH-RB	0.0144		0.0104		0.242	0.146	0.151	0.188	0.217	0.223
Barium	2.0	0.27	JI-FD	0.177	JI-FD	0.0922	UH-RB	0.0841		0.0791		0.0323 J	0.0573	0.0257	0.0264	0.0271	0.0290 J
Cadmium	0.0050	0.0057	JI-FD	0.00356		<0.000200	U	< 0.000200	U	< 0.000200	U	0.0168 J	0.0122	0.0141	0.0171	0.0194	0.0168 J
Chromium	0.10	0.726		0.552		0.00668		0.00773		0.0104		0.913	0.718	0.825	0.772	0.833	0.925
Lead	0.015	0.102	JI-FD	0.0597	JI-FD	0.00816		0.00359		0.00236		0.0711	0.0708	0.0580	0.0799	0.0960	0.0510
Mercury	0.0020	<0.0000300	U	<0.0000300	U	<0.0000300	U	0.0000350	J	< 0.0000300	U	<0.000042	0.0000580 J	0.0000440 J	0.0000710 J	0.0000720 J	0.0000640 J
Selenium	0.050	0.186		0.16		0.00144	J	0.00308		0.00445		0.129	0.0350	0.0550	0.0610	0.0694	0.0697
Silver	0.12	0.0013	J	0.000761	J	<0.000200	U	< 0.000200	U	< 0.000200	U	<0.0080	<0.00080	<0.0016	<0.00080	<0.00080	<0.0080
OTHER																	
Sulfate	NA	15700	JI-FD	11100	JI-FD	118		400		626		17,700	25,000	14,700	18,900	19,700	9,660
Total Dissolved Solids	NA	31300		24100		574		1410		2020		31,700	39,900	33,500	26,500	35,100	25,700

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs* $^{GW}GW_{ING}$ mg/L	UA-11													
		HAP-UA11-NOV2013 02/20/2014 14021012-17	HAP-UA11-JUL2014 07/11/2014 14070538-20	HAP-UA11-080 11/14/2014 14110545-17	HAP-UA11-090 5/14/2015 15050676-19	(DUP) HAP-UA11-091 5/14/2015 15050676-19	HAP-UA11-100 12/18/2015 HS15120626-05	HAP-UA11-110 6/30/2016 HS16070019-23	HAP-UA11-120 12/1/2016 HS16120073-15	(DUP) HAP-UA11-121 12/1/2016 HS16120073-16	HAP-UA11-130 6/8/2017 HS17060588-22	HAP-UA11-140 12/21/2017 HS17121222-09	HAP-UA11-150 06/14/2018 HS18060737-08	(DUP) HAP-UA11-151 06/14/2018 HS18060737-09
ANALYTE															
VOLATILE ORGANIC COMPOUNDS (mg/L)															
Benzene	0.005	50	46	26	2.2	2.2	34	41	4.4 JI-FD	11 JI-FD	5.4	24	49 JI-FD	13 JI-FD	
Ethylbenzene	0.70	<0.015	<0.015	<0.015	<0.0030	<0.0030	<0.0030 U	<0.030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.30 U	<0.030 U	
Toluene	1.0	0.090	0.075	0.051	<0.0020	<0.0020	0.082	0.058 J	0.0064 JI-FD	0.017 JI-FD	0.012	0.052	<0.20 U	0.031 J	
Xylenes, total	10	0.470	0.41	<0.025	<0.0050	<0.0050	0.48	0.22 J	0.037 JI-FD	0.11 JI-FD	0.067	0.34	0.64 J	0.18	
SEMI-VOLATILE ORGANIC COMPOUNDS															
Phenol	7.3	<0.000032	0.093 JL*	0.033 JL-MS/SD*	0.0055 JL-SUR,MS/SD,FD	0.0031 JL-SUR,MS/SD,FD	0.018	0.18 JL-LCS,MS/SD	0.0045 JL-MS/SD,FD	0.038 JL-MS/SD,FD	0.035 JL-SUR	0.022 JL-LCS	0.18 JL-MS/SD,FD	0.073 JL-MS/SD,FD	
Pyridine	0.024	0.066	1.1 JL*	0.12 JL-LCS, MS/SD*	0.018 JL-MS/SD,FD	0.34 JL-MS/SD,FD	0.080	0.18 JL-LCS,MS/SD	0.028 JL-MS/SD	0.032 JL-MS/SD	0.0058	0.0093 JL-LCS	0.16 JL-LCS, MS/SD	0.12 JL-MS/SD,FD	
METALS (mg/L)															
Arsenic	0.010	0.188	0.073	0.0846	0.011 JI-FD	0.022 JI-FD	0.102	0.156	0.0104 JI-FD	0.0320 JI-FD	0.0389	0.0334	0.721 JI-FD	0.253 JI-FD	
Barium	2.0	0.0238	0.024	0.0602	0.081 JI-FD	0.12 JI-FD	0.0399	0.158	0.0399	0.0404	0.132	0.0246	0.426 JI-FD	1.13 JI-FD	
Cadmium	0.0050	0.015	0.0087	<0.00800	<0.00080	0.0019 J	0.0124	0.0189	0.000665 JI-FD	0.00300 JI-FD	0.00445	0.00318	0.0635 JI-FD	0.0230 JI-FD	
Chromium	0.10	0.786	0.427	0.280	0.015 JI-FD	0.054 JI-FD	0.392	0.410	0.0112 JI-FD	0.0371 JI-FD	0.033	0.143	0.469 JI-FD	0.159 JI-FD	
Lead	0.015	0.0437	0.038	0.0134 J	0.0015	0.0076 JI-FD	0.0316 J	0.0788	0.00273 JI-FD	0.0186 JI-FD	0.0261	0.0101	0.306 JI-FD	0.139 JI-FD	
Mercury	0.0020	<0.000040	0.00012 J	<0.000040	<0.000040	<0.000040	<0.0000400 U	0.000046 J	<0.0000300 U	<0.0000300 U	<0.000030 U	0.0000410 UH-MB	0.0000540 UH-MB	0.0000450 UH-MB	
Selenium	0.050	0.1030	0.0054	0.0528	0.0036 JI-FD	0.0068	0.0455 J	0.0194	0.00374 UH-CCB,RB	0.00539 UH-CCB,RB	0.00425 J	0.0566	0.0413 JI-FD	0.0118 JI-FD	
Silver	0.12	<0.0016	<0.000056	<0.00800	<0.00080	<0.00080	<0.00100 U	<0.00100 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000400 U	<0.000200 U	
OTHER															
Sulfate	NA	15,500	14,900	13,600	270	1000	8740	11900	1430 JI-FD	2700 JI-FD	799	1140	10400 JI-FD	2810 JI-FD	
Total Dissolved Solids	NA	30,700	29,100	15,100	1500	3900	16800	24600	1590 JI-FD	3200 JI-FD	2130	2360	20100 JI-FD	5580 JI-FD	

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs* GW_{ING} mg/L	UA-11																UA-12
		HAP-UA11-160 12/20/2018 HS18121234-06	HAP-UA11-165 12/20/2018 HS18121234-07	HAP-UA11-170 6/19/19 HS19061132-01	HAP-UA11-180 12/18/19 HS19121142-09	HAP-UA11-191 6/24/20 HS20061381-04	(DUP) HAP-UA11-190 6/24/20 HS20061381-03	HAP-UA11-200 11/19/20 HS20111046-01	HAP-UA11-210 6/17/21 HS21061020-06	(DUP) HAP-UA11-211 6/17/21 HS21061020-07	HAP-UA11-220 12/1/21 HS21120188-03	HAP-UA11-230 6/15/22 HS22060875-08	HAPOM-UA-12 08/05/2011 1108225-08
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	6	0.0006 J	9	14	21	12	43	0.34 JI-FD	1.4 JI-FD	0.55	2.9	60
Ethylbenzene	0.70	<0.0075 U	<0.00030 U	0.0009 J	<0.0030 U	<0.015 U	<0.0030 U	<0.015 U	<0.00030 U	<0.00030 U	< 0.00030 U	0.00035 J	<0.00010
Toluene	1.0	0.03	<0.00020 U	0.026	0.029	0.042 J	0.035	0.081	<0.00020 UJI-FD	0.0011 JI-FD	< 0.00020 U	0.0012	0.12 J
Xylenes, total	10	0.14	<0.00030 U	0.097	0.16	0.22	0.21	0.38	0.0018 JI-FD	0.02 JI-FD	0.0022	0.0031	0.53 J
SEMI-VOLATILE ORGANIC COMPOUNDS													
Phenol	7.3	0.16	<0.000035 U	0.11	0.062	0.089	0.033	0.15	0.00056 JI-FD	0.0047 JI-FD	0.0015	0.00067	0.032
Pyridine	0.024	0.8	<0.000030 U	<0.000030 U	0.17	0.0034	0.1	0.073	0.0024 JI-FD	0.0088 JI-FD	0.0062 JL-LCS	< 0.000030 U	0.032
METALS (mg/L)													
Arsenic	0.010	0.163	<0.000400 U	0.0298	0.348	0.692	0.693	0.416	0.0117 UH-RB	0.0143 UH-RB	0.00752	0.00595	0.0597
Barium	2.0	0.172	<0.00190 U	0.0554	0.603	0.507	0.58	0.41	0.115 UH-RB,FD	0.174 UH-RB,FD	0.0682	0.0417	0.0259 J
Cadmium	0.0050	0.0182	<0.000200 U	0.00618	0.0459	0.0772	0.0894	0.0452	0.000632 JI-FD	0.00184 JI-FD	< 0.000200 U	< 0.000200 U	<0.0080
Chromium	0.10	0.367	<0.000400 U	0.0572	0.284	0.349	0.328	0.555	0.00813 JI-FD	0.0198 JI-FD	0.00359 J	0.0114	0.264
Lead	0.015	0.0655	<0.000500 U	0.0137	0.26	0.404	0.407	0.27	0.0027 JI-FD	0.00557 JI-FD	0.000822 J	0.000643 J	<0.0070
Mercury	0.0020	0.000055 J	<0.0000300 U	<0.0000300 U	0.000081 J	<0.0000300 U	0.000037 J	0.000058 JL-MS	0.00006 UH-CCB	<0.0000300 U	0.0000310 J	< 0.0000300 U	<0.000042
Selenium	0.050	0.0352	<0.00110 U	0.00304	0.0643	0.058	0.0582	0.107	<0.00110 U	0.00151 J	0.00111 J	0.00192 J	0.0642
Silver	0.12	<0.000200 U	<0.000200 U	<0.000200 U	0.00035 J	0.000253 J	0.000358 J	0.000659 J	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	<0.0080
OTHER													
Sulfate	NA	9790	0.363 J	922	4250	5990	5360	9740	100	76.4	906	632	5,300
Total Dissolved Solids	NA	15300	12	2640	8140	10800	10100	19200	362	3540	346	1440	12,200

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs* GW_{ING} mg/L	UA-12											
		HAPOM-UA-12-0 11/17/2011 1111650-10	HAP-UA12-070612-0 07/06/2012 1207230-03	HAP-UA12-112912-0 11/29/2012 12111017-17	HAP-UA12-062013-0 06/20/2013 1306861-20	(DUP) HAP-UA12-062013-1 06/20/2013 1306861-21	HAP-UA12-NOV2013 02/20/2014 14021012-18	HAP-UA12-JUL2014 07/11/2014 14070538-21	HAP-UA12-080 11/14/2014 14110545-18	HAP-UA12-090 5/14/2015 15050676-18	HAP-UA12-100 12/18/2015 HS15120626-03	HAP-UA12-110 6/30/2016 HS16070019-22	HAP-UA12-120 12/1/2016 HS16120073-14
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	40	67	35	86	97	79	62	79	6.7	79	87	12
Ethylbenzene	0.70	<0.0050	<0.030	<0.030	<0.030	<0.015	<0.030	<0.015	<0.015	<0.0030	<0.0030 U	<0.030 U	<0.0030 U
Toluene	1.0	0.081	0.13	0.052 J	0.150	0.130	0.120	0.10	0.13	0.0079 J	0.21	0.087 J	0.016
Xylenes, total	10	0.40	0.55	0.28	0.720	0.640	0.490	0.42	0.51	0.072	1.1	0.31	0.11
SEMI-VOLATILE ORGANIC COMPOUNDS													
Phenol	7.3	0.29 J*	0.47 J*	0.13 JL*	0.46	0.50	<0.000032	0.13 JL*	0.078 JL-MS/SD*	0.0058 JL-SUR,MS/SD	0.029	0.025 JL-LCS,MS/SD	0.019 JL-MS/SD
Pyridine	0.024	0.028 J*	3.1 J*	0.041 JL*	0.17 JI*	0.36 JI*	0.082	1.4 JL*	0.16 JL-LCS, MS/SD*	0.15 JL-MS/SD	0.062 JI-FD	0.051 JL-LCS,MS/SD	0.17 JL-MS/SD
METALS (mg/L)													
Arsenic	0.010	0.0507	0.0393	0.0287	0.0857	0.0777	0.0536	0.018	0.0605	0.041	0.150	0.112	0.0279
Barium	2.0	0.0391	0.0212	0.0396	0.0218	0.0209	0.0234	0.017	0.0210 J	0.065	0.0314	0.0271	0.0549
Cadmium	0.0050	0.00319	<0.00080	0.00129 J	0.00347 J	0.00336 J	0.00181 J	0.0022	<0.00800	<0.00080	0.00847 J	0.00775	0.000503 J
Chromium	0.10	0.228	0.267	0.164	0.445	0.411	0.352	0.312	0.346	0.018	0.450	0.351	0.0369
Lead	0.015	0.00497 J	0.00277 J	0.00137 J	0.00800 J	0.00737 J	0.00234 UH-MB*	0.00560	<0.00700	0.0037	0.0297 J	0.0308	0.00399 J
Mercury	0.0020	<0.000042	0.0000470 J	<0.000042	<0.000042	<0.000042	<0.000040	0.000039 J	0.0000500 J	<0.000040	0.000053 J	<0.0000400 U	<0.0000300 U
Selenium	0.050	0.0173	0.0234	0.0284	0.0295	0.0291	0.0686	0.0069	0.103	0.0062	0.0539	0.0184	0.00559 UH-CCB,RB
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.0016	<0.0016	<0.0016	<0.000056	<0.00800	<0.00080	<0.00100 U	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	6,500	6,420	5,190	10,800	10,600	8,930	12,300	12,700	420	9590	10200	580
Total Dissolved Solids	NA	13,500	12,000	9,210	19,800	20,000	17,400	19,400	14,900	2200	18900	20700	2250

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ING}$ mg/L	UA-12																UA-12	
		HAP-UA12-130 6/7/2017 HS17060588-21	HAP-UA12-140 12/21/2017 HS17121222-07	(DUP) HAP-UA12-141 12/21/2017 HS17121222-08	HAP-UA12-150 06/14/2018 HS18060737-08	HAP-UA12-160 12/202018 HS18121234-05	HAP-UA12-170 6/19/19 HS19061132-02	HAP-UA12-180 12/18/19 HS19121142-10	HAP-UA12-190 6/24/20 HS20061361-05	HAP-UA12-200 11/19/20 HS20111046-02	HAP-UA12-210 6/17/21 HS21061020-08	HAP-UA12-220 12/2/21 HS21120188-04		DUP HAP-UA12-221 12/2/21 HS21120188-05		HAP-UA12-230 6/15/22 HS22060875-09	
ANALYTE																			
VOLATILE ORGANIC COMPOUNDS (mg/L)																			
Benzene	0.005	54	16	13	55	69	30	39	6.7		57		8.2		8.8	JI-FD	12	JI-FD	23	
Ethylbenzene	0.70	<0.015 U	<0.015 U	<0.0030 U	<0.30 U	<0.030 U	<0.015 U	<0.030 U	<0.0030 U		<0.015 U		<0.0030 U		< 0.0015 U		< 0.0015 U		0.0011	
Toluene	1.0	0.11	0.027 J	0.023	<0.20 U	0.14	<0.010 U	0.092 J	0.015		0.11		0.044		0.013	JI-FD	0.019	JI-FD	0.037	
Xylenes, total	10	0.51	0.19	0.17	0.71 J	0.62	0.31	0.48	0.07		0.53		0.29		0.086	JI-FD	0.12	JI-FD	0.22	
SEMI-VOLATILE ORGANIC COMPOUNDS																			
Phenol	7.3	0.34	0.052 JL-LCS,FD	0.038 JL-LCS,FD	0.54 JL-MS/SD	0.39	0.89	0.25	0.059		0.18		0.12		0.024	JI-FD	0.033	JI-FD	< 0.000035	U
Pyridine	0.024	0.11 JL-MS/SD	0.13 JL-LCS,FD	0.031 JL-LCS,FD	0.42 JL-LCS,MS/SD	1.2	<0.000030 U	0.29	0.0045		0.071		0.032		0.075	JL-LCS	0.066	JL-LCS	< 0.000030	U
METALS (mg/L)																			
Arsenic	0.010	0.0475	0.0138	0.0159	0.255	0.111	0.204	0.329	0.13		1.75		0.0215		0.0176		0.0153		0.0139	
Barium	2.0	0.0250	0.0278	0.0281	0.0372	0.0274	0.0326	0.0751	1.17		0.479		0.0782	UH-RB	0.0293		0.0235		0.0252	
Cadmium	0.0050	0.000753 J	0.000287 J	0.000263 J	0.00426	0.00905	0.0071 J	0.00396	0.0143		0.0325		0.00158 J		< 0.000200	U	0.000231	J	< 0.000200	U
Chromium	0.10	0.243	0.0393	0.0396	0.232	0.386	0.36	0.162	0.0882		0.489		0.139		0.0344		0.0435		0.0505	
Lead	0.015	0.00375 J	0.00214	0.00241	0.0614	0.0208	0.0549	0.077	0.112		0.489		0.00322		0.00116	J	0.00144	J	< 0.000600	U
Mercury	0.0020	<0.0000300 U	0.0000470 UH-MB	0.0000360 UH-MB	0.0000580 UH-MB	<0.0000300 U	<0.0000300 U	0.000057 J	<0.0000300 U		0.000032	JL-MS	0.000062	UH-CCB	0.0000770	J	0.0000440	J	< 0.0000300	U
Selenium	0.050	0.0434	0.0281	0.0273	0.0242	0.0392	0.0235	0.0478	0.0159		0.0738		0.0173		0.00770		0.00925		0.0085	
Silver	0.12	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.00100 U	<0.000200 U	<0.000200 U		0.0005 J		<0.000200 U		< 0.000200 U		< 0.000200 U		< 0.000200 U	
OTHER																			
Sulfate	NA	6180	1270	1270	6580	10500	2380	4620	1710		7080		4150		1370		1620		2050	
Total Dissolved Solids	NA	12000	2700	2700	12100	18700	18300	8660	4940		14400		3920		2680		3150		4050	

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ING}$ mg/L	UA-14									
		HAPOM-UA-14 08/05/2011 1108225-09	(DUP) HAPOM-DUP 08/05/2011 1108225-12	HAPOM-UA-14-0 11/17/2011 1111650-08	HAP-UA14-070612-0 07/06/2012 1207230-05	HAP-UA14-070612-1 07/06/2012 1207230-06	HAP-UA14-112912-0 11/28/2012 12111017-18	HAP-UA14-062013-0 06/20/2013 1306861-19	HAP-UA14-NOV2013 02/20/2014 14021012-19	(DUP) HAP-UA14-NOV2013-1 02/20/2014 14021012-20	HAP-UA14-JUL2014 07/11/2014 14070538-22
ANALYTE											
VOLATILE ORGANIC COMPOUNDS (mg/L)											
Benzene	0.005	22	21	28	18	19	48	30	5	5	7.0
Ethylbenzene	0.70	0.00080 J	0.0011	<0.0050	<0.0075	<0.0075	<0.0075	<0.015	<0.0030	<0.0030	0.00040 J
Toluene	1.0	0.010	0.011	0.035 J	0.011 J	0.011 J	0.049	0.050	0.0035 J	0.0035 J	0.0061
Xylenes, total	10	0.013	0.018	0.11 J	0.052 J	0.053 J	0.22	0.220	0.037	0.035	0.044
SEMI-VOLATILE ORGANIC COMPOUNDS											
Phenol	7.3	0.015	0.015	0.093 J*	0.057 J*	0.074 J*	0.19 JL*	0.11	<0.000032 UJL-SUR	<0.000032	0.043 JL*
Pyridine	0.024	0.0018 J*	0.0021 J	0.0033 UJ*	0.59 J*	0.55 J*	0.012 JL*	0.028	0.029 JI-FD	0.12 JI-FD*	0.27 JL*
METALS (mg/L)											
Arsenic	0.010	0.0056	0.005078	0.00721	0.00519	0.00535	0.0154	0.0118	0.00399 J	0.00418 J	0.0021
Barium	2.0	0.0458	0.0414	0.0304	0.0776	0.0826	0.0303	0.158	0.174	0.171	0.194
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009
Chromium	0.10	0.0214	0.0204	0.0543	0.0299	0.0347	0.0913	0.114	0.00863	0.00995	0.012
Lead	0.015	<0.00070	<0.00070	0.000776 U*	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000040	<0.000012
Selenium	0.050	0.00465 J	0.00450 J	0.00511	0.00408 U*	0.00325 U*	0.00992	0.00638	0.00118 J	0.00252 J	<0.0011
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056
OTHER											
Sulfate	NA	836	--	2,040	677	--	2,560	3,160	354	290	394
Total Dissolved Solids	NA	2,040	--	4,030	2,010	--	4,900	4,280	2,520	2,380	2,530

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ING}$ mg/L	UA-14												
		HAP-UA14-080 11/14/2014 14110545-19	HAP-UA14-090 5/14/2015 15050876-17	HAP-UA14-100 12/18/2015 HS15120826-02	HAP-UA14-110 6/30/2016 HS16070019-18	(DUP) HAP-UA14-111 6/30/2016 HS16070019-19	HAP-UA14-120 12/1/2016 HS16120073-12	HAP-UA14-130 6/7/2017 HS17060588-19	(DUP) HAP-UA14-131 6/7/2017 HS17060588-20	HAP-UA14-140 12/21/2017 HS17121222-06	HAP-UA14-150 06/13/2018 HS18060737-05	HAP-UA14-160 12/20/2018 HS18121234-04	HAP-UA14-170 6/19/19 HS19061132-03	HAP-UA14-180 12/18/19 HS19121142-11
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	**4.2**	**2.5**	**5.0**	**0.15 JI-FD**	**0.31 JI-FD**	**18**	**0.68**	**0.88**	**0.96**	**16**	**0.79**	**1.8**	**15**
Ethylbenzene	0.70	<0.0015	<0.0030	<0.0030 U	<0.00030 U	<0.00030 U	<0.0030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.030 U	<0.00030 U	<0.00030 U	<0.0030 U
Toluene	1.0	**0.0099**	**<0.0020**	**0.0095 J**	<0.00020 U	<0.00020 U	**0.032**	<0.00020 U	<0.00020 U	<0.00020 U	**0.040 J**	**0.0014**	**0.0033**	**0.035**
Xylenes, total	10	**0.065**	**0.0058 J**	**0.049**	<0.00050 U	<0.00050 U	**0.15**	**0.0011**	**0.00075 J**	<0.00030 U	**0.17**	**0.0018**	**0.023**	**0.17**
SEMI-VOLATILE ORGANIC COMPOUNDS														
Phenol	7.3	**0.036 JL-SUR, MS/SD***	**0.0092 JL-SUR,MS/SD**	**0.013**	<0.000035 JI-FD	**0.00065 JI-FD**	**0.022 JL-MS/SD**	**0.0095 JL-SUR,FD**	**0.0046 JL-SUR,FD**	**0.0010 JL-LCS**	**0.18 JL-MS/SD**	**0.0034**	**0.027**	**0.2**
Pyridine	0.024	**0.13 JL-LCS,MS/SD***	**0.0055 JL-MS/SD**	**0.0015**	<0.000030 UJL-MS/SD,FD	**0.00026 JL-MS/SD,FD**	**0.13 JL-MS/SD**	<0.000030 UJL-MS/SD,FD	**0.00040 JL-MS/SD, FD**	**0.016 JL-LCS**	**0.30 JL-LCS,MS/SD**	**0.0054**	<0.000030 U	**0.039**
METALS (mg/L)														
Arsenic	0.010	**0.00278 J**	**0.016**	**0.00324 J**	**0.00782 UH-MB,RB,FD**	**0.00506 UH-MB,RB,FD**	**0.203**	**0.00443 J**	**0.00497 J**	**0.00362**	**0.180**	**0.00544**	**0.0167**	**0.257**
Barium	2.0	**0.144**	**0.19**	**0.274**	**0.186 JI-FD**	**0.13 JI-FD**	**0.766**	**0.120**	**0.147**	**0.0892**	**0.187**	**0.152**	**0.149**	**0.304**
Cadmium	0.0050	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	**0.0107**	**0.000213 J**	**0.000232 J**	<0.000200 U	**0.0120**	<0.000200 U	**0.000981 J**	**0.0134**
Chromium	0.10	**0.00608**	**0.0057**	**0.00820**	**0.0041 JI-FD**	**0.00308 JI-FD**	**0.421**	**0.00341 J**	**0.00400 J**	**0.00227 J**	**0.480**	**0.00243 J**	**0.0508**	**0.407**
Lead	0.015	<0.000700	**0.002 J**	<0.000600 U	**0.000952 J**	**0.000815 J**	**0.0242 J**	<0.00060 U	<0.00060 U	<0.000600 U	**0.0113**	**0.00226**	**0.00181 J**	**0.0357**
Mercury	0.0020	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000400 U	**0.000168 J**	<0.000030 U	<0.000030 U	0.0000300 UH-MB	0.0000490 UH-MB	<0.0000300 U	<0.0000300 U	**0.000148 J**
Selenium	0.050	**0.00141 J**	0.0011	**0.0019 J**	<0.00110 U	<0.00110 U	**0.0223**	<0.0011 U	<0.0011 U	**0.00134 J**	**0.0352**	<0.00110 U	**0.0024**	**0.0779**
Silver	0.12	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.00020 U	<0.000200 U	<0.000400 U	<0.000200 U	<0.000200 U	<0.000200 U
OTHER														
Sulfate	NA	419	88	550	157	138	142	173	175	193	9290	129	794	7160
Total Dissolved Solids	NA	2,060	730	2140	1770	1600	15700	1750	1800	1130	16200	1070	2380	12400

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ING}$ mg/L	UA-14												UA-15				
		HAP-UA14-190 6/25/20 HS20081381-06		HAP-UA14-200 11/19/20 HS20111046-03		HAP-UA14-210 6/17/21 HS21061095-01		HAP-UA14-220 12/2/21 HS21120188-06		HAP-UA14-220 6/15/22 HS22060875-10		DUP HAP-UA14-210 6/15/22 HS22060933-01		HAPOM-UA-15 08/05/2011 1108225-10	HAPOM-UA-15-0 11/17/2011 1111650-07	HAP-UA15-070512-0 07/05/2012 1207231-05	HAP-UA15-112812-0 11/28/2012 12111017-19	HAP-UA15-061913-0 06/19/2013 1306861-05
ANALYTE																		
VOLATILE ORGANIC COMPOUNDS (mg/L)																		
Benzene	0.005	**0.54**		**39**		**2.3**		**1.2**		**0.14**	JI-FD	**0.0038**	JI-FD	**0.54**	**1.0**	**0.97**	**0.41**	**0.250**
Ethylbenzene	0.70	<0.00030	U	<0.015	U	<0.0030	U	< 0.00030	U	< 0.00030	U	< 0.00030	U	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030
Toluene	1.0	**0.00062**	**J**	**0.068**		**0.0059**	J	**0.0015**		**0.00030**	J	< 0.00020	U	0.00010 UJ*	<0.00010	<0.00030	<0.00030	<0.00020
Xylenes, total	10	**0.0039**		**0.32**		**0.021**		**0.011**		**0.0027**	JI-FD	**0.00066**	JI-FD	**0.00023 J**	<0.00030	<0.00090	<0.00030	<0.00050
SEMI-VOLATILE ORGANIC COMPOUNDS																		
Phenol	7.3	**0.00096**		**0.17**		**0.030**	JL-SUR	**0.0073**		**0.00087**	JI-FD	< 0.000035	UJI-FD	<0.000050 UJ*	**0.00031 J***	**0.0014 J***	**0.00071 JL***	**0.00012 J**
Pyridine	0.024	**0.0045**		**0.12**		**0.11**		**0.041**	JL-LCS	< 0.000030	U	< 0.000030	U	<0.00010 UJ*	<0.00010 UJ*	**0.00058 J***	<0.00010 UJL*	**0.00021 J**
METALS (mg/L)																		
Arsenic	0.010	**0.0235**		**1.04**		**0.00904**	UH-RB	**0.00648**		**0.00243**		**0.00254**		**0.00143**	**0.0165**	**0.00618**	**0.00891**	**0.00886**
Barium	2.0	**0.435**		**0.323**		**0.0940**	UH-RB	**0.0996**		**0.0772**	JI-FD	**0.109**	JI-FD	**0.0322**	**0.0196**	**0.0451**	**0.0296**	**0.0679**
Cadmium	0.0050	**0.00245**		**0.026**		**0.000502**	J	< 0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Chromium	0.10	**0.016**		**0.614**		**0.0358**		**0.00660**		**0.00315**	JI-FD	**0.00167**	JI-FD	**0.00184 J**	**0.00252 J**	**0.00287 J**	<0.0012	<0.0010
Lead	0.015	**0.0224**		**0.201**		**0.00153**	J	< 0.000600	U	< 0.000600	U	< 0.000600	U	<0.00070	0.000852 U*	**0.000880 J**	<0.00070	<0.00070
Mercury	0.0020	<0.0000300	U	<0.0000300	UJL-MS	**0.0000860**	UH-CCB	**0.0000340**	J	< 0.0000300	U	< 0.0000300	U	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
Selenium	0.050	**0.00273**		**0.0828**		**0.00481**		**0.00144**	J	< 0.00110	U	< 0.00110	U	**0.0120**	**0.00503**	**0.00421 J**	**0.00750**	0.00192 UH*
Silver	0.12	<0.000200	U	**0.000296**	J	<0.000200	U	< 0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
OTHER																		
Sulfate	NA	283		**10200**		1010		**251**		**127**		**69.5**		1,470	17,700	635	1,270	222
Total Dissolved Solids	NA	932		**20100**		1870		**760**		**530**		**488**		3,170	3,380	3,140	2,740	1,080

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[5] GW_ING mg/L	UA-15												
		HAP-UA15-NOV2013 02/19/2014 14021012-03	HAP-UA15-JUL2014 07/10/2014 14070538-13	(DUP) HAP-UA15-JUL2014-1 07/10/2014 14070538-14	HAP-UA15-080 11/13/2014 14110545-21	HAP-UA15-090 5/14/2015 15050676-15	HAP-UA15-100 12/17/2015 HS15120827-08	HAP-UA15-110 6/29/2016 HS16070019-14	HAP-UA15-120 11/30/2016 HS16120073-08	HAP-UA15-133 6/7/2017 HS17060588-14	HAP-UA15-140 12/20/2017 HS17121222-01	HAP-UA15-150 06/13/2018 HS18060737-01	HAP-UA15-160 12/19/18 HS18121186-14	
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	**0.022**	**0.0076**	**0.0082**	<0.00020	**0.007**	0.0011 UH-RB,FB	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.37**	<0.00020	U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030	U
Toluene	1.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020	U
Xylenes, total	10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030	U
SEMI-VOLATILE ORGANIC COMPOUNDS														
Phenol	7.3	**0.00005 J**	<0.00044 UJL*	<0.00044 UJL*	<0.000026 UJL-HT*	**0.00005 JL-SUR,MS/SD**	<0.000035 U	<0.000035 U	<0.000036 UJL-MS/SD	<0.000036 UJL-SUR	<0.000035 UJL-SUR,LCS	**0.00039 JL-SUR, MS/SD**	<0.000035	U
Pyridine	0.024	<0.000048	<0.0024 UJL*	<0.0024 UJL*	<0.000040 UJL-HT*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	<0.000031 UJL-MS/SD	<0.000031 UJL-MS/SD	<0.000030 UJL-LCS	<0.000030 UJL-SUR, LCS,MS/SD	<0.000030	U
METALS (mg/L)														
Arsenic	0.010	**0.0032 J**	**0.0057**	**0.0059**	**0.00965**	**0.11**	**0.00216 J**	**0.0657**	**0.0214**	**0.0491**	**0.00436**	**0.294**	**1.03**	
Barium	2.0	**0.0827**	**0.087**	**0.087**	**0.0721**	**0.14**	**0.0915**	**0.0660**	**0.0715**	**0.0560**	**0.0814**	**0.302**	**0.398**	
Cadmium	0.0050	<0.00080	<0.00009	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	**0.000449 J**	**0.0007**	**J**
Chromium	0.10	<0.0010	<0.00018	<0.00018	<0.00100	**0.0015 J**	0.000684 UH-MB,RB,CCB	**0.00096 UH-MB**	<0.000400 U	**0.000704 J**	<0.000400 U	**0.0258**	**0.104**	
Lead	0.015	<0.00070	<0.00012	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	<0.00080 U	<0.000600 U	**0.0242**	**0.0244**	
Mercury	0.0020	<0.000040	**0.000022 J**	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U	<0.000030 U	0.0000310 UH-MB	<0.0000300 U	**0.00005**	**J**
Selenium	0.050	<0.0010	<0.0011	<0.0011	<0.00100	0.0026 UH-CCB	<0.00110 U	**0.00122 J**	<0.00110 U	<0.0011 U	**0.00121 J**	**0.0145**	**0.0169**	
Silver	0.12	<0.00080	<0.000056	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200	U
OTHER														
Sulfate	NA	89.9	99.0	98	101	44	40.9	47.8	50.7	59.5	50.7	369	184	
Total Dissolved Solids	NA	788	1,010	926	802	800	470	364	320	436	278	1000	1030	

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[5] GW_ING mg/L	UA-15														UA-16			
		HAP-UA15-170 6/20/19 HS19061132-05		HAP-UA15-180 12/18/19 HS19121186-01		HAP-UA15-190 6/25/20 HS20061381-07		HAP-UA15-200 11/19/20 HS20111046-04		HAP-UA15-210 6/17/21 HS21061095-02		HAP-UA15-220 12/2/211 HS21120188-07		HAP-UA15-230 6/15/22 HS22060933-02		HAPOM-UA-16 08/05/2011 1108225-11	HAPOM-UA-16-0 11/17/2011 1111650-09	HAP-UA16-070512-0 07/05/2012 1207231-04	HAP-UA16-112812-0 11/28/2012 12111017-20
ANALYTE																			
VOLATILE ORGANIC COMPOUNDS (mg/L)																			
Benzene	0.005	<0.00020	U	**1.2**		**0.076**		**7.4**		**0.8**		**0.027**		**0.00048**	J	**0.92**	**7.2**	**0.10**	**6.9**
Ethylbenzene	0.70	<0.00030	U	<0.0015	U	<0.00030	U	<0.00030	U	<0.0030	U	< 0.00030	U	< 0.00030	U	**0.00055 J**	**0.0010 J**	<0.00030	**0.00065 J**
Toluene	1.0	<0.00020	U	**0.0031**	J	<0.00020	U	**0.016**		<0.0020	U	< 0.00020	U	< 0.00020	U	0.00050 UJ*	**0.0013 J**	<0.00030	**0.00039 J**
Xylenes, total	10	<0.00030	U	**0.014**		<0.00030	U	**0.082**		**0.0061**	J	< 0.00030	U	< 0.00030	U	**0.018**	**0.014 J**	**0.0038**	**0.0055**
SEMI-VOLATILE ORGANIC COMPOUNDS																			
Phenol	7.3	<0.000035	U	**0.017**		**0.00047**		**0.044**		**0.0098**		**0.00025**		< 0.000035	U	0.00065 U*	**0.0041 J***	0.00022 U*	**0.040 JL***
Pyridine	0.024	<0.000030	U	**0.083**		**0.0032**		**0.048**		**0.052**		**0.0032**	JL-LCS	< 0.000030	U	<0.00010 UJ^	<0.00010 UJ*	**0.00012 J***	<0.00010 UJL*
METALS (mg/L)																			
Arsenic	0.010	**0.105**		**0.0932**		**1.34**		**1.63**		**0.0311**		**0.00705**		**0.0343**		<0.0013	**0.00170 J**	**0.00161 J**	<0.0013
Barium	2.0	**0.0812**		**0.107**		**1.27**		**0.747**		**0.0866**	UH-RB	**0.0483**		**0.122**		**0.180**	**0.167**	**0.110**	**0.153**
Cadmium	0.0050	<0.000200	U	**0.00129**	J	**0.00314**		**0.0163**		**0.000235**	J	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080	<0.00080
Chromium	0.10	**0.00427**		**0.0385**		**0.0763**		**0.339**		**0.0128**		**0.000741**	J	**0.00220**	J	<0.0012	<0.0012	**0.00173 J**	<0.0012
Lead	0.015	**0.00124**	J	**0.00405**		**0.0518**		**0.169**		**0.000892**	J	< 0.000600	U	< 0.000600	U	<0.00070	0.000726 U*	<0.00070	<0.00070
Mercury	0.0020	<0.0000300	U	<0.0000300	U	<0.0000300	U	<0.0000300	UJL-MS	**0.0000920**	UH-CCB	**0.000105**	J	< 0.0000300	U	<0.000042	<0.000042	<0.000042	<0.000042
Selenium	0.050	**0.00157**	J	**0.0176**		**0.0758**		**0.0748**		**0.00315**		< 0.00110	U	< 0.00110	U	<0.0010	**0.00106 J**	**0.00233 J**	<0.0010
Silver	0.12	<0.000200	U	<0.000200	U	<0.000200	U	**0.000306**		<0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080	<0.00080
OTHER																			
Sulfate	NA	78.6		765		380		**3140**		**296**		**61.3**		**115**		655	809	400	618
Total Dissolved Solids	NA	3740		1600		1040		**6920**		**742**		**242**		**412**		3,430	3,660	2,220	2,390

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[5] $^{GW}GW_{HQ}$ mg/L	UA-15										
		HAP-UA16-061913-0 06/19/2013 1306861-07	HAP-UA16-NOV2013 02/19/2014 14021012-04	HAP-UA16-JUL2014 07/10/2014 14070538-15	HAP-UA16-080 11/14/2014 14110545-22	HAP-UA16-093 5/14/2015 15050876-16	HAP-UA16-100 12/17/2015 HS15120827-09	HAP-UA16-110 6/29/2016 HS16070019-15	HAP-UA16-120 11/30/2016 HS16120073-09	HAP-UA16-130 6/7/2017 HS17060588-15	HAP-UA16-140 12/20/2017 HS17121222-02	HAP-UA16-150 06/13/2018 HS18060737-02
ANALYTE												
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	**0.410**	**2.9**	**0.0090**	**5.3**	**0.0015**	**2.5**	**0.00038 J**	**6.4**	<0.00020 U	**3.6**	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.0030	<0.0030	<0.0030	<0.00030	<0.0030 U	<0.00030 U	<0.0030 U	<0.00030 U	<0.0060 U	<0.00030 U
Toluene	1.0	<0.00020	<0.0020	<0.0020	**0.00062 J**	<0.00020	<0.0020 U	<0.00020 U	<0.0020 U	<0.00020 U	<0.0040 U	<0.00020 U
Xylenes, total	10	**0.0047**	<0.0050	<0.0050	**0.011**	**0.00062 J**	**0.015 J**	<0.00050 U	<0.0030 U	<0.00030 U	<0.0060 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS												
Phenol	7.3	**0.00091**	**0.00021**	<0.00043 UJL*	**0.015 JL-SUR***	<0.000035 UJL-SUR,MS/SD	**0.0012**	<0.000035 U	**0.0017 JL-MS/SD**	<0.000035 UJL-SUR	**0.00090 JL-LCS**	<0.000035 UJL-SUR,MS/SD
Pyridine	0.024	<0.00010	<0.000048	<0.0024 UJL*	<0.000040 UJL-LCS*	<0.000030 UJL-MS/SD	0.000099 UH-RB	<0.000030 UJL-MS/SD	**0.0038 JL-MS/SD**	<0.000030 UJL-MS/SD	<0.000030 UJL-LCS	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)												
Arsenic	0.010	<0.0010	<0.0010	<0.00042	<0.00100	<0.0010	<0.000400 U	**0.00318 UH-MB,CCB,RB**	**0.000598 J**	<0.00040 U	<0.000400 U	**0.000597 J**
Barium	2.0	**0.131**	**0.133**	**0.106**	**0.138**	**0.11**	**0.128**	**0.0779**	**0.128**	**0.155**	**0.218**	**0.154**
Cadmium	0.0050	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0010	**0.00141 J**	**0.0012**	<0.00100	<0.0010	0.00095 UH-MB,RB,CCB	**0.000633 UH-MB**	<0.000400 U	<0.00040 U	**0.000647 J**	**0.000423 J**
Lead	0.015	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	<0.00060 U	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.0000300 U	<0.0000300 U
Selenium	0.050	0.00132 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U
OTHER												
Sulfate	NA	279	208	269	355	260	185	126	198	174	138	215
Total Dissolved Solids	NA	1,230	1,110	1,120	1,210	1,100	930	612	912	876	776	894

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[2] $^{GW}GW_{ing}$ mg/L	UA-16																	
		HAP-UA16-160 12/192018 HS18121188-15		HAP-UA16-170 6/20/10 HS19061132-07		HAP-UA16-180 12/19/19 HS19121186-02		HAP-UA16-190 6/25/20 HS20061361-08		HAP-UA16-200 11/19/20 HS20111046-05		HAP-UA16-210 6/17/21 HS21061095-03		HAP-UA16-220 12/2/21 HS21120188-08		HAP-UA16-230 6/15/22 HS22060933-03	
ANALYTE																			
VOLATILE ORGANIC COMPOUNDS (mg/L)																			
Benzene	0.005	**0.0015**		<0.00020	U	**0.00092**	J	**0.0062**		**1.5**		**0.16**		**0.0022**		**0.00022**	J
Ethylbenzene	0.70	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.0015	U	<0.0015	U	< 0.00030	U	< 0.00030	U
Toluene	1.0	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	**0.0038**	J	<0.0010	U	< 0.00020	U	< 0.00020	U
Xylenes, total	10	<0.00030	U	<0.00030	U	<0.00030	U	**0.00087**	J	**0.024**		**0.013**		**0.0041**		**0.0038**	
SEMI-VOLATILE ORGANIC COMPOUNDS																			
Phenol	7.3	**0.000064**	J	<0.000035	U	**0.00006**	J	**0.0001**	J	**0.011**		**0.00086**		**0.00013**	J	< 0.000035	U
Pyridine	0.024	<0.000030	U	<0.000030	U	**0.00049**	J	**0.00026**	J	**0.026**		**0.0054**		**0.00067**	JL-LCS	< 0.000030	U
METALS (mg/L)																			
Arsenic	0.010	**0.00185**	J	**0.00125**	J	**0.0281**		**0.669**		**1.11**		**0.0136**	UH-RB	**0.00226**		**0.00972**	
Barium	2.0	**0.161**		**0.105**		**0.374**		**2.97**		**1.78**		**0.0859**	UH-RB	**0.0882**		**0.119**	
Cadmium	0.0050	<0.000200	U	<0.000200	U	<0.000200	U	**0.00315**		**0.00941**		<0.000200	U	< 0.000200	U	< 0.000200	U
Chromium	0.10	**0.0275**		**0.0004**	J	**0.0109**		**0.217**		**0.273**		**0.00372**	UH-RB	**0.000738**	J	**0.00243**	J
Lead	0.015	<0.000600	U	<0.000600	U	**0.00211**		**0.0393**		**0.115**		<0.000600	U	< 0.000600	U	< 0.000600	U
Mercury	0.0020	<0.0000300	U	<0.0000300	U	<0.0000300	U	**0.000031**	J	<0.0000300	UJL-MS	**0.0000950**	UH-CCB	**0.0000470**	J	< 0.0000300	U
Selenium	0.050	<0.00110	U	<0.00110	U	**0.00301**		**0.0453**		**0.0445**		**0.00131**	J	< 0.00110	U	< 0.00110	U
Silver	0.12	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	**0.000241**		<0.000200	U	< 0.000200	U	< 0.000200	U
OTHER																			
Sulfate	NA	344		314		118		751		**1320**		**341**		**222**		**335**	
Total Dissolved Solids	NA	1290		2060		428		2450		**3370**		**1020**		**862**		**1200**	

NOTES:
NA - Not Applicable.
Groundwater analytical results in milligrams per liter (mg/L).
Bolded value indicates a concentration at or above the sample detection limit.
Shaded value indicates an exceedance of the Tier 1
[2]Texas Risk Reduction Tier 1 Residential Protective Concentration Level, May 2011.

QUALIFIERS:
* - Qualified in the Data Usability Summary.
CCB - Analyte detected in associated continuing calibration blank.
FD - Field duplicate evaluation criteria not met.
H – Bias in sample result is likely to be high.
HT - Sample was analyzed outside of holding time.
I - Bias in sample result is indeterminate.
J - Estimated: The analyte was detected and positively identified. The associated numerical values are the approximate concentration of the analyte in the sample.
L - Bias in sample result is likely to be low.
LCS - Analyte was detected in associated laboratory control sample.
MB - Method blank contamination.
MS - Matrix spike recovery outside acceptance range. (inorganic)
MS/SD - Matrix spike/matrix spike duplicate accuracy and/or precision criteria not met. (organic)
RB - Analyte was detected in associated rinsate/equipment blank.
SUR - Surrogate recovery outside acceptance range.
U - Not detected: Analysis for the analyte was performed, but the analyte was not detected above the level of the sample detection limit.
UJ - Not detected, SDL is estimated: The analyte was analyzed for but was not detected above the reported SDL.
However, the reported SDL is an estimate and may be inaccurate or imprecise.

Table F-2: Middle and Deep Aquifer Groundwater Monitoring Results

	TRRP Tier 1 Residential PCLs[1] $^{GW}GW_{ING}$ mg/L	MA-02											
Sample ID **Sample Date** **Lab Sample ID**		HAPOM-MA-02 08/04/2011 1108186-01	HAPOM-MA-02-0 11/17/2011 1111650-04	HAP-MA02-070512-0 07/05/2012 1207231-09	HAP-MA02-112812-0 11/28/2012 12111017-07	HAP-MA02-061913-3 06/19/2013 1305861-10	HAP-MA02-NOV2013 02/19/2014 14021012-05	HAP-MA02-JUL2014 07/11/2014 14070538-18	HAP-MA02-080 11/14/2014 14110545-06	HAP-MA02-090 5/14/2015 15050576-06	HAP-MA02-100 12/17/2015 HS15120827-07	HAP-MA02-110 6/29/2016 HS16070019-13	HAP-MA02-120 11/30/2016 HS16120073-06
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	0.014 UH*	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0074	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00030	<0.00090	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	0.00016 UJ*	**0.000065 J**	<0.000060 UJ*	<0.000060 UJL*	<0.000050	<0.000032	<0.00047 UJL*	**0.000082 UH-RB, SUR, MS/SD***	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U	<0.000035 UJL-MS/SD
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000048	<0.0026 UJL*	<0.000040 UJL-MS/SD*	<0.000030	<0.000030 U	<0.000030 UJL-MS/SD	<0.000030 UJL-MS/SD
METALS (mg/L)													
Arsenic	0.010	**0.00468 J**	**0.00551**	**0.00655**	**0.00542**	**0.00444 J**	**0.00703**	**0.0057**	**0.000694**	**0.0060**	**0.00581**	**0.00496 UH-MB,CCB,RB**	**0.00192 J**
Barium	2.0	**0.0612**	**0.0481**	**0.0208**	**0.0699**	**0.0993**	**0.031**	**0.080**	**0.0795**	**0.042**	**0.0728**	**0.0561**	**0.0511**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0012	<0.0012	<0.0010	<0.0010	**0.00032 J**	<0.00100	<0.0010	0.000425 UH-MB,RB,CCB	**0.00492 J**	**0.00160 J**
Lead	0.015	<0.00070	0.000789 U*	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	**0.00228 J**	**0.000902 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.000040	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U
Selenium	0.050	<0.0010	<0.0010	**0.00365 J**	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	68.5	61.1	19.9	46.4	59.1	7.61	53	52.5	5.7	25.8	3.62	4.39 UH-RB
Total Dissolved Solids	NA	1,210	740	420	806	920	336	822	828	380	742	130	90

	TRRP Tier 1 Residential PCLs[1] $^{GW}GW_{ING}$ mg/L	MA-02												MA-03	
Sample ID **Sample Date** **Lab Sample ID**		HAP-MA02-130 6/7/2017 HS17060588-13	HAP-MA02-143 12/20/2017 HS17121134-13	HAP-MA02-153 06/13/2018 HS18060635-13	HAP-MA02-160 12/19/2018 HS18121186-13	HAP-MA02-170 6/17/2019 HS19060976-01	HAP-MA02-180 12/18/19 HS19121050-01	HAP-MA02-190 6/22/20 HS20061199-01	HAP-MA02-200 11/18/20 HS20110979-01	HAP-MA02-210 6/14/21 HS21060975-01	HAP-MA02-220 11/29/21 HS21120107-01	HAP-MA02-230 6/13/22 HS22060764-01	HAPOM-MA-03 08/05/2011 1108225-003	HAPOM-MA-03-0 11/16/2011 1111590-05
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U	<0.00030	<0.00030
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U	<0.00010	<0.00010
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U	<0.00010	<0.00010
Xylenes, total	10	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U	<0.00030	<0.00030
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.000036 UJL-SUR	<0.000035 U	**0.000086 JL-SUR, LCS,MS/SD**	<0.000035 U	<0.000035 U	<0.000035 U	<0.000038 U	<0.000035 UJL-SUR,LCS	<0.000035 U	< 0.000035 U	< 0.000035 U	0.00044 U*	<0.000050
Pyridine	0.024	<0.000031 UJL-MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 UJL-SUR, LCS,MS/SD	<0.000030 U	<0.000030 U	<0.000030 U	<0.000032 U	<0.000030 UJL-LCS,MS/SD	<0.000030 U	< 0.000030 U	UJL-LCS, MS/SD < 0.000030 U	<0.00010 UJ*	<0.00010 UJ*
METALS (mg/L)														
Arsenic	0.010	**0.00240 J**	**0.00207**	**0.00208**	**0.00220**	**0.00299**	**0.00166 J**	**0.00126 J**	**0.00121 J**	**0.00155 UH-RB**	**0.00156 J**	**0.00176 J**	**0.00801**	**0.00949**
Barium	2.0	**0.0556**	**0.0583**	**0.0627**	**0.0649**	**0.0801**	**0.0633**	**0.0552**	**0.0443**	**0.0624 UH-RB**	**0.0634**	**0.0648**	**0.164**	**0.156**
Cadmium	0.0050	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.00080
Chromium	0.10	**0.000887 J**	<0.000400 U	**0.000550 J**	<0.000400 U	0.000561 J	<0.000400 U	**0.00236 J**	**0.00108 JH-MS**	**0.00245 UH-RB**	**0.00193 J**	**0.00249 J**	<0.0012	<0.0012
Lead	0.015	**0.00107 J**	**0.00106 J**	<0.000600 U	**0.000615 J**	**0.000774 J**	**0.00163 J**	**0.000884 J**	<0.000600 U	**0.000711 J**	< 0.000600 U	< 0.000600 U	<0.00070	<0.00070
Mercury	0.0020	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000440 UH-MB**	< 0.0000300 U	< 0.0000300 U	<0.000042	<0.000042
Selenium	0.050	<0.0011 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	< 0.00110 U	< 0.00110 U	<0.0010	<0.0010
Silver	0.12	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.00080
OTHER														
Sulfate	NA	4.25 UH-RB	5.67	4.66	5.25	4.83	4.80	4.67	**4.58**	**4.74**	**4.39**	**4.61**	69.4	24.3
Total Dissolved Solids	NA	148	134	155	170	324	124	112	**134**	**150**	**144**	**306**	1,140	614

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[c] $^{DW}GW_{ING}$ mg/L	MA-03												
		HAP-MA03-070512-0 07/09/2012 1207231-06	HAP-MA03-112812-0 11/28/2012 1211017-08	HAP-MA03-061913-0 06/19/2013 1306881-06	HAP-MA03-NOV2013-3 02/19/2014 14021012-06	HAP-MA03-JUL2014 07/10/2014 14070638-07	HAP-MA03-080 11/14/2014 14110546-07	HAP-MA03-090 5/14/2015 15050876-10	HAP-MA03-103 12/17/2015 HS15120827-06	HAP-MA03-110 8/29/2016 HS16070019-12	HAP-MA03-123 11/30/2016 HS16120073-05	HAP-MA03-130 6/7/2017 HS17080588-12	HAP-MA03-140 12/20/2017 HS17121134-11
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020	<0.00020	<0.00020	**0.00036 J**	<0.00020	<0.00020	<0.00020	<0.00020 U	**0.00036 J**	**0.0079**	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00090	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.000050 UJ*	<0.000050 UJL*	<0.000050	<0.000032	<0.00045 UJL*	<0.000026 UJL-SUR,MS/SD*	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U	<0.000035 UJL-MS/SD	<0.000036 UJL-SUR	<0.000035 U
Pyridine	0.024	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000048	<0.0025 UJL*	<0.000040 UJL-MS/SD*	<0.000030	<0.000030 U	<0.000030 UJL-MS/SD	**0.0013 JL-SUR,MS/SD**	<0.000031 UJL-MS/SD	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)														
Arsenic	0.010	**0.0108**	**0.0111**	**0.0119**	**0.0127**	**0.011**	**0.0117**	**0.011**	**0.0116**	**0.0143 UH-RB**	**0.0104**	**0.0118**	**0.00220**
Barium	2.0	**0.166**	**0.184**	**0.200**	**0.166**	**0.169**	**0.176**	**0.150**	**0.158**	**0.134**	**0.0864**	**0.140**	**0.0589**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00008	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0010	<0.0010	**0.00029 J**	<0.00100	<0.0010	<0.000400 U	**0.000457 UH-MB**	<0.000400 U	<0.00040 U	**0.000685 J**
Lead	0.015	**0.000712 J**	<0.00070	<0.00070	0.000584 UH-MB*	**0.00022 J**	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	<0.00060 U	**0.000879 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.0000300 U
Selenium	0.050	**0.00438 J**	<0.0010	0.00102 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
OTHER														
Sulfate	NA	14.9	15.7	18.3	11.4	11.8	14.9	10	10.9	9.45	12.5	9.17	4.98
Total Dissolved Solids	NA	800	436	448	368	366	358	340	364	342	276	328	100

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[c] $^{DW}GW_{ING}$ mg/L	MA-03																				MA-05		
		HAP-MA03-150 09/13/2018 HS18090833-12		HAP-MA03-163 12/19/2018 HS18121186-12		HAP-MA03-170 6/18/2019 HS19061024-04		HAP-MA03-180 12/18/19 HS19121142-03		HAP-MA03-190 6/24/20 HS20061283-04		HAP-MA03-200 11/18/20 HS20110979-12		HAP-MA03-210 6/15/21 HS21061020-01		HAP-MA03-220 12/1/21 HS21120107-12		HAP-MA03-230 6/14/22 HS22060875-04		HAPOM-MA-05 08/05/2011 1108225-04	HAPOM-MA-05-0 11/19/2011 1111590-01	HAP-MA05-070812-0 07/06/2012 1207230-04
ANALYTE																								
VOLATILE ORGANIC COMPOUNDS (mg/L)																								
Benzene	0.005	<0.00020 U		<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U	<0.00030	<0.00030	<0.00020
Ethylbenzene	0.70	<0.00030 U		<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	< 0.00050	U	< 0.00030	U	<0.00010	<0.00010	<0.00030
Toluene	1.0	<0.00020 U		<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U	<0.00010	<0.00010	<0.00030
Xylenes, total	10	<0.00030 U		<0.00030	U	<0.00030	U	<0.00030	U	**0.0010**		**0.00079**	J	<0.00030	U	< 0.00050	U	**0.00080**	J	**0.00031 J**	<0.00030	<0.00060
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																								
Phenol	7.3	<0.000035 UJL-SUR, LCS,MS/SD		<0.000035	U	**0.000041**	**J**	<0.000035	U	<0.000036	U	<0.000035 UJL-LCS		<0.000035	U	< 0.000035	U	< 0.000035	U	0.00019 U*	<0.000050 UJ*	0.000080 U*
Pyridine	0.024	<0.000030 UJL-SUR, LCS,MS/SD		<0.000030	U	<0.000030	U	<0.000030	U	<0.000031	U	<0.000030 UJL-LCS,MS/SD		<0.000030	U	< 0.000050	UJL-LCS, MS/SD	< 0.000030	U	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*
METALS (mg/L)																								
Arsenic	0.010	**0.0123**		**0.00190**	**J**	**0.00222**		**0.00352**		**0.00367**		**0.00256**		**0.00206**	UH-RB	0.00350		**0.00268**		**0.0231**	**0.0224**	**0.0249**
Barium	2.0	**0.135**		**0.0637**		**0.0676**		**0.0686**		**0.0906**		**0.0687**		**0.0575**	UH-RB	0.0842		**0.0630**		**0.106**	**0.113**	**0.125**
Cadmium	0.0050	<0.000200 U		<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080
Chromium	0.10	**0.00266 J**		<0.000400	U	<0.000400	U	**0.00178**	**J**	**0.000799**	**J**	**0.00123**	**J**	**0.000645**	UH-RB	0.00166	J	**0.000809**	UH-RB	<0.0012	<0.0012	**0.00168 J**
Lead	0.015	**0.00200 J**		<0.000600	U	<0.000600	U	<0.000600	U	<0.000600	U	<0.000600	U	<0.000600	U	0.00162	J	< 0.000600	U	<0.00070	<0.00070	<0.00070
Mercury	0.0020	<0.0000300 U		<0.0000300	U	**0.0000500**	**J**	<0.0000300	U	<0.0000300	U	<0.0000300	U	**0.0000820**	UH-CCB	< 0.0000500	U	< 0.0000300	U	<0.000042	<0.000042	<0.000042
Selenium	0.050	<0.00110 U		<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	< 0.00110	U	< 0.00110	U	<0.0010	<0.0010	0.00170 U*
Silver	0.12	<0.000200 U		<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080
OTHER																								
Sulfate	NA	7.43		5.53		6.48		9.63		12.6		**12.6**		**10.7**		**11.2**		**26.8**		14.2	3.34	6.51
Total Dissolved Solids	NA	244		58.0		120		148		132		**158**		**112**		170		**164**		346	342	552

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{HQ}$ mg/L	MA-05											
		HAP-MA05-112712-0 11/27/2012 12111017-06	HAP-MA05-082013-0 08/20/2013 1308861-16	HAP-MA05-NOV2013 02/19/2014 14021012-07	HAP-MA05-JUL2014 07/10/2014 14070538-08	HAP-MA05-080 11/14/2014 14110545-08	HAP-MA05-090 5/14/2015 15050676-01	HAP-MA05-100 12/17/2015 HS15120827-05	HAP-MA05-110 6/29/2016 HS16070019-11	HAP-MA05-120 11/30/2016 HS16120073-02	(DUP) HAP-MA05-121 11/30/2016 HS16120073-03	HAP-MA05-130 6/7/2017 HS17060588-10	HAP-MA05-140 12/20/2017 HS17121134-10
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	**0.00058 J**	<0.00020	<0.00020	<0.00020	<0.00020	0.00037 J	<0.00020 U	**0.0004 J**	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	<0.000050 UJL*	<0.000050	<0.000032	<0.00045 UJL*	**0.00019 JJ-SUR,MS/SD***	**<0.000035 UJL-SUR,MS/SD**	<0.000035 UJL-SUR	<0.000035 U	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-MS/SD	<0.000036 UJL-SUR	<0.000035 U
Pyridine	0.024	<0.00010 UJL*	<0.00010	<0.000048	<0.0025 UJL*	<0.000040 UJL-MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	**0.000056 UH-RB,MS/SD**	<0.000030 UJL-MS/SD	<0.000030 UJL-MS/SD	<0.000031 UJL-SUR,MS/SD	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)													
Arsenic	0.010	**0.0252**	**0.0230**	**0.0230**	**0.027**	**0.0259**	**0.0280**	**0.0280**	**0.0276**	**0.0210 JI-FD**	**0.0219 JI-FD**	**0.0274**	**0.00316**
Barium	2.0	**0.131**	**0.122**	**0.134**	**0.145**	**0.138**	**0.14**	**0.126**	**0.120**	**0.130**	**0.131**	**0.141**	**0.0588**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0010	<0.0010	<0.00018	<0.00100	<0.0010	0.00057 UH-MB,RB,CCB	<0.000400 U	<0.000400 U	<0.000400 U	<0.00040 U	**0.00210 J**
Lead	0.015	<0.00070	<0.00070	0.000719 UH-MB*	**0.00013 J**	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	**0.000816 J**	<0.00060 U	**0.000685 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U	<0.0000300 U	<0.000030 U	<0.0000300 U
Selenium	0.050	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U
Silver	0.12	<0.00080	<0.000080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
OTHER													
Sulfate	NA	2.58	7.02	11.7	16	10.0	18	5.54	10.9	8.59	8.68	6.94	10.5
Total Dissolved Solids	NA	342	360	386	358	330	360	316	342	318	308	328	72

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{HQ}$ mg/L	MA-05																		MA-06	
		HAP-MA05-150 06/12/2018 HS18060635-10		HAP-MA05-160 12/19/2018 HS18121186-10		HAP-MA05-165 12/19/2018 HS18121186-11		HAP-MA05-173 6/19/2018 HS19061024-05		HAP-MA05-180 12/18/19 HS19121142-04		HAP-MA05-190 6/24/20 HS20081283-05		HAP-MA05-200 11/18/20 HS20110979-13		HAP-MA05-210 6/16/21 HS21061020-02		HAP-MA05-220 12/1/21 HS21120107-13		HAP-MA05-230 6/14/22 HS22060875-02		(DUP) HAP-MA05-231 6/14/22 HS22060875-03		HAPOM-MA-06 08/04/2011 1108188-03	HAPOM-MA-06-0 11/16/2011 1111590-06
ANALYTE																					
VOLATILE ORGANIC COMPOUNDS (mg/L)																					
Benzene	0.005	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U	< 0.00020	U	< 0.00020	U	<0.00030	<0.00030
Ethylbenzene	0.70	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	< 0.00030	U	< 0.00030	U	< 0.00030	U	< 0.00030	U	<0.00010	<0.00010
Toluene	1.0	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U	< 0.00020	U	< 0.00020	U	<0.00010	<0.00010
Xylenes, total	10	**0.00098 J**		<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	**0.00069**	J	<0.00030	U	**0.0013**		**0.00062**	J	**0.0033**		**0.0032**		**0.0027 J**		**0.0021 J**	
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																					
Phenol	7.3	<0.000035 UJL-LCS,MS/SD		<0.000035	U	<0.000035	U	**0.00011**	J	<0.000035	U	<0.000037	U	<0.000035 UJL-LCS		<0.000035	U	< 0.000035	U	< 0.000035	U	< 0.000035	U	0.00034 UJ*		<0.000050 UJ*	
Pyridine	0.024	<0.000030 UJL-LCS,MS/SD		<0.000030	U	<0.000030	U	<0.000030	U	<0.000030	U	<0.000032	U	<0.000030 UJL-LCS,MS/SD		<0.000030	U	< 0.000030	UJL-LCS, MS/SD	< 0.000030	U	< 0.000030	U	<0.00010 UJ*		<0.00010 UJ*	
METALS (mg/L)																					
Arsenic	0.010	**0.00533**		**0.00428**		**<0.000400**	U	**0.00929**		**0.00193**	J	**0.00449**		**0.00244**		**0.00824**	UH-RB	**0.00220**		**0.00340**		**0.00327**		**0.00935**		**0.00912**	
Barium	2.0	**0.102**		**0.105**		<0.00190	U	**0.125**		**0.0498**		**0.0827**		**0.0713**		**0.0883**	UH-RB	**0.0737**		**0.0905**		**0.104**		**0.151**		**0.160**	
Cadmium	0.0050	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080		<0.00080	
Chromium	0.10	**0.000648 J**		<0.000400	U	<0.000400	U	<0.000400	U	**0.000947**	J	<0.000400	U	**0.00354**	J	**0.000446**	UH-RB	**0.000864**	J	**0.000413**	UH-RB	**0.000677**	UH-RB	<0.0012		**0.00126 J**	
Lead	0.015	**0.000890 J**		<0.000600	U	<0.000600	U	<0.000600	U	**0.000993**	J	<0.000600	U	<0.000600	U	**0.000953**	J	< 0.000600	U	< 0.000500	U	< 0.000600	U	<0.00070		**0.000744 J**	
Mercury	0.0020	<0.0000300	U	<0.0000300	U	<0.0000300	U	<0.0000300	U	<0.0000300	U	<0.0000300	U	<0.0000300	U	**0.000144**	J	**0.0000460**	J	< 0.0000300	U	< 0.0000300	U	<0.000042		<0.000042	
Selenium	0.050	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	< 0.00110	U	< 0.00110	U	< 0.00110	U	<0.0010		<0.0010	
Silver	0.12	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080		<0.00080	
OTHER																					
Sulfate	NA	28.7		42.8		0.344	J	68.0		13.3		29.8		**30.6**		**62.3**		72.7		97.4		98.6		7.61		11.0	
Total Dissolved Solids	NA	154		170		<5.00	U	268		92.0		96.0		**124**		**198**		**226**		**302**		**310**		370		416	

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{HQ}$ mg/L	MA-06												
		HAP-MA06-070512-0 07/05/2012 1207231-02	HAP-MA06-112812-0 11/28/2012 12111017-09	HAP-MA06-061913-0 06/19/2013 1306861-08	HAP-MA06-NOV2013 02/19/2014 14021012-08	HAP-MA06-JUL2014-3 07/10/2014 14070538-09	HAP-MA06-080 11/13/2014 14110545-09	(DUP) HAP-MA06-081 11/13/2014 14110545-10	HAP-MA06-081 5/12/2015 15050676-09	HAP-MA06-100 12/16/2015 HS15120827-04	HAP-MA06-113 6/29/2016 HS16070019-09	HAP-MA06-120 11/29/2016 HS16120073-01	HAP-MA06-130 6/6/2017 HS17060588-09	HAP-MA06-140 12/20/2017 HS17121134-09
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020	<0.00020	<0.00020	**0.00041 J**	<0.00020	**0.010**	**0.010**	**<0.00020**	**0.0075**	**0.002**	**0.0034**	**0.0027**	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.0013 J**	**0.00083**	<0.00050	<0.00050	**0.00097 J**	<0.00050	<0.00050	0.0012 J	**0.0016 J**	**0.0041**	**0.0024**	**0.0014**	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	0.000076 U*	<0.000050 UJL*	<0.000050 UJL*	**0.00013 J**	<0.00043 UJL*	**0.00030 JL-SUR, MS/SD, FD***	**0.00040 JL-SUR, MS/SD, FD***	<0.000035 UJL-SUR,MS/SD	<0.000035	**0.000066 J**	<0.000036 UJL-MS/SD	<0.000035 UJL-SUR	<0.000035 U
Pyridine	0.024	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000048	<0.0024 UJL*	<0.00040 UJL-MS/SD*	<0.00040 UJL-MS/SD*	<0.000030 UJL-MS/SD	0.000073	**0.00011 UH-RB,MS/SD**	**0.0017 JL-MS/SD**	<0.000030 UJL-MS/SD	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)														
Arsenic	0.010	**0.0110**	**0.0104**	**0.00828**	**0.0107**	**0.0099**	**0.0101**	**0.00960**	**0.00990**	**0.0101**	**0.0116 UH-RB**	**0.00983**	**0.0101**	**0.00225**
Barium	2.0	**0.150**	**0.151**	**0.147**	**0.130**	**0.145**	**0.140**	**0.138**	**0.120**	**0.0848**	**0.0826**	**0.0804**	**0.105**	**0.0544**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0010	<0.0010	<0.00018	<0.00100	<0.00100	<0.0010	0.000589 UH-MB,RB,CCB	<0.000400 U	<0.000400 U	<0.00040 U	**0.00642**
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	<0.00060 U	**0.00116 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.0000300 U
Selenium	0.050	**0.00354 J**	<0.0010	0.00110 UH*	<0.0010	<0.0011	<0.00100	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
OTHER														
Sulfate	NA	10.0	5.56	21.0	4.52	18	11.3	11.1	19.0	7.25	11.6	15.7	14.1	19.9
Total Dissolved Solids	NA	760	338	414	338	322	328	338	350	320	370	366	346	124

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{HQ}$ mg/L	MA-06																MA-07			
		HAP-MA06-150 06/12/2018 HS18060635-08		(DUP) HAP-MA06-151 06/12/2018 HS18060635-09		HAP-MA06-160 12/18/2018 HS18121186-09		HAP-MA06-170 6/17/19 HS19060976-02		HAP-MA06-183 12/16/19 HS19121050-02		HAP-MA06-190 6/23/20 HS20061199-02		HAP-MA06-203 11/16/20 HS20110979-02		HAP-MA06-210 6/14/21 HS21060975-02		HAP-MA06-220 11/30/21 HS21120107-02		HAP-MA06-230 8/13/22 HS22080764-02		HAPCM-MA-07 08/04/2011 1108188-05	(DUP) HAPCM-DUP 08/04/2011 1108188-08	HAPCM-MA-07-0 11/16/2011 1111590-08	HAP-MA07-070512-0 07/05/2012 1207231-08
ANALYTE																									
VOLATILE ORGANIC COMPOUNDS (mg/L)																									
Benzene	0.005	**0.0015**		**0.0016**		**0.0016**		**0.0048**		**0.00034**	J	**0.0029**		**0.012**		<0.00020	U	< 0.00020	U	**0.0020**		<0.00030	<0.00030	<0.00030	<0.00020
Ethylbenzene	0.70	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	< 0.00030	U	**0.00091**	J	<0.00010	<0.00010	<0.00010	<0.00030
Toluene	1.0	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U	<0.00010	<0.00010	<0.00010	<0.00030
Xylenes, total	10	<0.00030	U	<0.00030	U	**0.0013**		<0.00030	U	**0.0010**		**0.0017**		**0.0029**		**0.00052**	J	< 0.00030	U	**0.0033**		**0.0013 J**	**0.0014 J**	**0.0012 J**	<0.00090
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																									
Phenol	7.3	<0.000035 UJL-SUR, LCS,MS/SD		<0.000035 UJL-SUR, LCS,MS/SD		<0.000035	U	<0.000035	U	**0.00012**	J	<0.000038	U	<0.000035 UJL-LCS,MS/SD		<0.000035	U	< 0.000035	UJL-SUR	< 0.000035	U	<0.00005 UJ*	<0.00005 UJ*	<0.000050 UJ*	<0.000050 UJ*
Pyridine	0.024	**0.00024 JL-LCS,MS/SD**		**0.00020 JL-LCS,MS/SD**		<0.000030	U	<0.000030	U	<0.000030	U	<0.000033	U	<0.000030 UJL-LCS,MS/SD		<0.000030	U	< 0.000030	UJL-LCS, MS/SD	< 0.000030	U	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*
METALS (mg/L)																									
Arsenic	0.010	**0.00247**		**0.00201**		**0.00229**		**0.00252**		**0.00278**		**0.00372**		**0.00353**		**0.00245**	UH-RB	**0.00214**		**0.00843**		**0.00494 J**	**0.00560**	**0.00554**	**0.00624**
Barium	2.0	**0.0809**		**0.0797**		**0.0783**		**0.0987**		**0.0680**		**0.116**		**0.0632**		**0.0874**	UH-RB	**0.0522**		**0.109**		**0.161**	**0.179**	**0.171**	**0.176**
Cadmium	0.0050	<0.000200 U		<0.000200 U		<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080	<0.00080
Chromium	0.10	**0.00199 J**		**0.00179 J**		**0.00297**	J	**0.00579**		**0.00598**		**0.00796**		**0.0296**	JH-MS	**0.00441**	UH-RB	**0.000571**	J	**0.00181**	J	<0.0012	<0.0012	<0.0012	<0.0012
Lead	0.015	<0.000600 U		<0.000600 U		<0.000600	U	<0.000600	U	<0.000600	U	**0.00324**		<0.000600	U	<0.000600	U	< 0.000600	U	< 0.000600	U	<0.00070	<0.00070	<0.00070	<0.00070
Mercury	0.0020	<0.0000300 U		<0.0000300 U		<0.0000300	U	<0.0000300	U	**0.0000310**	J	<0.0000300	U	<0.0000300	U	<0.0000300	U	< 0.0000300	U	< 0.0000300	U	<0.000042	<0.000042	<0.000042	<0.000042
Selenium	0.050	<0.00110 U		<0.00110 U		<0.00110	U	**0.00136**	J	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	< 0.00110	U	< 0.00110	U	<0.0010	<0.0010	<0.0010	**0.00238 J**
Silver	0.12	<0.000200 U		<0.000200 U		<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.00080	<0.00080
OTHER																									
Sulfate	NA	29.0		28.8		32.4		44.1		51.4		53.3		**67.8**		**55.5**		**11.8**		**35.4**		9.53	--	0.895	10.3
Total Dissolved Solids	NA	188		190		222		362		296		298		**356**		**302**		**140**		372		276	--	314	320

	TRRP Tier 1 Residential PCLs[5] $^{GW}GW_{NS}$ mg/L	MA-07												
Sample ID **Sample Date** **Lab Sample ID**		HAP-MA07-112812-0 11/28/2012 12111017-10	HAP-MA07-051913-0 05/19/2013 1306861-11	HAP-MA07-NOV2013 02/19/2014 14021012-09	HAP-MA07-JUL2014 07/10/2014 14070538-10	HAP-MA07-083 11/14/2014 14110545-12	HAP-MA07-090 5/14/2015 15050676-08	HAP-MA07-100 12/16/2015 HS15120827-02	HAP-MA07-110 6/29/2016 HS16070019-08	HAP-MA07-123 11/29/2016 HS16111331-08	HAP-MA07-130 6/6/2017 HS17060588-08	HAP-MA07-140 12/19/2017 HS17121134-08	HAP-MA07-150 06/12/2018 HS18060835-07	HAP-MA07-160 12/18/2018 HS18121186-07
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020	<0.00020	**0.00037 J**	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.0024**	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	**0.0011**	<0.00050	**0.0022**	<0.00050	**0.0012 J**	**0.00071 J**	**0.00065 J**	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.000050 UJL*	<0.000050	**0.000092 J**	<0.00044 UJL*	<0.000028 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U	<0.000035 U	<0.000035 UJL-SUR	<0.000035 U	<0.000035 UJL-LCS,MS/SD	<0.000035 U
Pyridine	0.024	<0.00010 UJL*	<0.00010	<0.000048	<0.0024 UJL*	<0.00040 UJL-MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	**0.000065 JL-LCS,MS/SD**	<0.000030 UJL-LCS,MS/SD	<0.000030 U
METALS (mg/L)														
Arsenic	0.010	**0.00576**	**0.00530**	**0.00630**	**0.0062**	**0.00600**	**0.0060**	**0.00739**	**0.00863 UH-MB**	**0.00567**	**0.00643**	**0.00402**	**0.00404**	**0.00402**
Barium	2.0	**0.189**	**0.208**	**0.167**	**0.186**	**0.176**	**0.18**	**0.172**	**0.163**	**0.149**	**0.171**	**0.0921**	**0.0793**	**0.0811**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0010	<0.0010	**0.00024 J**	<0.00100	<0.0010	0.000662 UH-MB,RB,CCB	**0.000429 UH-MB**	<0.000400 U	<0.00040 U	**0.00189 J**	**0.00130 J**	**0.000610 J**
Lead	0.015	<0.00070	<0.00070	<0.00070	**0.00012 J**	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	<0.00060 U	**0.00260**	**0.000787 J**	**0.000830 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.0000300 U	<0.0000300 U	<0.0000300 U
Selenium	0.050	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U
OTHER														
Sulfate	NA	4.47	13.8	9.38	11	6.34	9.3	3.3 UH-CCB	9.37	8.59	7.03	6.22	11.8	14.6
Total Dissolved Solids	NA	276	352	342	324	318	330	318	366	344	352	246	238	232

	TRRP Tier 1 Residential PCLs[5] $^{GW}GW_{NS}$ mg/L	MA-07										MA-08				
Sample ID **Sample Date** **Lab Sample ID**		HAP-MA07-161 12/18/2018 HS18121186-08	HAP-MA07-170 6/17/19 HS19080976-03	HAP-MA07-180 12/18/19 HS19121050-03	HAP-MA07-190 6/23/20 HS20061199-03	HAP-MA07-200 11/17/20 HS20110979-03	HAP-MA07-210 6/14/21 HS21060975-03	HAP-MA07-223 11/30/21 HS21120107-03	HAP-MA07-230 6/13/22 HS22060764-03			HAPOM-MA-08 08/04/2011 1108188-07	HAPOM-MA-08-0 11/17/2011 1111650-02	HAP-MA08-070612-0 07/06/2012 1207230-01	HAP-MA08-112812-0 11/28/2012 12111017-11	(DUP) HAP-MA08- 112812-1 11/28/2012 12111017-12
ANALYTE																
VOLATILE ORGANIC COMPOUNDS (mg/L)																
Benzene	0.005	**0.0046**	**0.0028**	**0.00043 J**	**0.0011**	<0.00020 U	<0.00020 U	< 0.00020 U	**0.00048**	JH-MS/SD		<0.00030	<0.00030	<0.00020	<0.00020	<0.00020
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030	U		<0.00010	<0.00010	<0.00030	<0.00030	<0.00030
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020	U		<0.00010	<0.00010	<0.00030	<0.00030	<0.00030
Xylenes, total	10	<0.00030 U	<0.00030 U	<0.00030 U	**0.0035**	**0.0009 J**	<0.00030 U	< 0.00030 U	< 0.00030	U		**0.011**	**0.0066**	**0.0033**	**0.0038**	**0.0038**
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																
Phenol	7.3	<0.000035 U	<0.000035 U	<0.000035 U	<0.000037 U	<0.000035 UJL-SUR,LCS	<0.000035 U	< 0.000035 U	< 0.000035	U		0.00022 U*	<0.000050 UJ*	<0.000050 UJ*	<0.000050 UJL*	<0.000050 UJL*
Pyridine	0.024	<0.000030 U	<0.000030 U	<0.000030 U	<0.000032 U	<0.000030 UJL-LCS,MS/SD	<0.000030 U	< 0.000030 U	< 0.000030	UJL-LCS, MS/SD	U	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.0010 UJL*
METALS (mg/L)																
Arsenic	0.010	**0.00414**	**0.00408**	**0.00528**	**0.00533**	**0.00482**	**0.00502** UH-RB	**0.00585**	**0.00726**			**0.00839**	**0.0105**	**0.0112**	**0.0107**	**0.0105**
Barium	2.0	**0.0694**	**0.0894**	**0.0785**	**0.201**	**0.112**	**0.136** UH-RB	**0.144**	**0.149**			**0.142**	**0.124**	**0.135**	**0.182**	**0.166**
Cadmium	0.0050	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200	U		<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Chromium	0.10	<0.000400 U	**0.00122 J**	<0.000400 U	**0.00618**	**0.0043** JH-MS	**0.00131** UH-RB	**0.00264** J	**0.00104** J			<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
Lead	0.015	<0.000600 U	<0.000600 U	<0.000600 U	**0.00610**	<0.000600 U	<0.000600 U	< 0.000600 U	< 0.000600	U		<0.00070	<0.00070	<0.00070	<0.00070	<0.00070
Mercury	0.0020	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000450 J**	< 0.0000300	U		<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
Selenium	0.050	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	< 0.00110 U	< 0.00110	U		<0.0010	<0.0010	0.00117 U*	<0.0010	<0.0010
Silver	0.12	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200	U		<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
OTHER																
Sulfate	NA	8.73	27.3	21.5	30.3	**18.8**	**24.3**	**10.5**	**15.5**			99.7	75.1	107	88.4	84.5
Total Dissolved Solids	NA	250	204	316	358	**308**	**302**	**292**	**540**			1,220	1,190	1,220	1,140	1,130

	TRRP Tier 1 Residential	MA-08												
Sample ID **Sample Date** **Lab Sample ID**	PCLs[1] $^{DW}GW_{MS}$ mg/L	HAP-MA08-062013-0 06/20/2013 1306861-18	HAP-MA08-NOV2013 02/20/2014 14021012-21	HAP-MA08-JUL2014 07/10/2014 14070538-11	HAP-MA08-080 11/13/2014 14110545-13	HAP-MA08-090 05/12/2015 15050676-03	(DUP) HAP-MA08-090 05/12/2015 15050676-03	HAP-MA08-100 12/16/2015 HS15120788-09	HAP-MA08-110 6/28/2016 HS16070019-07	HAP-MA08-120 11/29/2016 HS16111331-07	HAP-MA08-133 6/6/2017 HS17060588-07	HAP-MA08-140 12/19/2017 HS17121134-07	HAP-MA08-150 06/12/2018 HS18060636-06	HAP-MA08-160 12/18/2018 HS18121188-06
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.0051**	**0.0099**	**0.014**	**0.0054**	**0.012**	**0.011**	**0.0065**	**0.015**	**0.024**	**0.010**	<0.00030 U	**0.0024**	0.0028
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.000050	<0.000032	<0.00044 UJL*	<0.000026 UJL-SUR*	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U	<0.000035 U	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 UJL-SUR,LCS,MS/SD	<0.000036 U
Pyridine	0.024	<0.00010	<0.000048	<0.0024 UJL*	<0.000040 UJL-LCS*	<0.000030 UJL-MS/SD	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-SUR,MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 U
METALS (mg/L)														
Arsenic	0.010	**0.0110**	**0.00898**	**0.0098**	**0.00981**	**0.0093**	**0.0089**	**0.00907**	**0.00929 UH-MB**	**0.00619**	**0.00796**	**0.00436**	**0.00524**	0.00803
Barium	2.0	**0.153**	**0.210**	**0.207**	**0.234**	**0.24**	**0.22**	**0.193**	**0.156**	**0.065**	**0.210 JH-DL**	**0.103**	**0.113**	0.122
Cadmium	0.0050	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0010	<0.0010	**0.00082 J**	**0.00259 J**	**0.0031 J**	**0.0020**	0.000582 UH-RB	**0.00109 UH-MB**	**0.000779 J**	**0.00177 J**	**0.00115 J**	**0.00262 J**	0.00272 J
Lead	0.015	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	<0.00060 U	**0.000874 J**	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.000040	<0.0000400 UJ-CCB	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.0000300 U	<0.0000300 U	<0.0000300 U
Selenium	0.050	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U	**0.00123 J**	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U
OTHER														
Sulfate	NA	65.8	46.2	55	93.9	58	59	38.0	53.3	47.2	51.2	2.16	38.5	46.7
Total Dissolved Solids	NA	1,270	1,130	1,120	1,030	1100	1100	322	1130	1050	1130	336	664	838

	TRRP Tier 1 Residential	MA-08								DA-01				
Sample ID **Sample Date** **Lab Sample ID**	PCLs[1] $^{DW}GW_{MS}$ mg/L	HAP-MA08-170 6/17/19 HS19060976-04	HAP-MA08-171 6/17/19 HS19060976-05	HAP-MA08-180 12/17/19 HS19121050-04	HAP-MA08-193 6/23/20 HS20061196-04	HAP-MA08-200 11/17/20 HS20110979-04	HAP-MA08-213 6/14/21 HS21060975-04	HAP-MA08-220 11/30/21 HS21120107-05	HAP-MA08-230 6/13/22 HS22060764-04	HAPOM-DA-01 08/05/2011 1108225-002	HAPOM-DA-01-0 11/17/2011 1111650-03	HAP-DA01-070512-0 07/05/2012 1207231-10	HAP-DA01-112812-0 11/28/2012 12111017-01	HAP-DA01-061913-0 06/19/2013 1306861-09
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	**0.00036** J	**0.00033** J	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.00077** J	< 0.00020 U	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U	**0.0091 J**	<0.00010	<0.00030	<0.00030	<0.00020
Xylenes, total	10	**0.0031**	**0.0031**	**0.0076**	**0.016**	**0.011**	**0.012**	< 0.00030 U	**0.0049**	**0.00032 J**	<0.00030	<0.00090	<0.00030	<0.00050
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	0.000040 J	<0.000035 U	<0.000035 U	<0.000036 U	<0.000035 UJL-SUR,LCS	<0.000035 U	< 0.000035 U	< 0.000035 U	<0.000050 UJ*	<0.000050 UJ*	0.000092 U*	<0.00005 UJL*	<0.000050 UJL*
Pyridine	0.024	<0.000030 U	<0.000030 U	<0.000030 U	<0.000031 U	<0.000030 UJL-LCS,MS/SD	<0.000030 U	< 0.000030 UJL-LCS, MS/SD	< 0.000030 U	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJL*	<0.00010 UJL*
METALS (mg/L)														
Arsenic	0.010	**0.00596**	**0.00688**	**0.00813**	**0.00706**	**0.0061**	**0.00722** UH-RB	**0.00444**	**0.00748**	<0.0013	<0.0013	<0.0013	<0.0013	<0.0010
Barium	2.0	**0.0957**	**0.113**	**0.121**	**0.168**	**0.124**	**0.153** UH-RB	**0.0867**	**0.190**	**0.0898**	**0.0851**	**0.109**	**0.116**	**0.122**
Cadmium	0.0050	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Chromium	0.10	**0.000791** J	**0.00261** J	**0.000525** J	**0.00426**	**0.00675** JH-MS	**0.00194** UH-RB	**0.000565** J	**0.00595**	<0.0012	<0.0012	**0.00220 J**	<0.0012	<0.0010
Lead	0.015	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	< 0.000600 U	< 0.000600 U	<0.00070	0.000819 U*	<0.00070	<0.00070	<0.00070
Mercury	0.0020	<0.0000300 U	<0.0000300 U	**0.0000300** J	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000730** J	< 0.0000300 U	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
Selenium	0.050	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	< 0.00110 U	< 0.00110 U	<0.0010	<0.0010	**0.00360 J**	<0.0010	0.00187 UH*
Silver	0.12	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
OTHER														
Sulfate	NA	40.8	44.3	44.2	48.8	**38.3**	**44.2**	**14.7**	**41.6**	5.40	3.51	2.70	2.53	3.84
Total Dissolved Solids	NA	922	1010	944	908	**750**	**1010**	**360**	**920**	316	316	308	352	316

			DA-01												
Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{DW}GW_{HQ}$ mg/L	HAP-DA01-NOV2013 02/19/2014 14021012-10	HAP-DA01-JUL2014 07/10/2014 14070538-01	(DUP) HAP-DA01-JUL2014-1 07/10/2014 14070538-02	HAP-DA01-080 11/14/2014 14110545-01	HAP-DA01-090 5/12/2015 15050676-07	HAP-DA01-100 12/15/2015 HS15120788-02	HAP-DA01-110 6/27/2016 HS16070019-01	HAP-DA01-120 11/28/2016 HS16111331-01	HAP-DA01-130 5/5/2017 HS17060588-01	(DUP) HAP-DA01-131 6/5/2017 HS17060588-02	HAP-DA01-140 12/19/2017 HS17121134-01	HAP-DA01-150 05/11/2018 HS18060535-01	HAP-DA01-160 12/17/2018 HS18121186-01
ANALYTE															
VOLATILE ORGANIC COMPOUNDS (mg/L)															
Benzene	0.005	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	**0.00036 J**	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	
Toluene	1.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	
Xylenes, total	10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00050 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)															
Phenol	7.3	**0.000088 JL-SUR***	<0.00045 UJL*	<0.00045 UJL*	<0.000026 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U	<0.000036 UJL-SUR	<0.000037 UJL-SUR	<0.000035 UJL-SUR	<0.000035 UJL-SUR, LCS,MS/SD	<0.000035 U	
Pyridine	0.024	<0.000048 UJL-SUR*	<0.0025 UJL*	<0.0025 UJL*	<0.000040 UJL-SUR, MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	<0.000030 U	<0.000031 UJL-SUR,MS/SD	<0.000032 UJL-MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 UJL-SUR, LCS,MS/SD	<0.000030 U	
METALS (mg/L)															
Arsenic	0.010	**0.0012 J**	**0.00098 J**	**0.0011**	<0.00100	<0.0010	**0.000716 J**	**0.00322 UH-MB,CCB**	**0.000520 J**	**0.000726 J**	**0.000587 J**	**0.00156 J**	**0.00147 J**	**0.00146** J	
Barium	2.0	**0.117**	**0.130**	**0.132**	**0.135**	**0.13**	**0.107**	**0.113**	**0.114**	**0.131 JI-FD**	**0.182 JI-FD**	**0.0943**	**0.0121**	**0.1000**	
Cadmium	0.0050	<0.00080	<0.00009	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	
Chromium	0.10	<0.0010	<0.00018	<0.00018	<0.00100	<0.0010	<0.000400 U	**0.00109 UH-MB**	<0.000400 U	<0.00040 U	**0.000440 J**	<0.000400 U	**0.00210 J**	**0.00129** J	
Lead	0.015	<0.00070	**0.00020 J**	**0.00015 J**	<0.000700	<0.00070	<0.000600 U	**0.000867 J**	<0.000600 U	<0.00060 U	<0.00060 U	**0.00104 J**	**0.00133 J**	**0.000896** J	
Mercury	0.0020	<0.000040	<0.000012	<0.000012	<0.0000400	<0.000040	<0.0000400 UJ-CCB	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.000030 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	
Selenium	0.050	<0.0010	**0.0013 J**	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	**0.00111 UH-CCB**	<0.0011 U	<0.0011 U	<0.00110 U	<0.00110 U	<0.00110 U	
Silver	0.12	<0.00080	<0.000056	<0.000058	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	
OTHER															
Sulfate	NA	3.27	3.43	3.56	14.9	3.1	3.13	3.76	3.54	2.96	3.01	4.29	6.46	8.44	
Total Dissolved Solids	NA	340	316	316	298	300	322	338	328	292	286	166	246	36.0	

						DA-01							DA-02			
Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{DW}GW_{HQ}$ mg/L	HAP-DA01-170 6/18/2019 HS19060976-06	HAP-DA01-180 12/17/19 HS19121050-05	(DUP) HAP-DA01-181 12/17/19 HS19121050-06	HAP-DA01-190 6/23/20 HS20061199-05	HAP-DA01-200 11/17/20 HS20110979-05	(DUP) HAP-DA01-201 11/17/20 HS20110979-06	HAP-DA01-210 6/14/21 HS21060975-05	HAP-DA01-220 11/30/21 HS21120107-04	HAP-DA01-210 6/14/22 HS22060764-06	HAPOM-DA-02 06/04/2011 1108188-06	HAPOM-DA-02-0 11/15/2011 1111590-7	HAP-DA02-070612-0 07/06/2012 1207230-02	HAP-DA02-112712-0 11/27/2012 12111017-02
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U	<0.00030	<0.00030	<0.00020	<0.00020
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U	<0.00010	<0.00010	<0.00030	<0.00030
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U	**0.00012 J**	<0.00010	<0.00030	<0.00030
Xylenes, total	10	<0.00030 U	<0.00030 U	<0.00030 U	**0.0017**	<0.00030 U	<0.00030 U	**0.0081**	< 0.00030 U	**0.00064** J	<0.00030	<0.00030	<0.00090	<0.00030
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.000035 U	<0.000035 U	<0.000035 U	<0.000038 U	<0.000035 UJL-SUR,LCS	<0.000035 UJL-SUR,LCS	<0.000035 U	< 0.000035 U	< 0.000035 U	<0.00005 UJ*	<0.000050 UJ*	<0.000050 UJ*	**0.000076 JL***
Pyridine	0.024	<0.000030 U	<0.000030 U	<0.000030 U	<0.000033 U	<0.000030 UJL-SUR,LCS,MS/SD	<0.000030 UJL-LCS, MS/SD	<0.000030 U	< 0.000030 UJL-LCS, MS/SD	< 0.000030 U	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJL*
METALS (mg/L)														
Arsenic	0.010	**0.00132 J**	**0.00136 J**	**0.00129 J**	**0.00123 J**	**0.000905 J**	**0.000905 J**	**0.00355** UH-RB	**0.00143** J	**0.00189** J	**0.00335 J**	**0.00302 J**	**0.00361 J**	**0.00344 J**
Barium	2.0	**0.114**	**0.0533**	**0.0547**	**0.0685**	**0.0614**	**0.063**	**0.124** UH-RB	**0.0981**	**0.171**	**0.328**	**0.279**	**0.228**	**0.205**
Cadmium	0.0050	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.00080	<0.00080	<0.00080
Chromium	0.10	**0.00101 J**	<0.000400 U	<0.000400 U	**0.000690 J**	**0.000433** JH-MS	**0.000821** JH-MS	**0.00126** UH-RB	**0.000408** J	**0.00215** UH-RB	<0.0012	**0.00391 J**	<0.0012	<0.0012
Lead	0.015	<0.000600 U	<0.000800 U	<0.000800 U	<0.000800 U	<0.000600 U	<0.000800 U	<0.000800 U	< 0.000600 U	< 0.000600 U	<0.00070	<0.00070	<0.00070	<0.00070
Mercury	0.0020	<0.0000300 U	<0.0000300 U	**0.0000690 J**	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000430** UH-MB	**0.0000910** J	< 0.0000300 U	<0.000042	<0.000042	<0.000042	<0.000042
Selenium	0.050	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	< 0.00110 U	< 0.00110 U	<0.0010	<0.0010	0.00125 U*	<0.0010
Silver	0.12	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.00080	<0.00080	<0.00080
OTHER														
Sulfate	NA	10.4	10.2	9.63	10.8	**3.25**	**3.43**	**22.1**	**3.61**	**6.98**	9.88	10.2	10.1	11.7
Total Dissolved Solids	NA	390	344	338	372	**308**	**294**	**632**	**316**	**346**	550	470	456	424

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[c] $^{GW}GW_{ING}$ mg/L	DA-02												
		HAP-DA02-052013-0 05/20/2013 1306861-17	HAP-DA02-NOV2013 02/19/2014 14021012-12	(DUP) HAP-DA02-NOV2013-1 02/19/2014 14021012-13	HAP-DA02-JUL2014 07/10/2014 14070538-03	HAP-DA02-080 11/13/2014 14110545-02	HAP-DA02-090 5/12/2015 15050676-07	HAP-DA02-100 12/16/2015 HS15120788-07	HAP-DA02-101 12/16/2015 HS15120788-08	HAP-DA02-110 6/28/2016 HS16070019-06	HAP-DA02-120 11/29/2016 HS16111331-06	HAP-DA02-130 6/9/2017 HS17080588-06	HAP-DA02-143 12/19/2017 HS17121134-06
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	
Toluene	1.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	
Xylenes, total	10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	**0.0012 J**	**0.00065 J**	<0.00030 U	<0.00030 U	
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.000050	<0.000032	<0.000032 UJL-SUR*	<0.00047 UJL*	**0.000068 JL-SUR, MS/SD***	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 UJL-SUR	<0.000035 U	**0.000043 J**	<0.000036 UJL-SUR	<0.000035 U	
Pyridine	0.024	<0.00010	<0.000048	<0.000048 UJL-SUR*	<0.0026 UJL*	<0.000040 UJL-SUR, MS/SD*	<0.000030 UJL-SUR,MS/SD	<0.000030 U	<0.000030 UJL-SUR	<0.000030 UJL-MS/SD	**0.000068 J**	<0.000031 UJL-MS/SD	<0.000030 UJL-LCS,MS/SD	
METALS (mg/L)														
Arsenic	0.010	**0.00244 J**	**0.00307 J**	**0.00323 J**	**0.0032**	**0.00259 J**	**0.0023**	**0.00232 J**	**0.00236 J**	**0.00487 UH-MB,CCB**	**0.00247 J**	**0.00256 J**	**0.00155 J**	
Barium	2.0	**0.152**	**0.151**	**0.146**	**0.152**	**0.148**	**0.13**	**0.152**	**0.154**	**0.0893**	**0.0412**	**0.0837**	**0.115**	
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	
Chromium	0.10	<0.0010	<0.0010	<0.0010	**0.00021 J**	<0.00100	<0.0010	<0.000400 U	<0.000400 U	**0.000642 UH-MB**	<0.000400 U	**0.000700 J**	<0.000400 U	
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	<0.00060 U	**0.00168 J**	
Mercury	0.0020	<0.000042	<0.000040	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 UJ-CCB	<0.0000400 UJ-CCB	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.0000300 U	
Selenium	0.050	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U	
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U	
OTHER														
Sulfate	NA	13.5	9.96	10.7	9.90	11.3	8.7	5.48	5.48	12.4	10.3	11.1	6.72	
Total Dissolved Solids	NA	394	376	362	340	340	340	324 JI-FD	1050 JI-FD	396	402	360	320	

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[c] $^{GW}GW_{ING}$ mg/L	DA-02																				
		HAP-DA02-150 06/12/2018 HS18090635-05	HAP-DA02-160 12/18/2018 HS18121186-05		HAP-DA02-170 6/18/2019 HS19060976-07		HAP-DA02-180 12/17/19 HS19121050-07		HAP-DA02-190 6/23/20 HS20061199-06		(DUP) HAP-DA02-191 6/23/20 HS20061199-07		HAP-DA02-200 11/17/20 HS20110979-07		HAP-DA02-210 6/15/21 HS21060975-06		(DUP) HAP-DA02-211 6/15/21 HS21060975-07		HAP-DA02-220 11/30/21 HS21120107-06		(DUP) HAP-DA02-221 11/30/21 HS21120107-07		HAP-DA02-230 6/14/22 HS22060764-06		HAPOM-DA-05 08/04/2011 1108188-02
ANALYTE																								
VOLATILE ORGANIC COMPOUNDS (mg/L)																								
Benzene	0.005	<0.00020 U	<0.00020	U	<0.00020	U	<0.00020	U	**0.00027**	J	**0.00027**	J	**0.00022**	J	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U	< 0.00020	U	<0.00030
Ethylbenzene	0.70	<0.00030 U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	< 0.00030	U	< 0.00030	U	< 0.00030	U	<0.00010
Toluene	1.0	<0.00020 U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U	< 0.00020	U	**0.00010 J**
Xylenes, total	10	<0.00030 U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	<0.00030	U	**0.0023**	JI-FD	**0.00062**	JI-FD	< 0.00030	U	< 0.00030	U	< 0.00030	U	<0.00030
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																								
Phenol	7.3	<0.000035 UJL-LCS,MS/SD	<0.000036	U	<0.000035	U	<0.000036	U	<0.000036	U	<0.000037	U	<0.000035 UJL-SUR,LCS		<0.000035	U	<0.000036	U	< 0.000035	U	< 0.000035	U	< 0.000035	U	<0.00005 UJ*
Pyridine	0.024	<0.000030 UJL-LCS,MS/SD	<0.000030	U	<0.000030	U	<0.000030	U	<0.000031	U	<0.000032	U	<0.000030 UJL-SUR,LCS,MS/SD		<0.000030	U	<0.000030	U	< 0.000030	UJL-LCS, MS/SD	< 0.000030	UJL-LCS, MS/SD	< 0.000030	U	<0.00010 UJ*
METALS (mg/L)																								
Arsenic	0.010	**0.00189 J**	**0.00262**		**0.00308**		**0.00147**	J	**0.00143**	J	**0.00157**	J	**0.00177**	J	**0.00146**	UH-RB, CCB	**0.000982**	UH-RB, CCB	**0.00233**		**0.00256**		**0.00270**		
Barium	2.0	**0.121**	**0.131**		**0.0534**		**0.102**		**0.108**		**0.143**		**0.12**		**0.107**	UH-RB	**0.0986**	UH-RB	**0.0996**		**0.103**		**0.115**		
Cadmium	0.0050	<0.000200 U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	**0.000376**	J	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	< 0.000200	U	U
Chromium	0.10	<0.000400 U	**0.00382**	J	<0.000400	U	<0.000400	U	**0.000405**	J	**0.00221**	J	**0.00153**	JH-MS	<0.000400	U	<0.000400	U	**0.000419**	J	**0.000629**	J	**0.000936**	UH-RB	J
Lead	0.015	<0.000600 U	**0.00208**		<0.000600	U	**0.00140**	J	<0.000600	U	**0.00130**	J	<0.000600	U	<0.000600	U	<0.000600	U	< 0.000600	U	< 0.000600	U	< 0.000600	U	U
Mercury	0.0020	<0.0000300 U	<0.0000300	U	<0.0000300	U	**0.0000480**	J	<0.0000300	U	<0.0000300	U	<0.0000300	U	**0.0000380**	UH-MB	**0.0000410**	UH-MB	**0.0000710**	JI-FD	**0.000207**	JI-FD	< 0.0000300	U	<0.000042
Selenium	0.050	**0.00182 J**	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	<0.00110	U	< 0.00110	U	< 0.00110	U	< 0.00110	U	<0.0010
Silver	0.12	<0.000200 U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080
OTHER																								
Sulfate	NA	9.24	10.3		11.9		8.71		13.3		13.2		**15.1**		**26.8**		**28.5**		**12.2**		**13.8**		**12.5**		4.34
Total Dissolved Solids	NA	452	468		454		204		308		322		**302**		**290**		**230**		**364**		**390**		**390**		348

	TRRP Tier 1 Residential PCLs[c] $^{GW}GW_{HQ}$ mg/L	DA-05												
Sample ID **Sample Date** **Lab Sample ID**		HAPOM-DA-05-0 11/16/2011 1111590-02	HAP-DA05-070612-0 07/05/2012 1207231-01	HAP-DA05-112712-0 11/27/2012 12111017-03	HAP-DA05-061913-0 06/19/2013 1306861-03	(DUP) HAP-DA05-061913-1 06/19/2013 1306861-04	HAP-DA05-NOV2013 02/19/2014 14021012-14	HAP-DA05-JUL2014 07/10/2014 14070538-04	HAP-DA05-080 11/13/2014 14115045-03	HAP-DA05-090 5/12/2015 15060678-13	HAP-DA05-100 12/18/2015 HS15120788-06	HAP-DA05-110 6/28/2016 HS16070019-04	(DUP) HAP-DA05-111 6/28/2016 HS16070019-05	HAP-DA05-120 11/29/2016 HS16111331-04
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	**0.00033 J**
Ethylbenzene	0.70	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00090	<0.00090	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	**0.00081 J**	<0.00050 U	<0.00050 U	<0.00050 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.000050 UJ*	0.000074 U*	<0.000050 UJL*	<0.000050	<0.000050 UJL*	<0.000032	<0.00043 UJL*	**0.000056 JL-SUR, MS/SD***	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U	<0.000036 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.00010 UJL*	<0.000048	<0.0024 UJL*	<0.000040 UJL-SUR, MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	<0.000030 UJL-MS/SD	<0.000031 U
METALS (mg/L)														
Arsenic	0.010	<0.0013	**0.00565**	**0.00483 J**	<0.0010	<0.0010	**0.00505**	**0.0011**	<0.00100	<0.0010	**0.00486 J**	**0.0045 UH-MB,CCB**	**0.0043 UH-MB,CCB**	**0.00127 J**
Barium	2.0	**0.131**	**0.133**	**0.151**	**0.157**	**0.155**	**0.144**	**0.148**	**0.149**	**0.14**	**0.133**	**0.0778**	**0.0868**	**0.0834**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	**0.00157 J**	<0.0012	<0.0012	<0.0010	<0.0010	<0.0010	**0.00026 J**	<0.00100	<0.0010	<0.000400 U	**0.00481 JI-FD**	**0.0057 JI-FD**	**0.00123 J**
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	**0.00023 J**	<0.000700	<0.00070	<0.000600 U	**0.00304 J**	**0.00373 J**	**0.00102 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 UJ-CCB	<0.0000400 U	<0.0000400 U	<0.0000300 U
Selenium	0.050	<0.0010	**0.00368 J**	**0.00118 J**	0.00196 UH*	0.00116 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000096	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U
OTHER														
Sulfate	NA	4,920	0.806	0.626	39.2	40.1	2.45	38.7	37.9	37	0.913	6.02	6.16	18.7
Total Dissolved Solids	NA	318	640	296	314	328	188	328	318	390	314	162	176	212

	TRRP Tier 1 Residential PCLs[c] $^{GW}GW_{HQ}$ mg/L	DA-05																	
Sample ID **Sample Date** **Lab Sample ID**		HAP-DA05-130 6/6/2017 HS17060588-05	HAP-DA05-140 12/19/2017 HS17121134-04	(DUP) HAP-DA05-141 12/19/2017 HS17121134-05	HAP-DA05-150 06/12/2018 HS18060835-04	HAP-DA05-163 12/18/2018 HS18121186-04	HAP-DA05-170 6/18/2018 HS19060976-08	HAP-DA05-183 12/17/19 HS19121050-08	HAP-DA05-190 6/23/20 HS20061199-08	HAP-DA05-203 11/17/20 HS20110979-08	HAP-DA05-210 6/15/21 HS21060975-08		HAP-DA05-223 11/30/21 HS21120107-08		HAP-DA05-230 5/14/22 HS22060764-07	
ANALYTE																			
VOLATILE ORGANIC COMPOUNDS (mg/L)																			
Benzene	0.005	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U		< 0.00020	U	< 0.00020	U			
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U		< 0.00030	U	< 0.00030	U			
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.0012**	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U		< 0.00020	U	< 0.00020	U			
Xylenes, total	10	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U		< 0.00030	U	< 0.00030	U			
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																			
Phenol	7.3	**0.000041 JL-SUR**	<0.000035 U	<0.000035 UJL-SUR	<0.000035 UJL-SUR, LCS,MS/SD	<0.000035 U	<0.000035 U	<0.000035 U	<0.000038 U	<0.000035 UJL-SUR,LCS	<0.000035 U		< 0.000035	U	< 0.000035	U			
Pyridine	0.024	<0.000031 UJL-SUR,MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 UJL-SUR, LCS,MS/SD	<0.000030 U	<0.000030 U	<0.000030 U	<0.000033 U	<0.000030 UJL-LCS,MS/SD	<0.000030 U		< 0.000030	UJL-LCS, MS/SD	< 0.000030	U			
METALS (mg/L)																			
Arsenic	0.010	**0.00111 J**	**0.00171 J**	**0.00145 J**	**0.000959 J**	**0.000806 J**	**0.000555 J**	**0.00178 J**	**0.00140 J**	**0.000934 J**	**0.00188**	UH-RB, CCB	**0.00518**		**0.00481**				
Barium	2.0	**0.120**	**0.0789**	**0.0847**	**0.106**	**0.114**	**0.121**	**0.0769**	**0.154**	**0.0969**	**0.118**	UH-RB	**0.178**		**0.155**				
Cadmium	0.0050	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U		< 0.000200	U	< 0.000200	U			
Chromium	0.10	**0.000660 J**	<0.000400 U	<0.000400 U	<0.000400 U	<0.000400 U	<0.000400 U	**0.000653 J**	**0.00137 J**	**0.00107 J**	**0.000480**	UH-RB	**0.00668**		**0.000827**	UH-RB			
Lead	0.015	<0.000600 U	<0.000600 U	**0.000928 J**	<0.000600 U	<0.000600 U	<0.000600 U	**0.00156 J**	**0.000790 J**	<0.000600 U	<0.000600 U		**0.00123**	J	< 0.000600	U			
Mercury	0.0020	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000470 J**	<0.0000300 U	<0.0000300 U	**0.0000410**	UH-MB	**0.0000340**	J	< 0.0000300	U			
Selenium	0.050	<0.0011 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U		< 0.00110	U	< 0.00110	U			
Silver	0.12	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U		< 0.000200	U	< 0.000200	U			
OTHER																			
Sulfate	NA	27.8	22.5	24.2	29.3	31.1	30.6	10.7	19.6	**23.7**	**18.2**		**3.48**		**2.74**				
Total Dissolved Solids	NA	262	202	210	284	290	294	154	190	**214**	**338**		**312**		**294**				

	TRRP Tier 1 Residential PCLs[c] $^{GW}GW_{HQ}$ mg/L	DA-06	DA-06												
Sample ID		HAPOM-DA-06	HAPOM-DA-06-0	HAPOM-DA-06-1	HAP-DA06-070512-3	HAP-DA06-112712-3	HAP-DA06-061913-0	HAP-DA06-NOV2013	HAP-DA06-JUL2014	HAP-DA06-080	HAP-DA06-090	HAP-DA06-100	HAP-DA06-110	HAP-DA06-120
Sample Date		08/04/2011	11/16/2011	11/16/2011	07/05/2012	11/27/2012	06/19/2013	02/19/2014	07/10/2014	11/13/2014	5/14/2015	12/15/2015	6/28/2016	11/29/2016
Lab Sample ID		1108188-04	1111590-03	1111590-04	1207231-07	12111017-04	1306861-02	14021012-15	14070538-05	14110545-04	15050676-12	HS15120788-04	HS16070019-03	HS16111331-03
ANALYTE														
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	**0.012**
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	0.00010 UJ*	<0.00010	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00030	<0.00030	<0.00090	<0.00090	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	**0.0021**
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.00005 UJ*	<0.000050 UJ*	<0.000050 UJ*	<0.000050 UJ*	<0.000050 UJL*	<0.000050	**0.000082 J**	<0.00046 UJL*	<0.000026 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000048	<0.0025 UJL*	<0.000040 UJL-SUR, MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	<0.000030 U
METALS (mg/L)														
Arsenic	0.010	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0010	<0.0010	<0.00042	<0.00100	<0.0010	<0.000400 U	**0.00329 UH-MB,CCB**	**0.00943**
Barium	2.0	**0.117**	**0.110**	**0.107**	**0.126**	**0.128**	**0.139**	**0.129**	**0.131**	**0.130**	**0.12**	**0.121**	**0.108**	**0.0790**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	**0.00127 J**	<0.0012	<0.0012	**0.00102 J**	<0.0010	<0.00018	<0.00100	<0.0010	<0.000400 U	**0.000922 UH-MB**	<0.000400 U
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	**0.00133 J**	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 UJ-CCB	<0.0000400 U	<0.0000300 U
Selenium	0.050	<0.0010	<0.0010	<0.0010	**0.00250 J**	<0.0010	0.00116 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
OTHER														
Sulfate	NA	3.6	2.30	2.28	2.49	2.38	3.60	2.82	3.26	4.98	3.8	3.14	4.29	4.79
Total Dissolved Solids	NA	316	322	312	760	360	338	304	318	300	340	316	348	342

	TRRP Tier 1 Residential PCLs[c] $^{GW}GW_{HQ}$ mg/L	DA-06												DA-08		
Sample ID		HAP-DA06-130	HAP-DA06-140	HAP-DA06-150	HAP-DA06-160	HAP-DA06-170	HAP-DA06-180	HAP-DA06-190	HAP-DA06-200	HAP-DA06-210	HAP-DA06-220	HAP-DA06-230		HAPOM-DA-08	HAPOM-DA-08-0	HAP-DA08-070612-0
Sample Date		6/6/2017	12/19/2017	06/12/2018	12/18/2018	6/18/2019	12/17/19	6/23/20	11/17/20	6/16/21	12/1/21	6/14/22		08/05/2011	11/17/2011	07/06/2012
Lab Sample ID		HS17050588-04	HS17121134-03	HS18060635-03	HS18121186-03	HS19061024-01	HS19121050-09	HS20061283-01	HS19121050-09	HS20110979-09	HS21120107-09	HS22060784-08		1108225-001	1111650-01	1207230-08
ANALYTE																
VOLATILE ORGANIC COMPOUNDS (mg/L)																
Benzene	0.005	<0.00020 U	<0.00020 U	<0.00020 U	**0.0011**	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U		<0.00030	<0.00030	<0.00020
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U		<0.00010	<0.00010	<0.00030
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U		0.00014 UJ*	<0.00010	<0.00030
Xylenes, total	10	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U		<0.00030	**0.00032 J**	<0.00090
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																
Phenol	7.3	<0.000035 U	<0.000035 U	<0.000035 UJL-LCS,MS/SD	<0.000035 U	<0.000035 U	<0.000035 U	<0.000036 U	<0.000036 UJL-SUR,LCS	<0.000035 U	< 0.000035 U	< 0.000035 U		<0.000050 UJ*	<0.000050	<0.000050 UJ*
Pyridine	0.024	<0.000030 UJL-MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 UJL-LCS,MS/SD	<0.000030 U	<0.000030 U	<0.000030 U	<0.000031 U	<0.000030 UJL-SUR,LCS,MS/SD	<0.000030 U	< 0.000030 U	< 0.000030 UJL-LCS, MS/SD	U	<0.00010 UJ*	<0.00010	<0.00010 UJ*
METALS (mg/L)																
Arsenic	0.010	<0.00040 U	**0.00201**	**0.00240**	**0.00189 J**	**0.00170 J**	**0.00238**	**0.00336**	**0.000729 J**	**0.000643**	UH-RB, CCB	**0.00118 J**	**0.00103 J**	**0.00179 J**	**0.00153 J**	**0.00208 J**
Barium	2.0	**0.123**	**0.105**	**0.103**	**0.0874**	**0.0883**	**0.0667**	**0.104**	**0.0563**	**0.0858**	UH-RB	**0.104**	**0.112**	**0.0904**	**0.0846**	**0.0828**
Cadmium	0.0050	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U		<0.00080	<0.00080	<0.00080
Chromium	0.10	<0.00040 U	**0.000576 J**	**0.00105 J**	**0.00154 J**	**0.000885 J**	<0.000400 U	**0.00212 J**	**0.000496** JH-MS	<0.000400 U	**0.000605 J**	**0.00101** UH-RB		<0.0012	<0.0012	<0.0012
Lead	0.015	<0.00060 U	<0.000600 U	<0.000600 U	**0.000825 J**	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	< 0.000600 U	< 0.000600 U		<0.00070	0.000724 U*	<0.00070
Mercury	0.0020	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000410** UH-MB	**0.0000770 J**	< 0.0000300 U		<0.000042	<0.000042	<0.000042
Selenium	0.050	<0.0011 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	< 0.00110 U	< 0.00110 U		<0.0010	<0.0010	0.00205 U*
Silver	0.12	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	**0.000315 J**		<0.00080	<0.00080	<0.00080
OTHER																
Sulfate	NA	3.65	7.57	9.79	3.95	13.3	17.8	21.5	**12.8**	7.91	**4.25**	**4.61**		5.78	5.52	4.87
Total Dissolved Solids	NA	298	148	170	460	342	278	302	**260**	**300**	**322**	**286**		396	386	628

		DA-08											
Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{DW}GW_{ING}$ mg/L	HAP-DA08-112712-0 11/27/2012 12111017-05	HAP-DA08-062013-0 06/20/2013 1306881-15	HAP-DA08-NOV2013 02/20/2014 14021012-23	HAP-DA08-JUL2014 07/10/2014 14070538-06	HAP-DA08-080 11/13/2014 1411054S-05	HAP-DA08-080 05/14/2015 15050876-05	HAP-DA08-100 12/15/2015 HS15120788-03	HAP-DA08-110 6/27/2016 HS16070019-02	HAP-DA08-120 11/28/2016 HS16111331-02	HAP-DA08-130 6/9/2017 HS17060588-03	HAP-DA08-140 12/19/2017 HS17121134-02
ANALYTE												
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	**0.00025 J**	**0.00039 J**	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	<0.000050 UJL*	<0.000050	<0.000032	<0.00044 UJL*	<0.000026 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U	<0.000036 UJL-SUR	<0.000035 UJL-SUR
Pyridine	0.024	<0.00010 UJL*	<0.00010	<0.000048	<0.0024 UJL*	<0.000040 UJL-MS/SD*	<0.000030 UJL-MS/SD	<0.000030 UJL-SUR	**0.00009 JL-MS/SD**	<0.000030 U	<0.000031 UJL-SUR,MS/SD	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)												
Arsenic	0.010	**0.00183 J**	**0.00153 J**	**0.00147 J**	**0.0014**	**0.00155 J**	**0.0019 J**	**0.0015 J**	**0.00403 UH-MB,CCB**	**0.00107 J**	**0.00137 J**	**0.00225**
Barium	2.0	**0.101**	**0.103**	**0.0991**	**0.124**	**0.105**	**0.12**	**0.0851**	**0.117**	**0.0878**	**0.104**	**0.0733**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
Chromium	0.10	<0.0012	**0.00347 J**	<0.0010	**0.0027**	**0.00314 J**	<0.0010	0.00104 UH-RB	**0.00167 UH-MB**	**0.000785 J**	**0.00105 J**	**0.00112 J**
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	**0.00064 J**	<0.000600 U	<0.00060 U	**0.000797 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000040 UJL-MS*	<0.000012	<0.0000400	<0.0000400	<0.0000400 UJ-CCB	<0.0000400 U	<0.0000300 U	<0.000030 U	<0.0000300 U
Selenium	0.050	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U	<0.0011 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	<0.00020 U	<0.000200 U
OTHER												
Sulfate	NA	3.24	7.76	4.62	5.42	11.9	4.4	4.41	5.24	5.34	4.72	11.5
Total Dissolved Solids	NA	460	420	772	404	448	400	524	420	552	508	196

	TRRP Tier 1 Residential		DA-08																	
Sample ID	PCLs[a]	HAP-DA08-150	HAP-DA08-160	HAP-DA08-173	HAP-DA08-175	HAP-DA08-180	HAP-DA08-185	HAP-DA08-193	HAP-DA08-195	HAP-DA08-200	HAP-DA08-213	HAP-DA08-220		HAP-DA08-230	
Sample Date	$^{GW}GW_{ING}$	06/12/2018	12/18/2018	6/18/2019	6/18/2019	12/17/19	12/17/19	6/23/20	6/24/20	11/18/20	6/16/21	12/1/21		6/14/22	
Lab Sample ID	mg/L	HS18060635-02	HS18121186-02	HS19061024-02	HS19061024-03	HS19121142-01	HS19121142-02	HS20081263-02	HS20081263-03	HS20110979-10	HS21060975-10	HS21120107-10		HS22060764-08	
ANALYTE															
VOLATILE ORGANIC COMPOUNDS (mg/L)															
Benzene	0.005	<0.00020 U	0.00052 J	<0.00020 U	<0.00020 U	**0.00056** J	<0.00020 U	**0.00034** J	<0.00020 U	**0.00058** J	<0.00020 U	**0.00072** J		< 0.00020 U	
Ethylbenzene	0.70	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U		< 0.00030 U	
Toluene	1.0	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U		< 0.00020 U	
Xylenes, total	10	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	**0.0037**	<0.00030 U	**0.0026**	**0.0024**	< 0.00030 U		< 0.00030 U	
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)															
Phenol	7.3	<0.000035 UJL-SUR, LCS,MS/SD	<0.000035 U	<0.000035 U	<0.000035 U	<0.000035 U	<0.000035 U	<0.000038 U	<0.000038 U	<0.000035 UJL-LCS	<0.000035 U	< 0.000035 U		< 0.000035 U	
Pyridine	0.024	<0.000030 UJL-LCS,MS/SD	<0.000030 U	<0.000030 U	<0.000030 U	<0.000030 U	<0.000030 U	<0.000033 U	<0.000033 U	<0.000030 UJL-LCS,MS/SD	<0.000030 U	< 0.000030 U	UJL-LCS, MS/SD	< 0.000030 U	
METALS (mg/L)															
Arsenic	0.010	**0.00410**	0.00479	0.00507	<0.000400 U	**0.00526**	<0.000400 U	**0.00667**	<0.000400 U	**0.00301**	**0.00450** UH-RB	**0.00375**		**0.00103** J	
Barium	2.0	**0.161**	0.111	0.137	<0.00190 U	**0.0884**	<0.00190 U	**0.143**	<0.00190 U	**0.0801**	**0.102** UH-RB	**0.0826**		**0.112**	
Cadmium	0.0050	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U		< 0.000200 U	
Chromium	0.10	**0.00105 J**	0.00126 J	0.00110 J	<0.000400 U	**0.00213** J	<0.000400 U	**0.000869** J	<0.000400 U	0.000977 JH-MS	**0.000881** UH-RB	**0.000671** J		**0.00101** UH-RB	
Lead	0.015	<0.000600 U	<0.000600 U	0.000813 J	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	<0.000600 U	< 0.000600 U		< 0.000600 U	
Mercury	0.0020	<0.0000300 U	<0.0000300 U	<0.0000300 U	0.0000450 J	<0.0000300 U	**0.0000420** J	<0.0000300 U	<0.0000300 U	<0.0000300 U	**0.0000460** UH-MB	< 0.0000300 U		< 0.0000300 U	
Selenium	0.050	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	< 0.00110 U		< 0.000600 U	
Silver	0.12	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U		< 0.00110 U	
OTHER															
Sulfate	NA	8.86	11.1	17.4	NA	15.2	<0.200 U	23.8	0.221 J	**17.4**	**17.4**	**14.5**		**4.61**	
Total Dissolved Solids	NA	344	378	374	NA	356	<5.00	314	<5.00	**326**	**380**	**372**		**286**	

NOTES:

NA - Not Applicable

milligrams per liter (mg/L)

(mg/kg)

Bolded value indicates a concentration at or above the sample detection limit

Tier 1 Residential Protective Concentration Level for that compound

*Texas Risk Reduction Tier 1 Residential

QUALIFIERS:

CCB - Analyte detected in associated continuing calibration blank.

FD - Field duplicate evaluation criteria not met.

H – Bias in sample result is likely to be high.

HT - Sample was analyzed outside of holding time.

I - Bias in sample result is indeterminate.

J - Estimated. The analyte was detected and positively identified. The associated numerical values are the approximate concentration of the analyte in the sample.

L - Bias in sample result is likely to be low.

LCS - Analyte was detected in associated laboratory control sample.

MB - Method blank contamination.

MS - Matrix spike recovery outside acceptance range. (inorganic)

MS/SD - Matrix spike/matrix spike duplicate accuracy and/or precision criteria not met. (organic)

RB - Analyte was detected in associated rinsate/equipment blank.

SUR - Surrogate recovery outside acceptance range.

U - Not detected. Analysis for the analyte was performed, but the analyte was not detected above the level of the sample detection limit.

UJ - Not detected. SDL is estimated. The analyte was analyzed for but was not detected above the reported SDL. However, the reported SDL is an estimate and may be inaccurate or imprecise.

Table F-3: Surface Water Monitoring Results

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{Ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-01							
				HAP-SW01-0712-3 07/08/2012 1207234-08	HAP-SW01-112912-0 11/29/2012 12111016-05	(DUP) HAP-SW01-112912-1 11/29/2012 12111016-06	HAP-SW01-062113-3 06/21/2013 1306886-08	HAP-SW01-NOV2013-3 02/20/2014 14021014-02	HAP-SW01-JUL2014 07/11/2014 14070603-01	HAP-SW01-080 11/14/2014 14110541-05	(DUP) HAP-SW01-093 05/15/2015 14110541-06
ANALYTE											
VOLATILE ORGANIC COMPOUNDS (mg/L)											
Benzene	0.005	0.005	0.13	<0.00020	<0.00020	<0.00020	<0.00020	**0.0013**	<0.00020	<0.00020	<0.00020
Ethylbenzene	0.70	0.70	1.00	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Toluene	1.0	1.0	3.4	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Xylenes, total	10	--	1.34	<0.00090	<0.00030	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)											
Phenol	7.3	4	0.11	<0.000050 UJ[7]	<0.000050 UJL[5]	<0.000050 UJL[5]	<0.000050	<0.000032	<0.000026 UJL[5]	<0.000026 UJL-SUR, MS/SD[5]	<0.000026 UJL-SUR, MS/SD[5]
Pyridine	0.024	0.023	--	<0.00010 UJ[7]	<0.00010 UJL[7]	<0.00010 UJL[5]	<0.00010	<0.000048	<0.000040 UJL[5]	<0.000040 UJL-LCS, MS/SD[5]	<0.000040 UJL-SUR, LCS, MS/SD[5]
METALS (mg/L)											
Arsenic	0.010	0.010	0.15	**0.00475 J**	<0.0065	**0.00398 J**	**0.00454 J**	<0.0050	<0.0030 JL[7]	<0.00500	<0.00500
Barium	2.0	2.0	16	**0.133**	**0.140**	**0.150**	**0.0744**	**0.0881**	**0.070**	**0.105**	**0.107**
Cadmium	0.005	0.005	0.00015	<0.00090	<0.0040	<0.00080	<0.0016	<0.00080	<0.00009	<0.00400	<0.00400
Chromium	0.10	--	0.0106[a]	<0.0012	<0.0060	**0.00166 J**	<0.0020	<0.0050	**0.00086 J**	<0.00500	<0.00500
Lead	0.015	0.0015	0.00117	<0.00070	<0.0035	**0.00211 J**	<0.0014	<0.0035	**0.00077**	<0.00350	<0.00350
Mercury	0.0020	--	0.0013	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040 UJL-MS[5]	<0.000012	<0.0000400	<0.0000400
Selenium	0.050	0.050	0.005	**0.00362 U[7]**	**0.00521 J**	**0.00194 J**	<0.0020	<0.0050	<0.0011	**0.00551 J**	**0.00561 J**
Silver	0.12	--	0.0001	<0.00080	<0.0040	<0.00080	<0.0016	<0.00080	<0.000056	<0.00400	<0.00400

NOTES:

All results in milligrams per liter (mg/L).

[a] - For hexavalent chromium

Gray highlighting indicates the analytical result exceeds the TRRP Tier 1 Residential PCL for $^{GW}GW_{Ing}$.

Blue highlighting indicates the analytical result exceeds the Human Health Surface Water Risk-Based Exposure Limits.

Green highlighting indicates the analytical result exceeds the RG263B Ecological Surface Water Benchmark for Freshwater Chronic. If no benchmark for the analyte exists, then '--' was used.

Bold results indicate the analyte was detected.

QUALIFIERS:

[7] - Qualified in the Data Usability Summary.

CCB - Analyte detected in associated continuing calibration blank.

FD - Field duplicate evaluation criteria not met.

H – Bias in sample result is likely to be high.

I - Bias in sample result is indeterminate.

J - Estimated: The analyte was detected and positively identified. The associated numerical values are the approximate concentration of the analyte in the sample.

L - Bias in sample result is likely to be low.

LCS - Analyte was detected in associated laboratory control sample.

MB - Method blank contamination.

MS - Matrix spike recovery outside acceptance range. (inorganic)

MS/SD - Matrix spike/matrix spike duplicate accuracy and/or precision criteria not met. (organic)

SUR - Surrogate recovery outside acceptance range.

U - Not detected. Analysis for the analyte was performed, but the analyte was not detected above the level of the sample detection limit.

UJ - Not detected, SDL is estimated: The analyte was analyzed for but was not detected above the reported SDL. However, the reported SDL is an estimate and may be inaccurate or imprecise.

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-01							
				(DUP) HAP-SW01-093 05/15/2015 14110541-08	HAP-SW01-080 12/18/2015 HS15120926-10	HAP-SW01-110 6/30/2016 HS16070019-28	(DUP) HAP-SW01-111 6/30/2016 HS16070019-29	HAP-SW01-120 12/2/2016 HS16120124-01	HAP-SW01-130 6/8/2017 HS17060588-23	HAP-SW01-140 12/21/2017 HS17121232-01	(DUP) HAP-SW01-141 12/21/2017 HS17121232-02
ANALYTE											
VOLATILE ORGANIC COMPOUNDS (mg/L)											
Benzene	0.005	0.005	0.13	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.0075**	**0.0070**	**0.0067**
Ethylbenzene	0.70	0.70	1.00	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	1.0	3.4	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	--	1.34	<0.00050	<0.00050 U	<0.00050 U	<0.00050 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)											
Phenol	7.3	4	0.11	<0.000026 UJL-SUR, MS/SD[a]	<0.000035 UJL-SUR	<0.000035 UJL-LCS,SUR,MS/SD	<0.000035 UJL-LCS,SUR,MS/SD	<0.000036 UJL-MS/SD	**0.00011 JL-SUR**	<0.000035 UJL-LCS	<0.000035 UJL-LCS
Pyridine	0.024	0.023	--	<0.000040 UJL-SUR, LCS, MS/SD[a]	<0.000030 U	<0.000030 UJL-LCS,MS/SD	<0.000030 LCS,MS/SD	<0.000031 UJL-MS/SD	<0.000031 U	<0.000030 UJL-LCS	<0.000030 UJL-LCS
METALS (mg/L)											
Arsenic	0.010	0.010	0.15	<0.00500	**0.00224 J**	**0.00493 UH-MB,CCB**	**0.00508 UH-MB,CCB**	**0.00298 J**	**0.00377 J**	**0.00264**	**0.00220**
Barium	2.0	2.0	16	**0.107**	**0.0616**	**0.0619**	**0.0612**	**0.123**	**0.0532 JH-DL**	**0.0703**	**0.0754**
Cadmium	0.005	0.005	0.00015	<0.00400	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	--	0.0106[a]	<0.00500	**0.00367 UH-CCB**	**0.00207 UH-MB**	**0.00213 UH-MB**	<0.000400 U	**0.000410 J**	<0.000400 U	<0.000400 U
Lead	0.015	0.0015	0.00117	<0.00350	**0.00164 J**	**0.00158 J**	**0.00172 J**	<0.000600 U	<0.000600 U	**0.00113 J**	**0.00104 J**
Mercury	0.0020	--	0.0013	<0.0000400	<0.0000400 U	<0.0000400 U	<0.0000400 U	<0.0000300 U	<0.0000300 U	0.0000320 UH-MB	0.0000340 UH-MB
Selenium	0.050	0.050	0.005	**0.00561 J**	<0.00110 U	**0.00311 UH-CCB**	**0.00283 UH-CCB**	**0.00174 J**	<0.0011 U	<0.00110 U	<0.00110 U
Silver	0.12	--	0.0001	<0.00400	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-01											
				HAP-SW01-153 06/14/2018 HS18060737-11	HAP-SW01-160 12/20/18/2018 HS18121291-05	HAP-SW01-170 6/20/19 HS19061123-05	HAP-SW01-171 6/20/19 HS19061123-06	HAP-SW01-180 12/19/19 HS19121186-03	(DUP) HAP-SW01-185 12/19/19 HS19121186-07	HAP-SW01-190 6/28/20 HS20061382-01	(DUP) HAP-SW01-191 6/26/20 HS20061382-02	HAP-SW01-200 11/19/20 HS20111099-01	HAP-SW01-210 6/18/21 HS21061093-01
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	0.005	0.13	<0.00020 U	**0.0034**	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.00036 J**	**0.00037 J**	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	0.70	1.00	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	1.0	3.4	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	--	1.34	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	4	0.11	<0.000035 UJL-SUR,MS/SD	<0.000036 U	<0.000035 U	<0.000035 U	<0.000035 U	<0.000035 U	<0.000036 U	<0.000036 U	<0.000035 U	<0.000035 U
Pyridine	0.024	0.023	--	<0.000030 UJL-SUR,LCS,MS/SD	<0.000031 U	<0.000030 U	<0.000030 U	<0.000030 U	<0.000030 U	<0.000031 U	<0.000031 U	<0.000030 U	<0.000030 U
METALS (mg/L)													
Arsenic	0.010	0.010	0.15	**0.00429**	**0.00159 J**	**0.00430**	**0.00421**	**0.00175 J**	<0.000400 U	**0.00316**	**0.00340**	**0.00248**	**0.00325**
Barium	2.0	2.0	16	**0.0904**	**0.0728**	**0.0695**	**0.0704**	**0.108**	<0.00190 U	**0.0519**	**0.0588**	**0.107**	**0.0650**
Cadmium	0.005	0.005	0.00015	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	--	0.0106[a]	**0.000481 J**	**0.00119 J**	**0.00254 J**	**0.00321 J**	**0.000493 J**	<0.000400 U	**0.000816 J**	**0.000711 J**	<0.000400 U	**0.00114** J
Lead	0.015	0.0015	0.00117	**0.00198 J**	**0.00318**	**0.00204**	**0.00218**	**0.000962 J**	<0.000600 U	**0.00216**	**0.00269**	**0.00138** J	**0.00106** J
Mercury	0.0020	--	0.0013	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 UJL-MS	**0.0000710** UH-CCB
Selenium	0.050	0.050	0.005	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	--	0.0001	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-01								SW-02				
				(DUP) HAP-SW01-211 6/18/21 HS21061093-02		HAP-SW01-220 12/2/21 HS21120188-10		(DUP) HAP-SW01-221 12/2/21 HS21120188-11		HAP-SW01-230 6/18/22 HS22060933-10		HAP-SW02-0712-0 07/06/2012 1207234-05	(DUP) HAP-SW02-0712-1 07/06/2012 1207234-06	HAP-SW02-112912-0 11/29/2012 12111016-03	HAP-SW02-062113-0 06/21/2013 1306869-06	(DUP) HAP-SW02-062113-1 06/21/2013 1306869-05
ANALYTE																
VOLATILE ORGANIC COMPOUNDS (mg/L)																
Benzene	0.005	0.005	0.13	<0.00020	U	**0.028**		**0.027**		< 0.00020	U	<0.00020	**0.00028 J**	<0.00020	<0.00020	<0.00020
Ethylbenzene	0.70	0.70	1.00	<0.00030	U	< 0.00030	U	< 0.00030	U	< 0.00030	U	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Toluene	1.0	1.0	3.4	<0.00020	U	< 0.00020	U	< 0.00020	U	< 0.00020	U	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020
Xylenes, total	10	--	1.34	<0.00030	U	< 0.00030	U	< 0.00030	U	< 0.00030	U	<0.00090	<0.00090	<0.00030	<0.00050	<0.00050
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																
Phenol	7.3	4	0.11	<0.000035	U	< 0.000035	UJL-SUR	< 0.000035	UJL-SUR	< 0.000035	U	**0.00016 J***	<0.000050 UJ*	<0.000050 UJL*	<0.000050	<0.000050
Pyridine	0.024	0.023	--	<0.000030	U	< 0.000030	UJL-LCS	< 0.000030	UJL-LCS	< 0.000030	U	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJL*	<0.00010	<0.00010
METALS (mg/L)																
Arsenic	0.010	0.010	0.15	**0.00338**		**0.00216**		**0.00230**		**0.00352**		**0.00430 J**	**0.00426 J**	<0.0065	**0.00455 J**	**0.00479 J**
Barium	2.0	2.0	16	**0.0651**		**0.0757**		**0.0673**		**0.117**		**0.122**	**0.120**	**0.145**	**0.0833**	**0.0804**
Cadmium	0.005	0.005	0.00015	<0.000200	U	< 0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.0040	<0.00080	<0.00080
Chromium	0.10	--	0.0106[a]	**0.000535**	J	**0.00147**	J	**0.00158**	J	**0.00137**	J	<0.0012	<0.0012	<0.0060	<0.0010	**0.00104 J**
Lead	0.015	0.0015	0.00117	**0.000888**	J	**0.00212**		**0.00276**		**0.000857**	J	<0.00070	<0.00070	**0.0103 J**	**0.000898 J**	**0.00112 J**
Mercury	0.0020	--	0.0013	**0.0000850**	UH-CCB	**0.0000360**	J	<0.0000300	U	<0.0000300	U	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
Selenium	0.050	0.050	0.005	<0.00110	U	< 0.00110	U	**0.00116**	J	< 0.00110	U	0.00158 U*	0.00201 U*	**0.0133 J**	**0.00254 J**	**0.00243 J**
Silver	0.12	--	0.0001	<0.000200	U	< 0.000200	U	< 0.000200	U	< 0.000200	U	<0.00080	<0.00080	<0.0040	<0.00080	<0.00080

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-02								
				HAP-SW02-NOV2013 02/20/2014 14021014-05	(DUP) HAP-SW02-NOV2013-1 02/20/2014 14021014-06	HAP-SW02-JUL2014-3 07/11/2014 14070803-02	HAP-SW02-080 11/14/2014 14110541-07	HAP-SW02-090 05/15/2015 15050676-28	(DUP) HAP-SW02-091 05/15/2015 15050676-29	HAP-SW02-100 12/18/2015 HS15120826-11	HAP-SW02-110 6/30/2016 HS16070019-30	HAP-SW02-120 12/2/2016 HS16120124-02
ANALYTE												
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	0.005	0.13	**0.0041**	**0.0040**	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	0.70	1.00	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	1.0	3.4	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	--	1.34	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	4	0.11	<0.000038	<0.000038	<0.000026 UJL*	<0.000026 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 UJL-LCS,MS/SD	<0.000035 UJL-MS/SD
Pyridine	0.024	0.023	--	<0.000053 UJL-FD	**0.00022 JI-FD***	<0.000040 UJL*	<0.000040 UJL-LCS, MS/SD*	**0.000035 JL-SUR,MS/SD**	<0.000030 UJL-SUR,MS/SD	<0.000030 U	<0.000030 UJL-LCS,MS/SD	**0.00032 JL-MS/SD**
METALS (mg/L)												
Arsenic	0.010	0.010	0.15	<0.0050	**0.00502 J**	**0.0036 JL***	<0.00500	**0.0032 J**	**0.0032**	**0.00204 J**	**0.00535 UH-MB,CCB**	**0.00313 J**
Barium	2.0	2.0	16	**0.0880**	**0.0928**	**0.072**	**0.106**	**0.081**	**0.083**	**0.0606**	**0.0587**	**0.125**
Cadmium	0.005	0.005	0.00015	<0.00080	<0.00080	<0.00009	<0.00400	<0.00080	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	--	0.0108*	<0.0050	<0.0050	**0.0011**	<0.00500	**0.0056**	**0.0064**	0.00276 UH-CCB	**0.00251 UH-MB**	<0.000400 U
Lead	0.015	0.0015	0.00117	**0.00306 J**	**0.00396 J**	**0.00045 J**	<0.00350	**0.0064**	**0.0070**	**0.00181 J**	**0.00145 J**	<0.000600 U
Mercury	0.0020	--	0.0013	<0.000040 UJL-MS	<0.000040 UJL-MS*	<0.000012	<0.0000400	<0.000040	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000300 U
Selenium	0.050	0.050	0.005	<0.0050	<0.0050	<0.0011	<0.00500	0.001 UH-CCB	0.0011 UH-CCB	<0.00110 U	**0.00385 UH-CCB**	**0.00136 J**
Silver	0.12	--	0.0001	<0.0040	<0.00080	<0.000056	<0.00400	<0.00080	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	(DUP) HAP-SW02-121 12/2/2016 HS16120124-03	HAP-SW02-130 8/8/2017 HS17060588-25	SW-02 HAP-SW02-140 12/21/2017 HS17121232-03	HAP-SW02-150 08/14/2018 HS18060737-12	(DUP) HAP-SW02-151 08/14/2018 HS18060737-13	HAP-SW02-160 12/21/2018 HS18121291-06	HAP-SW02-170 6/20/19 HS19061123-07	HAP-SW02-180 12/19/19 HS19121186-04	(DUP) HAP-SW02-181 12/19/19 HS19121186-05	HAP-SW02-190 6/26/20 HS20061382-03
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	0.005	0.13	<0.00020 U	**0.0019**	**0.0068**	<0.00020 U	<0.00020 U	**0.0030**	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	0.70	1.00	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	1.0	3.4	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	--	1.34	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	4	0.11	<0.000036 UJL-MS/SD	<0.000036 UJL-SUR	<0.000035 UJL-LCS	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR,MS/SD	<0.000036 U	<0.000035 U	<0.000035 U	<0.000035 U	<0.000037 U
Pyridine	0.024	0.023	--	**0.00027 JL-MS/SD**	<0.000031 U	**0.000075 JL-LCS**	<0.000030 UJL-SUR,LCS,MS/SD	<0.000030 UJL-SUR,LCS,MS/SD	<0.000031 U	<0.000030 U	<0.000030 U	<0.000030 U	<0.000032 U
METALS (mg/L)													
Arsenic	0.010	0.010	0.15	**0.00330 J**	**0.00395 J**	**0.00225**	**0.00386**	**0.00393**	**0.00174 J**	**0.00426**	**0.00168 J**	**0.00165 J**	**0.00271**
Barium	2.0	2.0	16	**0.126**	**0.0512 JH-DL**	**0.0715**	**0.0935**	**0.0920**	**0.0746**	**0.0699**	**0.110**	**0.108**	**0.0489**
Cadmium	0.005	0.005	0.00015	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	--	0.0108*	<0.000400 U	<0.000400 U	<0.000400 U	**0.000701 J**	**0.000438 J**	**0.00154 J**	**0.00280 J**	**0.000414 J**	<0.000400 U	**0.00134 J**
Lead	0.015	0.0015	0.00117	**0.000614 J**	<0.000600 U	**0.000910 J**	**0.00247**	**0.00265**	**0.00349**	**0.00231**	**0.000954 J**	<0.000600 U	**0.00210**
Mercury	0.0020	--	0.0013	<0.0000300 U	<0.0000300 U	0.0000340 UH-MB	0.0000400 UH-MB	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U
Selenium	0.050	0.050	0.005	**0.00144 J**	<0.0011 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.000600 U	<0.00110 U
Silver	0.12	--	0.0001	<0.000200 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.00110 U	<0.000200 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{Ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits $^{SW}RBELs$ mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-02										SW-03	
				HAP-SW02-195 6/26/20 HS20081382-04	HAP-SW02-200 11/19/20 HS20111099-02	(DUP) HAP-SW02-201 11/19/20 HS20111099-03	HAP-SW02-210 6/18/21 HS21081093-03	HAP-SW02-220 12/2/21 HS21120189-12	HAP-SW02-230 6/16/22 HS22060933-11	(DUP) HAP-SW02-231 6/16/22 HS22060933-12	HAP-SW03-0712-0 07/08/2012 1207234-03	HAP-SW03-112912-3 11/29/2012 12111016-02
ANALYTE												
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	0.005	0.13	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	**0.027**	< 0.00020 U	< 0.00020 U	**0.00046 J**	<0.00020
Ethylbenzene	0.70	0.70	1.00	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U	< 0.00030 U	<0.00030	<0.00030
Toluene	1.0	1.0	3.4	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	< 0.00020 U	< 0.00020 U	< 0.00020 U	<0.00030	<0.00030
Xylenes, total	10	--	1.34	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	< 0.00030 U	< 0.00030 U	< 0.00030 U	<0.00090	<0.00030
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	4	0.11	**0.00052**	<0.000035 U	<0.000035 U	<0.000035 U	< 0.000035 U	< 0.000035 U	< 0.000035 U	<0.000050 UJ*	<0.000050 UJL*
Pyridine	0.024	0.023	--	<0.000033 U	<0.000030 U	<0.000030 U	<0.000030 U	< 0.000030 UJL-LCS	< 0.000030 U	< 0.000030 U	<0.00010 UJ*	<0.00010 UJL*
METALS (mg/L)												
Arsenic	0.010	0.010	0.15	<0.000400 U	**0.0024**	0.00255	**0.00306**	**0.00216**	**0.00389**	**0.00375**	**0.00366 J**	<0.0065
Barium	2.0	2.0	16	<0.00190 U	**0.0969**	0.103	**0.0618**	**0.0658**	**0.125**	**0.121**	**0.111**	**0.152**
Cadmium	0.005	0.005	0.00015	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.0040
Chromium	0.10	--	0.0106*	<0.000400 U	<0.000400 U	<0.000400 U	<0.000400 U	**0.00163** J	**0.00119** J	**0.00105** J	<0.0012	<0.0060
Lead	0.015	0.0015	0.00117	<0.000600 U	<0.00120 U	**0.0016** J	**0.000936** J	**0.00203**	**0.00111** J	**0.000995** J	<0.00070	**0.0244 J**
Mercury	0.0020	--	0.0013	<0.0000300 U	**0.000067** UH-RB	0.000176 UH-RB	**0.0000880** UH-CCB	**0.0000400** J	< 0.0000300 U	< 0.0000300 U	<0.000042	<0.000042
Selenium	0.050	0.050	0.005	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	< 0.00110 U	< 0.00110 U	< 0.00110 U	0.00192 U*	**0.00587 J**
Silver	0.12	--	0.0001	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	< 0.000200 U	< 0.000200 U	< 0.000200 U	<0.00080	<0.0040

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{Ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits $^{SW}RBELs$ mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-03								
				HAP-SW03-062113-0 06/21/2013 1306888-02	HAP-SW03-NOV2013 02/20/2014 14021014-03	HAP-SW03-JUL2014 07/11/2014 14070803-03	(DUP) HAP-SW03-JUL2014-1 07/11/2014 14070803-04	HAP-SW03-083 11/14/2014 14110541-08	HAP-SW03-090 5/15/2015 15050876-30	HAP-SW03-100 12/18/2015 HS15120826-12	HAP-SW03-101 12/18/2015 HS15120826-13	HAP-SW03-113 6/30/2016 HS16070019-31
ANALYTE												
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	0.005	0.13	**0.00091 J**	<0.00020	<0.00020	<0.00020	**0.020**	<0.00020	**0.0051 JI-FD**	**0.0046 JI-FD**	<0.00020 U
Ethylbenzene	0.70	0.70	1.00	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	1.0	3.4	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	--	1.34	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	4	0.11	<0.000050	<0.000032 UJL-SUR*	<0.000026 UJL*	<0.000026 UJL*	**0.00012 JL-SUR,MS/SD***	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U	<0.000035 UJL-LCS,MS/SD
Pyridine	0.024	0.023	--	**0.00011 J**	<0.000048	<0.000040 UJL*	<0.000040 UJL*	<0.000040 UJL-LCS,MS/SD*	<0.000030 UJL-SUR,MS/SD	<0.000030 U	<0.000030 U	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)												
Arsenic	0.010	0.010	0.15	**0.00385 J**	<0.0050	**0.0036 JL***	**0.0038 JL***	<0.00500	**0.0025 J**	**0.00227 J**	**0.0023 J**	**0.00506 UH-MB,CCB**
Barium	2.0	2.0	16	**0.082**	**0.0990**	**0.060**	**0.071**	**0.118**	**0.075**	**0.0640**	**0.0625**	**0.0599**
Cadmium	0.005	0.005	0.00015	<0.00080	<0.00080	<0.00009	<0.00009	<0.00400	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	--	0.0106*	<0.0010	<0.0050	**0.00048 J**	**0.00073 J**	<0.00500	**0.0030**	**0.00245 UH-CCB**	**0.00226 UH-CCB**	**0.00226 UH-MB**
Lead	0.015	0.0015	0.00117	<0.00070	**0.000828 J**	**0.00069 JI***	**0.0019 JI***	<0.00350	**0.0028**	**0.00154 J**	**0.00148 J**	**0.00175 J**
Mercury	0.0020	--	0.0013	<0.000042	<0.000040 UJL-MS*	<0.000012	<0.000012	<0.000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000400 U
Selenium	0.050	0.050	0.005	**0.00248 J**	<0.0050	<0.0011	<0.0011	<0.00500	<0.0010	<0.00110 U	<0.00110 U	**0.00292 UH-CCB**
Silver	0.12	--	0.0001	<0.00080	<0.00080	<0.000056	<0.000056	<0.00400	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-03										
				HAP-SW03-120 12/2/2016 HS16120124-04	HAP-SW03-130 6/8/2017 HS17060588-26	(DUP) HAP-SW03-131 6/8/2017 HS17060588-27	HAP-SW03-140 12/21/2017 HS17121232-04	HAP-SW03-150 06/14/2018 HS18060737-14	HAP-SW03-160 12/21/2018 HS18121291-07	HAP-SW03-161 12/21/2018 HS18121291-08	HAP-SW03-170 6/20/19 HS19061123-08	HAP-SW03-180 12/19/19 HS19121186-06	HAP-SW03-190 6/26/20 HS20061382-05
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	0.005	0.13	<0.00020 U	**0.027**	**0.027**	**0.0065**	<0.00020 U	**0.0032**	**0.0032**	<0.00020 U	<0.00020 U	**0.00031** J
Ethylbenzene	0.70	0.70	1.00	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	1.0	3.4	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	--	1.34	<0.00030 U	**0.0012**	**0.0011**	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U	<0.00030 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	4	0.11	<0.000036 UJL-MS/SD	**0.00014 JL-SUR,FD**	<0.000038 UJL-SUR,FD	<0.000035 UJL-LCS	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000036 U	<0.000035 U	<0.000035 U	<0.000036 U
Pyridine	0.024	0.023	--	**0.00055 JL-MS/SD**	<0.000030 U	<0.000031 U	**0.00011 JL-LCS**	<0.000030 UJL-SUR,LCS,MS/SD	<0.000030 U	<0.000031 U	<0.000030 U	<0.000030 U	<0.000031 U
METALS (mg/L)													
Arsenic	0.010	0.010	0.15	**0.00334 J**	**0.00388 J**	**0.00405 J**	**0.00260**	**0.00400**	**0.00168 J**	**0.00162 J**	**0.00419**	**0.00163 J**	**0.00322**
Barium	2.0	2.0	16	**0.130**	**0.0501 JH-DL**	**0.0533 JH-DL**	**0.0698**	**0.0944**	**0.0765**	**0.0681**	**0.071**	**0.101**	**0.0612**
Cadmium	0.005	0.005	0.00015	<0.000200 U	<0.00020 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	--	0.0106[a]	**0.000509 J**	<0.00040 U	**0.000427 J**	<0.000400 U	**0.000475 J**	**0.00225 J**	**0.00121 J**	**0.00298 J**	<0.000400 U	**0.000444 J**
Lead	0.015	0.0015	0.00117	<0.000600 U	<0.000600 U	**0.000629 J**	**0.00128 J**	**0.00266**	**0.00378**	**0.00316**	**0.00228**	<0.000600 U	**0.00245**
Mercury	0.0020	--	0.0013	<0.0000300 U	<0.0000300 U	<0.0000300 U	0.0000410 UH-MB	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U	<0.0000300 U
Selenium	0.050	0.050	0.005	**0.00197 J**	<0.0011 U	<0.0011 U	**0.00134 J**	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	--	0.0001	<0.000200 U	<0.00020 U	<0.00020 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U	<0.000200 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ing}$ mg/L	Human Health Surface Water Risk-Based Exposure Limits ^{SW}RBELs mg/L	RG263B Surface Water Benchmark Freshwater Chronic Benchmark mg/L	SW-03							
				HAP-SW03-200 11/19/20 HS20111099-04		HAP-SW03-210 6/18/21 HS21061083-05		HAP-SW03-220 12/2/21 HS21120188-14		HAP-SW03-230 6/16/22 HS22060933-13	
ANALYTE											
VOLATILE ORGANIC COMPOUNDS (mg/L)											
Benzene	0.005	0.005	0.13	<0.00020	U	<0.00020	U	**0.024**		< 0.00020	U
Ethylbenzene	0.70	0.70	1.00	<0.00030	U	<0.00030	U	< 0.00030	U	< 0.00030	U
Toluene	1.0	1.0	3.4	<0.00020	U	<0.00020	U	< 0.00020	U	< 0.00020	U
Xylenes, total	10	--	1.34	<0.00030	U	<0.00030	U	< 0.00030	U	< 0.00030	U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)											
Phenol	7.3	4	0.11	<0.000035	U	<0.000035	U	< 0.000035	U	< 0.000035	U
Pyridine	0.024	0.023	--	<0.000030	U	<0.000030	U	< 0.000030	UJL-LCS	< 0.000030	U
METALS (mg/L)											
Arsenic	0.010	0.010	0.15	**0.00238**		**0.00316**		**0.00240**		**0.00361**	
Barium	2.0	2.0	16	**0.103**		**0.0633**		**0.0893**		**0.117**	
Cadmium	0.005	0.005	0.00015	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U
Chromium	0.10	--	0.0106[a]	<0.000400	U	<0.000400	U	**0.00175**	J	**0.000859**	J
Lead	0.015	0.0015	0.00117	**0.00135**	J	**0.000948**	J	**0.00329**		**0.00100**	J
Mercury	0.0020	--	0.0013	<0.0000300	UJL-MS	**0.0000820**	UH-CCB	**0.0000340**	J	< 0.0000300	U
Selenium	0.050	0.050	0.005	**0.0013**	J	<0.00110	U	< 0.00110	U	< 0.00110	U
Silver	0.12	--	0.0001	<0.000200	U	<0.000200	U	< 0.000200	U	< 0.000200	U

Table F-4: Sediment Monitoring Results

			SD-01										
Sample ID **Sample Date** **Lab Sample ID**	TRRP Tier 1 Residential[a] $^{Tot}Soil_{comb}$ mg/kg	RG263B Sediment Benchmarks Freshwater Benchmark mg/kg	HAP-SD01-0712-0 07/06/2012 1207234-07	HAP-SD01-112912-0 11/29/2012 12111016-07	(DUP) HAP-SD01-112912-1 11/29/2012 12111016-08	HAP-SD01-062113-3 06/21/2013 1306888-07	HAP-SD01-NOV2013-3 02/20/2014 14021014-01	HAP-SD01-JUL2014 07/11/2014 14070603-05	HAP-SD01-080 11/14/2014 14110541-01	(DUP) HAP-SD01-081 11/14/2014 14110541-02	HAP-SD01-093 5/15/2015 14110541-01	HAP-SD01-100 12/18/2015 HS15120826-06
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Benzene	69	0.16	<0.00030	<0.00071	<0.00066	<0.00048	<0.00050	<0.00064	<0.00067	<0.00064	<0.00059	<0.00046 U
Ethylbenzene	5300	2.63	<0.00045	<0.0011	<0.00098	<0.00072	<0.00076	<0.00096	<0.0010	<0.00097	<0.00089	<0.00064 U
Toluene	5400	6.76	<0.00035	<0.00083	<0.00077	<0.00056	<0.00059	<0.00075	<0.00078	<0.00075	<0.00069	<0.00055 U
Xylenes, total	3700	4	<0.0013	<0.0031	<0.0028	<0.0014	<0.0014	<0.0018	<0.0019	<0.0018	<0.0017	<0.0022 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)												
Phenol	20000	0.12	<0.0026	<0.0025	<0.0024	<0.00091 UJL*	<0.00070	<0.060	**0.0026 J**	**0.0025 J**	<0.0013	<0.0018 U
Pyridine	82	--	<0.0026 UJ*	<0.0025 UJL*	<0.0024 UJL*	<0.0013 UJL*	<0.00099 UJL-MS/SD*	<0.037	<0.0018 UJL-MS/SD*	<0.0018	<0.0011	<0.0015 UJL-MS/SD
METALS (mg/kg)												
Arsenic	24	9.79	**0.270 J**	**0.202 J**	**0.221 J**	**0.157 J**	**0.147 J**	<0.33	**0.243 J**	**0.229 J**	**0.54 J**	**0.346 J**
Barium	8100	--	**2.35**	**1.33 JI***	**2.01 JI***	**1.55**	**1.44**	**3.3 J**	**1.39**	**1.45**	**6.3 JL-DL**	**4.83**
Cadmium	52	0.99	<0.062	<0.061	<0.051	<0.047	<0.048	<0.08	<0.0675	<0.0687	<0.060	<0.0650 U
Chromium	27000	43.4	**0.584 J**	**0.259 J**	**0.297 J**	**0.293 J**	**0.278 J**	**0.76 J**	**0.475 UH-CCB***	**0.436 J**	**2.5**	**0.63 J**
Lead	500	35.8	**1.68**	**1.09**	**0.982**	**1.05**	**1.00**	**1.60 J**	**1.28**	**1.06**	**6.9 J-D**	**2.03**
Mercury	2.1	0.18	**0.000626 J**	**0.00122 J**	**0.00179 J**	<0.00063	<0.00048	**0.0021 J**	**0.00130 J**	**0.000890 J**	**0.0040**	**0.00212 J**
Selenium	310	--	**0.272 J**	<0.22	<0.18	<0.17	<0.17	<0.51	<0.243	<0.247	**0.26 J**	<0.240 U
Silver	97	0.57	<0.099	<0.098	<0.082	<0.075	<0.076	<0.029	**0.170 UH-CCB***	<0.0110	<0.095	<0.110 U

NOTES:
All results in milligrams per kilogram (mg/kg).
Gray highlighting indicates the analytical result exceeds the TRRP Tier 1 Residential PCL for $^{Tot}Soil_{comb}$.
Green highlighting indicates the analytical result exceeds the RG-263B Ecological Sediment Benchmark for Freshwater.
Bold results indicate the analyte was detected.

QUALIFIERS:
* - Qualified in the Data Usability Summary.
CCB - Analyte detected in associated continuing calibration blank.
FD - Field duplicate evaluation criteria not met.
H – Bias in sample result is likely to be high.
I - Bias in sample result is indeterminate.
J - Estimated: The analyte was detected and positively identified. The associated numerical values are the approximate concentration of the analyte in the sample.
L - Bias in sample result is likely to be low.
MB - Method blank contamination.
MS - Matrix spike recovery outside acceptance range. (inorganic)
MS/SD - Matrix spike/matrix spike duplicate accuracy and/or precision criteria not met. (organic)
U - Not detected: Analysis for the analyte was performed, but the analyte was not detected above the level of the sample detection limit.
UJ - Not detected, SDL is estimated. The analyte was analyzed for but was not detected above the reported SDL. However, the reported SDL is an estimate and may be inaccurate or imprecise.

			SD-01											
Sample ID **Sample Date** **Lab Sample ID**	TRRP Tier 1 Residential[a] $^{Td}Soil_{Comb}$ mg/kg	RG263B Sediment Benchmarks Freshwater Benchmark mg/kg	HAP-SD01-110 6/30/2016 HS16070019-24	HAP-SD01-111 6/30/2016 HS16070019-25	HAP-SD01-123 12/2/2016 HS16120124-05	HAP-SD01-130 6/8/2017 HS17060516-02	HAP-SD01-140 12/22/2017 HS17121232-07	(DUP) HAP-SD01-141 12/22/2017 HS17121232-08	HAP-SD01-153 06/14/2018 HS18060745-01	HAP-SD01-160 12/20/2018 HS18121291-01	HAP-SD01-170 6/20/19 HS19061123-01	HAP-SD01-171 6/20/19 HS19061123-02	HAP-SD01-183 12/19/19 HS19121186-10
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Benzene	69	0.16	<0.00046 U	<0.00048 U	<0.00046 U	<0.00044 U	<0.00043 U	<0.00048 U	<0.00048 U	<0.00048 U	<0.00048 U	<0.00044 U	<0.00052 U
Ethylbenzene	5300	2.63	<0.00064 U	<0.00068 U	<0.00064 U	<0.00062 UJI-MS/SD	<0.00060 U	<0.00067 U	<0.00067 U	<0.00068 U	<0.00067 U	<0.00062 U	<0.00073 U
Toluene	5400	6.76	<0.00055 U	<0.00058 U	<0.00055 U	<0.00053 U	<0.00052 U	<0.00058 U	<0.00057 U	<0.00058 U	<0.00057 U	<0.00053 U	<0.00063 U
Xylenes, total	3700	4	<0.0022 U	<0.0023 U	<0.00092 U	<0.00089 UJI-MS/SD	<0.00086 U	<0.00096 U	<0.00096 U	<0.00097 U	<0.00095 U	<0.00088 U	<0.0010 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Phenol	20000	0.12	<0.0040 U	<0.0041 U	<0.0013 U	<0.0013 U	<0.0013 U	<0.0014 U	<0.0014 UJL-SUR	**0.0026 J**	**0.0024 J**	**0.0066 J**	<0.0013 U
Pyridine	82	--	**0.0072 J**	<0.0034 U	<0.0010 U	<0.0011 UJI-MS/SD	<0.0011 U	<0.0012 U	<0.0011 R-MS/SD	**0.017**	<0.0011 U	<0.0011 U	<0.0010 U
METALS (mg/kg)													
Arsenic	24	9.79	**0.669 JI-FD**	**1.14 JI-FD**	**2.25**	**1.49**	**0.859 JI-FD**	**1.21 JI-FD**	**1.31 JH-MS**	**1.13**	**3.22**	**1.64**	**0.905**
Barium	8100	--	**8.46 JH-MS**	**8.69 JH-MS**	**45.4**	**24.5 JH-MS**	**8.96 JH-MS,FD**	**24.7 JH-MS,FD**	**22.1 JH-MS**	**11.5**	**24.1**	**137**	**4.40**
Cadmium	52	0.99	<0.0579 U	**0.0729 J**	<0.053 U	**0.0598 J**	<0.0310 U	<0.0320 U	**0.237 J**	**0.0311 J**	<0.0305 U	<0.0315 U	<0.0294 U
Chromium	27000	43.4	**5.12 UH-MB**	**4.8 UH-MB**	**5.96**	**5.49**	**1.74 JI-FD**	**3.56 JI-FD**	**7.42 JH-MS**	**4.01**	**5.57**	**6.92**	**2.20**
Lead	500	35.8	**4.8 JI-FD**	**9.49 JI-FD**	**7.07**	**16.2**	**2.82 JI-FD**	**3.75 JI-FD**	**28.6 JL-PDS,MS**	**8.78**	**5.32**	**5.61**	**7.76**
Mercury	2.1	0.18	**0.00347 JI-FD**	**0.0128 JI-FD**	**0.0112**	**0.0468**	0.00271 UH-RB	0.00478 UH-RB	**0.0218**	**0.0123**	**0.00306 J**	**0.00381 J**	**0.00486**
Selenium	310	--	**0.25 UH-CCB**	<0.211 U	**0.388 J**	**0.583**	**0.293 J**	**0.236 J**	<0.11 U	**0.256 J**	**0.394 J**	**0.325 J**	**0.356 J**
Silver	97	0.57	<0.0926 U	<0.0938 U	<0.085 U	<0.092 U	<0.0170 U	**0.0231 J**	**0.0799 J**	**0.0319 J**	**0.0174 J**	**0.0193 J**	<0.0163 U

			SD-01								SD-02		
Sample ID **Sample Date** **Lab Sample ID**	TRRP Tier 1 Residential[a] $^{Td}Soil_{Comb}$ mg/kg	RG263B Sediment Benchmarks Freshwater Benchmark mg/kg	HAP-SD01-190 6/26/20 HS20061382-06	HAP-SD01-203 11/19/20 HS20111099-05	HAP-SD01-210 6/18/21 HS21061093-06	HAP-SD01-220 12/2/21 HS21120188-15	(DUP) HAP-SD01-221 12/2/21 HS21120188-16	HAP-SD01-233 6/16/22 HS22060933-04	HAP-SD02-0712-3 07/06/2012 1207234-04	HAP-SD02-112912-0 11/29/2012 12111016-04	HAP-SD02-062113-0 06/21/2013 1306888-03
ANALYTE											
VOLATILE ORGANIC COMPOUNDS (mg/kg)											
Benzene	69	0.16	<0.00046 U	<0.00053 U	<0.00050 U	< 0.00048 U	< 0.00050 U	< 0.00046 U	<0.00035	<0.00060	<0.00061
Ethylbenzene	5300	2.63	<0.00064 U	<0.00074 U	<0.00070 U	< 0.00068 U	< 0.00070 U	< 0.00065 U	<0.00053	<0.00089	<0.00092
Toluene	5400	6.76	**0.0034 J**	<0.00063 U	<0.00060 U	< 0.00058 U	< 0.00060 U	< 0.00056 U	<0.00041	<0.00069	<0.00072
Xylenes, total	3700	4	<0.00092 U	<0.0011 U	<0.0010 U	< 0.00096 U	< 0.0010 U	< 0.00093 U	<0.0015	<0.0026	<0.0017
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)											
Phenol	20000	0.12	<0.0013 U	<0.0013 U	<0.0014 UJL-SUR	< 0.0013 U	< 0.0013 UJL-SUR	< 0.0012 U	**6.8 J**	<0.0024 UJL*	<0.00089 UJL*
Pyridine	82	--	<0.0011 U	<0.0011 UJL-LCS,MS/SD	<0.0011 UJL-LCS, SUR	< 0.0011 UJL-MS/SD	< 0.0011 UJL-SUR, MS/SD	< 0.0010 U	<0.0050 UJ*	<0.0024 UJL*	<0.0013 UJL*
METALS (mg/kg)											
Arsenic	24	9.79	**0.545 J**	**0.846**	**0.218 J**	**0.228 J**	**0.319 J**	**1.32**	**0.964**	**0.540**	**0.395 J**
Barium	8100	--	**40.8**	**61.1**	**4.63**	**4.41**	**4.68**	**7.18**	**8.59**	**2.09**	**2.27 JI***
Cadmium	52	0.99	<0.0300 U	**0.0386 J**	<0.0317 U	< 0.0316 U	< 0.0304 U	**0.0589 J**	**0.115 J**	<0.053	<0.046
Chromium	27000	43.4	**7.19**	**7.51**	**0.898**	**1.27** JI-FD	**1.45** JI-FD	**2.56**	**1.84**	**0.58**	**0.422 J**
Lead	500	35.8	**6.70**	**7.2**	**2.39**	**2.19**	**2.22**	**3.50**	**19.8**	**132**	**3.03**
Mercury	2.1	0.18	**0.0104**	**0.0124**	**0.00243 J**	**0.00183** JL-MS	**0.00144** JL-MS	**0.0152**	**0.00344 J**	**0.000426 J**	**<0.00060**
Selenium	310	--	**0.244 J**	**0.447 J**	<0.107 U	< 0.106 U	< 0.102 U	**0.199 J**	**0.278 J**	<0.19	**0.299 J**
Silver	97	0.57	**0.0171 J**	**0.0216 J**	**0.0309 J**	**0.0249 J**	**0.0235 J**	< 0.0161 U	<0.092	<0.084	<0.074

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential[a] $^{Tot}Soil_{Comb}$ mg/kg	RG263B Sediment Benchmarks Freshwater Benchmark mg/kg	SD-02										
			(DUP) HAP-SD02-062113-1 06/21/2013 1306888-04	HAP-SD02-NOV2013 02/20/2014 14021014-07	(DUP) HAP-SD02-NOV2013-1 02/20/2014 14021014-08	HAP-SD02-JUL2014-3 07/11/2014 14070603-06	HAP-SD02-080 11/14/2014 14110541-03	HAP-SD02-090 05/15/2015 15050676-23	(DUP) HAP-SD02-091 05/15/2015 15050676-24	HAP-SD02-103 12/18/2015 HS15120826-07	HAP-SD02-110 6/30/16 HS16070019-26	HAP-SD02-120 12/2/16 HS16120124-06
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Benzene	69	0.16	<0.00056	<0.00054	<0.00055	<0.00066	<0.00070	<0.00055	<0.00058	<0.00062 U	<0.00049 U	<0.00050 U
Ethylbenzene	5300	2.63	<0.00084	<0.00081	<0.00082	<0.00098	<0.0011	<0.00083	<0.00087	<0.00087 U	<0.00069 U	<0.00070 U
Toluene	5400	6.76	<0.00066	<0.00063	<0.00064	<0.00076	<0.00082	<0.00065	<0.00068	<0.00074 U	<0.00059 U	<0.00060 U
Xylenes, total	3700	4	<0.0016	<0.0015	<0.0015	<0.0019	<0.0020	<0.0016	<0.0016	<0.0030 U	<0.0024 U	<0.0010 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)												
Phenol	20000	0.12	<0.00090 UJL*	<0.00070 UJL-SUR	**0.0021 J**	<0.056	**0.0041 J**	<0.0013	<0.0014	<0.0019 U	<0.0040 U	<0.0014 U
Pyridine	82	--	<0.0013 UJL*	<0.0010 UJL-SURMS/SD	<0.0010	<0.034	<0.0018	<0.0011	<0.0011	<0.0015 UJL-MS/SD	<0.0033 U	<0.0011 U
METALS (mg/kg)												
Arsenic	24	9.79	**0.0403 J**	**0.340 J**	**0.382 J**	**0.36 J**	**0.551 J**	**1.1 JI-FD**	**0.51**	**2.80**	**0.852**	**1.98 JI-FD**
Barium	8100	--	**4.05 JI***	**2.18**	**2.24**	**6.6 J**	**3.80**	**17 JL-DL,FD**	**8.7**	**16.1**	**6.55 JH-MS**	**124 JI-FD**
Cadmium	52	0.99	<0.049	<0.048	**0.0522 J**	<0.05	<0.0672	<0.060	<0.062	**0.0849 J**	0.0848 J	<0.059 U
Chromium	27000	43.4	**0.556**	**0.682**	**0.886**	**1.1 J**	**0.816**	**6.2**	**3.3**	**4.56**	**3.05 UH-MB**	**6.22**
Lead	500	35.8	**2.52**	**3.91**	**3.9**	**5.10**	**3.52**	**12**	**7.9**	**71.1**	**5.66**	**6.33**
Mercury	2.1	0.18	**<0.00061**	**<0.00048**	**<0.00048**	**0.0035 J**	**0.00439 J**	**0.012**	**0.028**	**0.0404**	**0.00695**	**0.00632 JI-FD**
Selenium	310	--	0.239 J	<0.17	<0.18	<0.30	<0.242	**0.26**	**0.23**	**0.411 J**	**0.263 UH-CCB**	**0.493 J**
Silver	97	0.57	<0.078	<0.077	<0.079	<0.017	<0.108	<0.096	<0.099	<0.110 U	<0.0959 U	<0.0940 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential[a] $^{Tot}Soil_{Comb}$ mg/kg	RG263B Sediment Benchmarks Freshwater Benchmark mg/kg	SD-02									
			HAP-SD02-121 12/2/16 HS16120124-07	HAP-SD02-133 6/8/2017 HS17060516-03	HAP-SD02-140 12/22/2017 HS17121232-09	HAP-SD02-150 06/14/2018 HS18060745-02	(DUP) HAP-SD02-151 06/14/2018 HS18060745-03	HAP-SD02-163 12/20/2018 HS18121291-02	HAP-SD02-170 6/20/19 HS19061123-03	HAP-SD02-180 12/19/19 HS19121186-11	(DUP) HAP-SD02-181 12/19/19 HS19121186-12	HAP-SD02-193 6/26/20 HS20061382-08
ANALYTE												
VOLATILE ORGANIC COMPOUNDS (mg/kg)												
Benzene	69	0.16	<0.00048 U	<0.00046 U	<0.00052 U	<0.00050 U	<0.00051 U	<0.00057 U	<0.00048 U	<0.00047 U	<0.00048 U	<0.00043 U
Ethylbenzene	5300	2.63	<0.00067 U	<0.00064 UJI-MS/SD	<0.00073 U	<0.00070 U	<0.00071 U	<0.00080 U	<0.00068 U	<0.00065 U	<0.00067 U	<0.00060 U
Toluene	5400	6.76	<0.00057 U	<0.00055 U	<0.00063 U	<0.00060 U	<0.00061 U	<0.00068 U	<0.00058 U	<0.00056 U	<0.00057 U	**0.0034 J**
Xylenes, total	3700	4	<0.00096 U	<0.00091 UJI-MS/SD	<0.0010 U	<0.00099 U	<0.0010 U	<0.0011 U	<0.00097 U	<0.00094 U	<0.00095 U	<0.00086 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)												
Phenol	20000	0.12	<0.0014 U	<0.0013 U	<0.0014 U	<0.0014 U	<0.0014 U	<0.0015 U	<0.0013 U	<0.0013 U	<0.0013 U	<0.0013 U
Pyridine	82	--	<0.0011 U	<0.0011 UJI-MS/SD	<0.0012 U	<0.0011 R-MS/SD	<0.0011 R-MS/SD	<0.0012 U	<0.0011 U	<0.0011 U	<0.0011 U	<0.0011 U
METALS (mg/kg)												
Arsenic	24	9.79	**1.28 JI-FD**	**0.798**	**0.962**	**0.827 JH-MS,FD**	**1.35 JH-MS,FD**	**2.87**	**4.05**	**4.58**	**3.91**	**0.763**
Barium	8100	--	**36.5 JI-FD**	**12.3 JH-MS**	**73.5 JH-MS**	**12.1 JH-MS,FD**	**25.0 JH-MS,FD**	**15.1**	**40.4**	**128**	**69.9**	**42.2**
Cadmium	52	0.99	<0.0590 U	<0.0560 U	<0.0330 U	**0.0583 JI-FD**	**0.185 JI-FD**	**0.220 J**	<0.0314 U	<0.0312 U	<0.0315 U	<0.0306 U
Chromium	27000	43.4	**4.13**	**3.41**	**3.61**	**5.74 JH-MS**	**6.74 JH-MS**	**5.02**	**7.34**	**8.59**	**6.47**	**5.28**
Lead	500	35.8	**5.49**	**7.07**	**6.29**	**11.2 JL-PDS,MS,FD**	**23.9 JL-PDS,MS,FD**	**11.0**	**5.73**	**7.85**	**6.10**	**6.09**
Mercury	2.1	0.18	0.00889 JI-FD	**0.0189**	0.00150 UH-RB	**0.0229**	**0.0228**	**0.0942**	**0.00627**	**0.0126**	**0.00928**	**0.00671**
Selenium	310	--	**0.408 J**	**0.461 J**	**0.159 J**	**0.114 UH-CCB**	**0.170 UH-CCB**	**0.359 J**	**0.495 J**	**1.73**	**1.34**	**0.371 J**
Silver	97	0.57	**<0.0940 U**	<0.090 U	**0.0396 J**	**0.0292 J**	**0.0421 J**	**0.0546 J**	**0.0220 J**	**0.0227 J**	**0.0210 J**	**0.0188 J**

			SD-02												SD-03	
Sample ID **Sample Date** **Lab Sample ID**	TRRP Tier 1 Residential[a] $^{Tot}Soil_{Comb}$ mg/kg	RG263B Sediment Benchmarks Freshwater Benchmark mg/kg	HAP-SD02-200 11/19/20 HS20111099-06	(DUP) HAP-SD02-201 11/19/20 HS20111099-07	HAP-SD02-213 6/18/21 HS21061093-08	HAP-SD02-220 12/2/21 HS21120188-18	HAP-SD02-230 6/16/22 HS22060933-06	(DUP HAP-SD02-232 6/16/22 HS22060933-07	HAP-SD03-0712-0 07/06/2012 1207234-01	(DUP) HAP-SD03-0712-1 07/06/2012 1207234-02	HAP-SD03-112912-3 11/29/2012 12111016-01
ANALYTE											
VOLATILE ORGANIC COMPOUNDS (mg/kg)											
Benzene	69	0.16	<0.00046 U	<0.00045 U	<0.00052 U	< 0.00046 U	< 0.00051 U	< 0.00045 U	<0.00029	<0.00039	<0.00065
Ethylbenzene	5300	2.63	<0.00064 U	<0.00063 U	<0.00073 U	< 0.00064 U	< 0.00071 U	< 0.00063 U	<0.00044	<0.00058	<0.00097
Toluene	5400	6.76	<0.00055 U	<0.00054 U	<0.00063 U	< 0.00055 U	< 0.00061 U	< 0.00054 U	<0.00034	<0.00045	<0.00075
Xylenes, total	3700	4	<0.00091 U	<0.00090 U	<0.0010 U	< 0.00092 U	< 0.0010 U	< 0.00090 U	<0.0013	<0.0017	<0.0028
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)											
Phenol	20000	0.12	<0.0013 UJL-SUR	<0.0013 UJL-SUR	**0.0023** J	< 0.0013	UJL-SUR	< 0.013 U	< 0.0012	UJL-SUR	<0.0025 UJ*	<0.0028	<0.0026
Pyridine	82	--	<0.0011 UJL-LCS,MS/SD	<0.0011 UJL-LCS,MS/SD	<0.0011 UJL-LCS	< 0.0011	UJL-MS/SD	< 0.011 U	< 0.00098	U	<0.0025 UJ*	<0.0028 UJ*	<0.0026 UJL*
METALS (mg/kg)											
Arsenic	24	9.79	**1.01**	**0.927**	**0.285** J	**4.02**		**1.05**	JI-FD	**0.596**	JI-FD	**0.498 J**	**0.551 J**	**1.20**
Barium	8100	--	**49.2** JI-FD	**88.1** JI-FD	**5.21**	**69.3**		**12.2**	JI-FD	**6.08**	JI-FD	**5.37**	**3.85**	**12.4**
Cadmium	52	0.99	<0.0300 U	<0.0310 U	<0.0316 U	< 0.0329	U	< 0.0300	U	< 0.0282	U	<0.054	<0.060	**0.0667 J**
Chromium	27000	43.4	**8.19**	**8.01**	**1.24**	**7.81**		**2.62**	JI-FD	**1.51**	JI-FD	**0.908**	**0.910**	**2.21**
Lead	500	35.8	**7.28**	**7.38**	**2.81**	**5.55**		**5.96**	JI-FD	**2.51**	JI-FD	**2.00 J***	**2.24 J***	**4.94**
Mercury	2.1	0.18	**0.0127** JI-FD	**0.0171** JI-FD	**0.00370** J	**0.00481**	JL-MS	**0.0280**	JI-FD	**0.0121**	JI-FD	**0.00115 J**	**0.994 J**	**0.0112**
Selenium	310	--	**0.43 J**	**0.358 J**	**0.126** J	**0.191** J		**0.372** J		**0.185** J		**0.311 J**	**0.361 J**	**0.316 J**
Silver	97	0.57	<0.0170 U	<0.0180 U	**0.0256** J	**0.0214** J		**0.0211** J		< 0.0157 U		<0.086	<0.096	<0.099

			SD-03									
Sample ID **Sample Date** **Lab Sample ID**	TRRP Tier 1 Residential[a] $^{Tot}Soil_{Comb}$ mg/kg	RG263B Sediment Benchmarks Freshwater Benchmark mg/kg	HAP-SD03-062113-0 06/21/2013 1306888-01	HAP-SD03-NOV2013 02/20/2014 14021014-04	HAP-SD03-JUL2014 07/11/2014 14070603-07	(DUP) HAP-SD03-JUL2014-1 07/11/2014 14070603-08	HAP-SD03-083 11/14/2014 14110541-04	HAP-SD03-090 05/15/2015 15050676-26	HAP-SD03-100 12/18/2015 HS15120826-08	HAP-SD03-101 12/18/2015 HS15120826-09	HAP-SD03-113 6/30/16 HS16070019-27	HAP-SD03-120 12/2/16 HS16120124-08
ANALYTE												
VOLATILE ORGANIC COMPOUNDS (mg/kg)												
Benzene	69	0.16	<0.00068	<0.00048	<0.00074	<0.00081	<0.00078	<0.00057	<0.00070 U	<0.00056 U	<0.00061 U	<0.00041 U
Ethylbenzene	5300	2.63	<0.0010	<0.00072	<0.0011	<0.0012	<0.0012	<0.00085	<0.00098 U	<0.00079 U	<0.00085 U	<0.00057 U
Toluene	5400	6.76	<0.00079	<0.00056	<0.00087	<0.00095	<0.00090	<0.00066	<0.00084 U	<0.00067 U	**0.0036 J**	<0.00049 U
Xylenes, total	3700	4	<0.0019	<0.0014	<0.0021	<0.0023	<0.0022	<0.0016	<0.0033 U	<0.0027 U	<0.0029 U	<0.00081 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)												
Phenol	20000	0.12	**0.0060 JL***	<0.00070	<0.069	<0.070 UJL*	<0.0025	<0.0014	<0.0020 U	<0.0019 UJL-SUR	<0.0045 U	<0.0013 U
Pyridine	82	--	<0.0015 UJL*	<0.0010	<0.042	<0.043 UJL*	<0.0021	<0.0011	**0.0041 JL-MS/SD**	<0.0016 UJL-MS/SD	**0.21**	<0.0011 U
METALS (mg/kg)												
Arsenic	24	9.79	**0.61**	**0.858**	**1.1 J**	**0.59 J**	**1.41**	**0.84**	**1.62**	**1.96**	**1.05**	**1.02**
Barium	8100	--	**7.8**	**6**	**19**	**18**	**6.35**	**6.3 JL-DL**	**7.40**	**9.11**	**12.3 JH-MS**	**17.4**
Cadmium	52	0.99	<0.058	<0.049	<0.07	<0.06	<0.0785	<0.063	<0.0730 U	<0.0680 U	<0.0663 U	<0.057 U
Chromium	27000	43.4	**1.19**	**1.79**	**4.3 J**	**5.1 J**	**1.45**	**2.8**	**1.89**	**1.81**	**3.99 UH-MB**	**2.92**
Lead	500	35.8	**3.16**	**3.47**	**6.60**	**7.50**	**5.87**	**8.5 J-D**	**4.55**	**4.54**	**5.75**	**4.53**
Mercury	2.1	0.18	**0.00275 J**	**0.00275 J**	**0.0112**	**0.0155**	**0.00582**	**0.019**	**0.00870**	**0.0116**	**0.00617**	**0.00815**
Selenium	310	--	**0.462 J**	0.223 J	<0.41	<0.35	**0.671 J**	**0.29 J**	**0.643 J**	**0.594 J**	**0.259 UH-CCB**	<0.21 U
Silver	97	0.57	<0.092	<0.079	<0.024	**0.022 J**	<0.126	<0.10	<0.120 U	<0.110 U	<0.106 U	<0.091 U

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential[a] $^{Tot}Soil_{Comb}$ mg/kg	RG 263B Sediment Benchmarks Freshwater Benchmark mg/kg	SD-03 HAP-SD03-130 6/8/2017 HS17060516-04	(DUP) HAP-SD03-131 6/8/2017 HS17060516-05	HAP-SD03-143 12/22/2017 HS17121232-10	HAP-SD03-150 06/14/2018 HS18060745-04	HAP-SD03-160 12/20/2018 HS18121291-03	HAP-SD03-161 12/20/2018 HS18121291-04	HAP-SD03-165 12/20/2018 HS18121291-09	HAP-SD03-173 6/20/19 HS19061123-04	HAP-SD03-180 12/19/19 HS19121186-13	HAP-SD03-190 6/26/20 HAP-SD03-190	(DUP) HAP-SD03-191 6/26/20 HS20061382-10
ANALYTE													
VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Benzene	69	0.16	<0.00044 U	<0.00044 U	<0.00046 U	<0.00054 U	<0.00061 U	<0.00066 U	<0.00020 U	<0.00046 U	<0.00045 U	<0.00043 U	<0.00043 U
Ethylbenzene	5300	2.63	<0.00061 UJI-MS/SD	<0.00062 UJI-MS/SD	<0.00064 U	<0.00075 U	<0.00085 U	<0.00092 U	<0.00030 U	<0.00065 U	<0.00064 U	<0.00060 U	<0.00060 U
Toluene	5400	6.76	<0.00053 U	<0.00053 U	<0.00055 U	<0.00064 U	<0.00073 U	<0.00079 U	<0.00020 U	<0.00056 U	<0.00055 U	**0.0033 J**	**0.0034 J**
Xylenes, total	3700	4	<0.00088 UJI-MS/SD	<0.00089 UJI-MS/SD	<0.00092 U	<0.0011 U	<0.0012 U	<0.0013 U	<0.00030 U	<0.00093 U	<0.00091 U	<0.00086 U	<0.00086 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Phenol	20000	0.12	<0.0013 U	<0.0013 U	<0.0014 U	<0.0014 U	<0.0015 U	**0.0030 J**	<0.000049 U	<0.0013 U	**0.0021 J**	<0.0013 U	<0.0013 U
Pyridine	82	--	<0.0011 UJI-MS/SD	<0.0010 UJL-MS/SD	<0.0011 U	<0.0011 R-MS/SD	<0.0012 U	**0.041**	<0.000042 U	<0.0010 U	<0.0011 U	<0.0011 U	<0.0011 U
METALS (mg/kg)													
Arsenic	24	9.79	**0.393 J**	**0.162 J**	**0.961**	**1.77 JH-MS**	**1.79**	**2.31**	<0.000400 U	**1.13**	**2.40**	**0.970**	**0.667**
Barium	8100	--	**4.85 JH-MS,FD**	**2.59 JH-MS,FD**	**12.6 JH-MS**	**62.1 JH-MS**	**16.7**	**19.8**	<0.00190 U	**34.2**	**123**	**49.7**	**47.5**
Cadmium	52	0.99	<0.057 U	**<0.056 U**	**<0.0320 U**	**0.392 J**	**0.0847 J**	**0.0936 J**	<0.000200 U	<0.0293 U	<0.0295 U	<0.0288 U	<0.0305 U
Chromium	27000	43.4	**1.56 JI-FD**	**0.722 JI-FD**	**2.68**	**8.75 JH-MS**	**5.34**	**5.93**	<0.000400 U	**3.55**	**3.76**	**6.59**	**5.81**
Lead	500	35.8	**3.90 JI-FD**	**2.01 JI-FD**	**11.9**	**48.1 JL-PDS,MS**	**13.4**	**11.4**	<0.000600 U	**4.31**	**4.89**	**7.95**	**6.24**
Mercury	2.1	0.18	**0.0105 JI-FD**	**0.00438 JI-FD**	**0.00866 UH-RB**	**0.0220**	**0.0200**	**0.0395**	<0.0000300 U	**0.00286 J**	**0.00451**	**0.00817**	**0.00828**
Selenium	310	--	**0.224 J**	<0.20 U	<0.110 U	<0.11 U	**0.305 J**	**0.428 J**	<0.00110 U	**0.261 J**	**1.18**	**0.348 J**	**0.271 J**
Silver	97	0.57	<0.091 U	**<0.089 U**	**0.0188 J**	**0.0461 J**	**0.0294 J**	**0.0361 J**	<0.000200 U	**0.0213 J**	**0.0212 J**	**0.0166 J**	**0.0187 J**

Sample ID Sample Date Lab Sample ID	TRRP Tier 1 Residential[a] $^{Tot}Soil_{Comb}$ mg/kg	RG 263B Sediment Benchmarks Freshwater Benchmark mg/kg	SD-03 HAP-SD03-200 11/19/20 HS20111099-08	HAP-SD03-210 6/18/21 HS21061093-09	(DUP) HAP-SD03-211 6/18/21 HS21061093-10	HAP-SD03-223 12/2/21 HS21120188-19	HAP-SD03-230 6/16/22 HS22060933-08
ANALYTE							
VOLATILE ORGANIC COMPOUNDS (mg/kg)							
Benzene	69	0.16	<0.00045 U	<0.00050 U	<0.00053 U	< 0.00046 U	< 0.00045 U
Ethylbenzene	5300	2.63	<0.00063 U	<0.00070 U	<0.00074 U	< 0.00065 U	< 0.00063 U
Toluene	5400	6.76	<0.00054 U	<0.00060 U	<0.00064 U	< 0.00055 U	< 0.00054 U
Xylenes, total	3700	4	<0.00090 U	<0.0010 U	<0.0011 U	< 0.00092 U	< 0.00090 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)							
Phenol	20000	0.12	<0.0013 UJL-SUR	**0.0017** J	**0.0021** J	< 0.0013 U	< 0.0012 U
Pyridine	82	--	<0.0011 UJL-LCS,MS/SD	<0.0011 UJL-LCS	<0.0011 UJL-LCS	< 0.0011 UJL-MS/SD	< 0.00098 U
METALS (mg/kg)							
Arsenic	24	9.79	**1.27**	**0.289** J	**0.279** J	**0.686**	**0.751**
Barium	8100	--	**48.6**	**4.96**	**5.06**	**12.4**	**14.3**
Cadmium	52	0.99	<0.0320 U	<0.0312 U	<0.0332 U	< 0.0316 U	< 0.0282 U
Chromium	27000	43.4	**7.1**	**1.15** JI-FD	**0.892** JI-FD	**5.57**	**1.49**
Lead	500	35.8	**6.75**	**3.52** JI-FD	**2.10** JI-FD	**4.53**	**4.76**
Mercury	2.1	0.18	**0.0141 J**	**0.00292** J	**0.00212** J	**0.00549** JL-MS	**0.0232**
Selenium	310	--	**0.332** U	**0.132** J	<0.112 U	**0.155** J	**0.144** J
Silver	97	0.57	<0.0180	**0.0263** J	<0.0185 U	**0.0258** J	< 0.0157 U

APPENDIX G – INTERVIEW FORMS

HIGHLANDS ACID PIT SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Highlands Acid Pit federal Superfund site	
EPA ID: TXD980514996	
Interviewer name:	**Interviewer affiliation:**
Subject name: Adam Nichols	**Subject affiliation: TCEQ**
Subject contact information: adam.nichols@tceq.texas.gov **512-239-2215**	
Interview date: 2/10/2023	**Interview time: 3:30 PM**
Interview location: TCEQ Central Office	
Interview format (circle one): In Person Phone Mail XEmail Other:	
Interview category: State Agency	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   My overall impression of the site is that the remedy needs further evaluation to ensure continued protectiveness of human health and the environment. Shallow groundwater and surface water contamination needs to be better delineated and evaluated for health and ecological risks on off-site properties that are adjacent to the site. Also, the adjacent property that was recently cleared should be investigated for potential vapor intrusion risk.

2. What is your assessment of the current performance of the remedy in place at the Site?

   The contaminant levels in the onsite shallow aquifer continue to be very high, even in perimeter wells, and the remedy may not be protective because of the lack of off-site delineation and investigation. Future investigation should include evaluation of the vapor intrusion health risk. Also, the contaminant levels in the surface water surrounding the site persist and need to be investigated and potentially remediated.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

   Yes. During the site visit and community interviews conducted with the EPA, the TCEQ was made aware of a resident who described independently obtained and tested water samples from their tap that indicated the presence of arsenic and benzene. The TCEQ has not had any discussion or follow-up with the resident who had their water tested.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

   The TCEQ has conducted routine semi-annual operation and monitoring at the site.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?

   No.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

   No. Institutional controls need to be filed to restrict on-site land use or groundwater use.

7. Are you aware of any changes in projected land use(s) at the Site?

   Yes, the property adjacent to the site that contains the sand pits and the surface water SW-3 sampling location was recently cleared of trees and brush. The reason for clearing this land is unknown.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   The TCEQ recommends that the EPA perform additional studies to delineate and assess the potential impact of the contamination in the shallow aquifer and adjacent surface waters.

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

   Yes.

HIGHLANDS ACID PIT SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Highlands Acid Pit	
EPA ID: TXD980514996	
Interviewer name: Stephen Pereira and Hagai Nassau	**Interviewer affiliation:** EPA and Skeo
Subject name: name withheld for privacy	**Subject affiliation:** nearby resident
Interview date: December 5, 2022	**Interview time:** 2:54 p.m.
Interview location: front porch of residence	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Resident	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   No, we just moved here in April 2022 from Wyoming. If there is contamination, I want it to be cleaned up.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   I don't have any impression of it.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   I don't know what people do at the Site. I haven't been there. Drivers speed down this road. They use U-Hauls without license plates to bring stolen goods to the end of the road; maybe they ship the items out by boat from the end of the road. Across the road there used to be a notorious bar called Tugboat Annie's; it closed down.

4. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   I'm not interested in being informed about it.

5. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   We don't have a well. We use city water.

6. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   No.

HIGHLANDS ACID PIT SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Highlands Acid Pit	
EPA ID: TXD980514996	
Interviewer name: Stephen Pereira and Hagai Nassau	**Interviewer affiliation:** EPA and Skeo
Subject name: name withheld for privacy	**Subject affiliation:** nearby resident
Interview date: December 5, 2022	**Interview time:** 3:07 p.m.
Interview location: front porch of residence	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Resident	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   I know that there has been a cleanup, but I don't know if it was adequate.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   No opinion.

3. What have been the effects of this Site on the surrounding community, if any?

   It has had a huge effect. People know about the Site and it makes this an undesirable area, which lowers the property prices.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   I don't know.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   EPA has not kept us informed. I'd suggest mailings, phone calls or in-person communication.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   We use city water. We had it tested several times by Costco and Culligan's or a similar company. It has arsenic and benzene in it, so we put filters on it. We probably wouldn't have bought this house if we knew about the poor drinking water quality.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   No.

HIGHLANDS ACID PIT SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Highlands Acid Pit	
EPA ID: TXD980514996	
Interviewer name: Hagai Nassau	**Interviewer affiliation:** Skeo
Subject name: Dr. Latrice Babin	**Subject affiliation:** Executive Director
Subject contact information: 713-920-2831	
Interview date: 12/19/2022	**Interview time:** 5:00 pm
Interview location: Office of Harris County Pollution Control Services	
Interview format (circle one): In Person Phone Mail (Email) Other:	
Interview category: Local Government	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Harris County Pollution Control Services (PCS) is aware of environmental issues and cleanup activities through publicly available documents.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   PCS requests to be copied and included on all correspondence and communication, including those conducted by government agencies, contractors, and any other entity affiliated with the Site.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   PCS is unaware of any unexpected activities at the Site related to emergency response, vandalism, or trespassing.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

   PCS is not aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy.

5. Are you aware of any changes in projected land use(s) at the Site?

   PCS is not aware of any changes in the projected land use at the Site.

   PCS requests to be updated on any changes related to projected land uses at and around the Site.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

Per the EPA website, a public meeting was last held in 1987. There are no fact sheets available on the website. The 2018 Five-Year Review (FYR) noted nearby residents felt the EPA could do a more effective job of keeping them up to date regarding ongoing activities at the Site. The 2018 FYR stated the EPA plans to send an annual facts sheet or host a community meeting for the local residents that live near the site. It is unknown if the fact sheet or meetings was held.

PCS recommends Site fact sheets be made available on the EPA website and community meetings be held as stated in the FYR.

7. Do you have any comments, suggestions or recommendations regarding the project?

According to the 2018 FYR, the deed was not located despite EPA drafting a deed notice in 2007. The 2018 FYR stated the Institutional Control (IC) are inadequate since the deed was not recorded with the county.

PCS recommends the EPA verify ICs are in place by finding the deed notice or a new deed notice be drafted and put in place.

Upon review of the 2019 to 2020 and 2020 to 2021 annual groundwater reports, both inspection checklists revealed the signage around the fence to be missing. While reading the text in the report for the Site Inspection and Maintenance Activities of both reports, no mention of the missing signs was stated, but both reports said the front gate needs adjusting as it is slightly tilted. In the 2019 to 2020 annual groundwater report, in the conclusions and recommendations section, site signage and front gate adjustment are needed. The signs will be replaced during the first groundwater sampling event in FY 2021.

PCS recommends missing signs and gate adjustments be addressed at the time of the discovery and not be recommended to be accomplished in the next report.

The Site is located south of the Baytown Boat club. According to the 2018 FYR, local residents may use an adjacent sand pit for recreational purposes. The sand pit is submerged, located north of the site and south of Clear Lake Road, it is not part of the deed notice, and there are no site-related ICs associated with this parcel. The sampling frequency may be insufficient to evaluate the potential impacts of the upper aquifer groundwater on adjacent surface water and sediment. The highest concentrations of benzene have been detected in an upper aquifer well adjacent to the flooded sand pit. The following actions must be taken for the remedy to be protected over the long term, which includes collecting additional surface water and sediment samples in the former sand pit adjunct to the site to determine if the contaminated upper aquifer is impacting areas beyond the Site and take appropriate measures to ensure protectiveness. Based on the

2019 to 2021 annual groundwater reports, benzene, pyridine, arsenic, lead, cadmium, and chromium have been detected above protective concentration level (PCL) at various times in the upper aquifer (UA), which transmits water to the neighboring surface waters.

PCS is concerned with the remedy's protectiveness of health and the environment to neighboring surface water, which can be ingested by people or organisms if the contaminants are measured above the PCL in the UA.

PCS recommends more frequent sampling of surface water and sediments outside of the Site per the actions stated in the 2018 FYR and take appropriate measures to ensure protectiveness.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

   Yes.

APPENDIX H – EJSCREEN REPORT

EJScreen Report (Version 2.1)

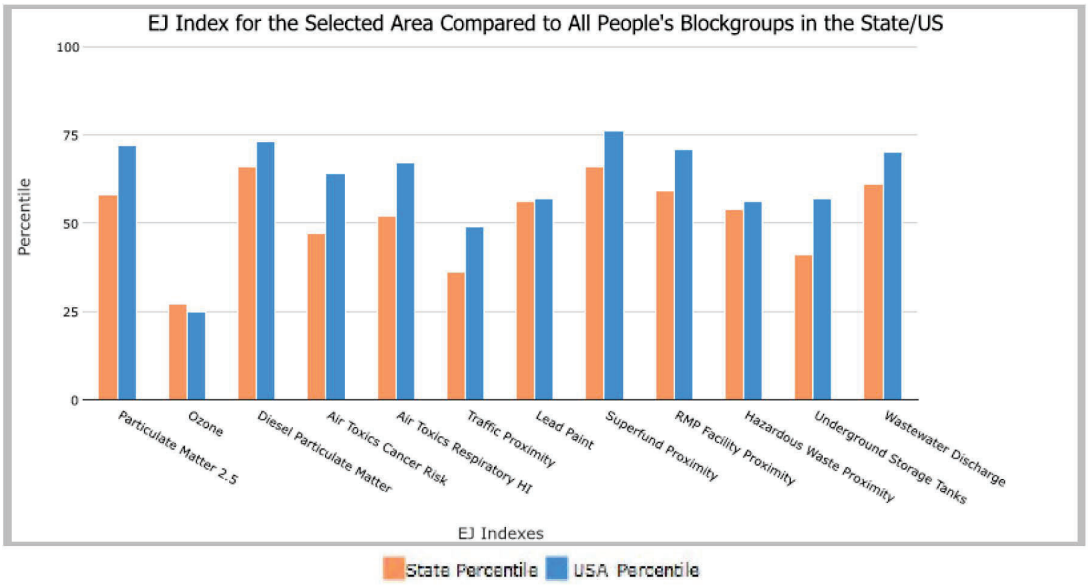
1 mile Ring Centered at 29.815402,-95.080879, TEXAS, EPA Region 6

Approximate Population: 842

Input Area (sq. miles): 3.14

Highland Acid Pit

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	58	72
EJ Index for Ozone	27	25
EJ Index for Diesel Particulate Matter*	66	73
EJ Index for Air Toxics Cancer Risk*	47	64
EJ Index for Air Toxics Respiratory HI*	52	67
EJ Index for Traffic Proximity	36	49
EJ Index for Lead Paint	56	57
EJ Index for Superfund Proximity	66	76
EJ Index for RMP Facility Proximity	59	71
EJ Index for Hazardous Waste Proximity	54	56
EJ Index for Underground Storage Tanks	41	57
EJ Index for Wastewater Discharge	61	70



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

February 07, 2023 1/3

EJScreen Report (Version 2.1)

1 mile Ring Centered at 29.815402,-95.080879, TEXAS, EPA Region 6

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Highland Acid Pit

Sites reporting to EPA	
Superfund NPL	1
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.1)

1 mile Ring Centered at 29.815402,-95.080879, TEXAS, EPA Region 6

Approximate Population: 842

Input Area (sq. miles): 3.14

Highland Acid Pit

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	10.1	9.5	76	8.67	85
Ozone (ppb)	37.2	40	31	42.5	17
Diesel Particulate Matter* (µg/m^3)	0.739	0.211	99	0.294	95-100th
Air Toxics Cancer Risk* (lifetime risk per million)	61	31	98	28	95-100th
Air Toxics Respiratory HI*	0.6	0.35	99	0.36	95-100th
Traffic Proximity (daily traffic count/distance to road)	180	570	45	760	44
Lead Paint (% Pre-1960 Housing)	0.21	0.14	70	0.27	49
Superfund Proximity (site count/km distance)	1.1	0.084	99	0.13	98
RMP Facility Proximity (facility count/km distance)	2	0.94	87	0.77	90
Hazardous Waste Proximity (facility count/km distance)	0.85	0.72	74	2.2	53
Underground Storage Tanks (count/km^2)	1.3	2.3	48	3.9	52
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.031	0.38	85	12	77
Socioeconomic Indicators					
Demographic Index	28%	46%	28	35%	49
People of Color	24%	59%	19	40%	44
Low Income	33%	33%	51	30%	58
Unemployment Rate	10%	5%	84	5%	83
Limited English Speaking Households	1%	7%	43	5%	59
Less Than High School Education	9%	16%	43	12%	54
Under Age 5	8%	7%	67	6%	75
Over Age 64	13%	13%	55	16%	41

*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

For additional information, see: www.epa.gov/environmentaljustice

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.