

**REVIEWED**

By Mike Buchanan at 2:29 pm, Nov 14, 2023

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Date: March 24, 2023

Our Ref: 30167857.300

Subject: 2022 Annual Groundwater Report
Former Brickland Refinery Site
Sunland Park, New Mexico
Huntsman International LLC
Case No. AP-01

Review of the 2022 Annual Groundwater Monitoring Report for
Former Brickland Refinery: **Content Satisfactory**

1. Continue to conduct LNAPL removal at MW-10 by bailing or pumping at quarterly intervals.
2. Continue to conduct groundwater monitoring of benzene at MW-3S, MW-3D, MW-5, MW-6S, MW-6D, MW-8, MW-9S, MW-10, MW-11, MW-17
3. Continue evaluations for river stages and seasonal fluctuations as prescribed.
4. May proceed with removal of PAH monitoring for MW-8
5. Submit the next groundwater monitoring report by April 1, 2024

Dear Mr. Billings:

On behalf of Huntsman International LLC (Huntsman), Arcadis U.S., Inc., is submitting an electronic copy of the above-referenced report. As agreed upon on February 11, 2003, this report is being submitted on or before April 1 for the previous year.

If you have any questions regarding the enclosed report, please contact the undersigned at 225-802-8261 or Mr. Scott Wagaman with the Huntsman facility at 281-719-3038.

Sincerely,
Arcadis U.S., Inc.

Timothy D. Ratchford, P.G. (LA/TX)

Associate Vice President/Regulatory Compliance Specialist

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CC. Scott Wagaman – Huntsman (electronic)



2022 Annual Groundwater Monitoring Report

**Former Brickland Refinery
Sunland Park, New Mexico**

March 24, 2023

2022 Annual Groundwater Monitoring Report

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**Former Brickland Refinery
Sunland Park, New Mexico**

March 24, 2023

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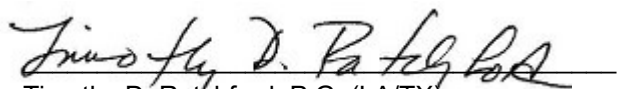
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2022 Annual Groundwater Monitoring Report

Contents

Executive Summary.....	ES-1
1 Introduction.....	1
1.1 Background.....	1
1.2 Scope of Services.....	2
2 Groundwater Elevation, Hydraulic Gradient, and Flow Direction	2
3 LNAPL Product Thickness and Removal.....	3
3.1 LNAPL Product Thickness.....	3
3.2 LNAPL Removal.....	3
4 Sample Collection and Laboratory Analytical Testing Procedures	3
4.1 Decontamination for Fluid-Level Measurements	3
4.2 Calibration of Multi-Probe Water Analyzer.....	3
4.3 Well Purging and Field Parameter Measurements.....	4
4.4 Groundwater Sample Collection	4
4.4.1 Benzene	4
4.4.2 Polycyclic Aromatic Hydrocarbons	4
4.5 Field Quality Assurance/Quality Control (QA/QC)	5
4.5.1 Field Blanks.....	5
4.5.2 Equipment Blanks	5
4.5.3 Duplicate Samples.....	5
5 Groundwater Analytical Results	5
5.1 Benzene	5
5.2 Polycyclic Aromatic Hydrocarbons	6
5.3 Trend Analyses and Seasonal Concentration Increases	6
6 Remediation Performance	7
6.1 Bioremediation Pilot Testing.....	7
6.2 Product Recovery.....	7
7 Conclusions	7
8 Recommendations.....	8

2022 Annual Groundwater Monitoring Report

Tables

Table 1	Water Sampling and Purging Methods
Table 2	Monitoring Well Groundwater Elevations
Table 3	Benzene Concentrations in Monitoring Wells
Table 4	Total Polycyclic Aromatic Hydrocarbon Concentrations in Monitoring Well MW-8
Table 5	LNAPL Thickness Measurements

Figures

Figure 1	Site Location Map
Figure 2	Site Layout
Figure 3	Potentiometric Surface Map, March 2022
Figure 4	Potentiometric Surface Map, June 2022
Figure 5	Potentiometric Surface Map, September 2022
Figure 6	Potentiometric Surface Map, December 2022xxxxxxxx
Figure 7	Historical LNAPL Thickness
Figure 8	Quarterly Benzene Concentrations in Monitoring Wells (2014-2022)
Figure 9	Quarterly Total PAH Concentrations in Monitoring Well MW-8 (2014-2022)
Figure 10	2022 Rio Grande at El Paso, Texas, River Stage with Monitoring Well Water-Level Elevations
Figure 11	2022 Rio Grande at El Paso, Texas, River Stage with Benzene Concentrations in Monitoring Wells
Figure 12	2022 Rio Grande at El Paso, Texas, River Stage with Total PAH Concentrations in Monitoring Well MW-8

Appendices

Appendix A	Field Data
Appendix B	Laboratory Analytical Reports

2022 Annual Groundwater Monitoring Report

Executive Summary

This 2022 Annual Groundwater Monitoring Report documents the results of four groundwater monitoring events conducted at the former Brickland Refinery in Sunland Park, New Mexico (site). The 2022 quarterly groundwater monitoring events were conducted in March (March 8-9), June (June 13-14), September (September 6), and December (December 6-7). This report contains summaries of groundwater elevation and analytical data from the 2022 groundwater monitoring events and historical records.

This monitoring program was conducted in accordance with the Groundwater Monitoring Plan included as Section 3.5 of the Stage 2 Abatement Plan approved by Mr. Bill Olson of the New Mexico Oil Conservation Division (NMOCD) in a letter dated December 17, 1998, and revised in 2006. A request was sent to NMOCD in a letter dated November 7, 2014, to modify the existing sampling performed at the site. The request was approved by Mr. Glenn von Gonten in correspondence dated April 24, 2015, and the Addendum to Abatement Plan AP-001 for the former Brickland Refinery was submitted to NMOCD on June 3, 2015. The modification to the plan requires quarterly sampling for designated wells.

In accordance with the Stage 2 Abatement Plan, quarterly sampling events include water-level and product-thickness measurements in all monitoring wells and analysis of benzene for all sampled wells. In addition, each sampling event includes analysis for polycyclic aromatic hydrocarbons (PAHs) at Monitoring Well MW-8 only.

During the 2022 monitoring events, the following samples were collected:

- Five off-site well samples (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S).
- Five on-site well samples (MW-5, MW-8, MW-10, MW-11, and MW-17).

The laboratory-reported benzene concentrations for samples collected from MW-5 and MW-8 during the March, June, September, and December 2022 monitoring events were above the New Mexico Water Quality Control Commission (NMWQCC) standard of 10 micrograms per liter ($\mu\text{g/L}$).

The laboratory-reported total PAHs were below the NMWQCC standard of 30 $\mu\text{g/L}$ for all samples collected at MW-8 during the March, June, September, and December 2022 monitoring events.

Historically, there appears to be a relationship between the magnitude of benzene detections reported at MW-5 and MW-8 and the seasonal river stage for the Rio Grande during the June/September sampling event. The hydrographs evaluated during 2022 show that water levels in all site monitoring wells rise concurrently with the elevated river stage, which results during June or September when water is released from Elephant Butte Dam (upstream from Sunland Park near Truth or Consequences, New Mexico) to the Rio Grande. Historically, the detections of benzene at Monitoring Wells MW-5 and MW-8 seasonally increase at the same time as the rise in water levels. However, during 2022, it appears that only the benzene concentration at Monitoring Well MW-8 followed this trend. The benzene concentration at Monitoring Well MW-5 was highest in December as opposed to June or September. The same relationship between the magnitude of PAH detections and the river stage for the Rio Grande has existed at MW-8. This trend is less consistent in 2022. Even though the highest detection of PAHs occurred during the March event, the PAH concentration was higher in September than the concentration in June.

2022 Annual Groundwater Monitoring Report

The hydraulic gradient beneath the former Brickland Refinery varies slightly across the site in response to river stages. In March, June, September, and December 2022, the gradient was approximately 0.0006, 0.0006, 0.001, and 0.0003 foot per foot, respectively. The groundwater flow direction was generally to the southeast, parallel to the river.

During the March, June, September, and December 2022 sampling events, no measurable amount of light non-aqueous phase liquid (LNAPL) was observed in MW-10 or in any of the other monitoring wells.

Based on the results of ongoing monitoring, the following actions are recommended:

- Continue LNAPL removal, if present, at MW-10 by bailing or pumping at quarterly intervals.
- Continue groundwater monitoring of benzene at MW-3S, MW-3D, MW-5, MW-6S, MW-6D, MW-8, MW-9S, MW-10, MW-11, and MW-17.
- Continue groundwater monitoring of PAHs at MW-8 to evaluate trends in groundwater concentrations.
- Continue evaluations of the relationship between river stages, elevated water-level measurements, and seasonal increases in concentrations of benzene (at MW-5 and MW-8) and PAHs (at MW-8) during future sampling events.
- Remove from the Abatement Plan PAHs as a monitoring parameter for Monitoring Well MW-8. Concentrations of PAHs have not been detected above the corresponding NMWQCC standard at Monitoring Well MW-8 since June 2016.

2022 Annual Groundwater Monitoring Report

1 Introduction

1.1 Background

The former Brickland Refinery (site) is located in Sunland Park, New Mexico, and consists of approximately 33 acres situated along the west bank of the Rio Grande (Figure 1). Huntsman International LLC (Huntsman) currently owns the site. From 1933 to 1958, the site was operated by previous owners as a petroleum refinery, producing both gasoline and jet fuel. The site was closed and the plant dismantled by the previous owners in 1958. Between 1964 and 1989, the site was leased by the previous owners to various parties to service trucks, conduct automobile salvage operations, graze livestock, and store used bricks.

Petroleum hydrocarbons have been reported in soil and groundwater at the site since the sampling program was initiated in December 1993. The distribution of petroleum hydrocarbons was investigated, and these investigations provided the basis for the Stage 2 Abatement Plan approved by Mr. Bill Olson of the New Mexico Oil Conservation Division (NMOCD) on December 17, 1998. The Stage 2 Abatement Plan provides the methods for abating contamination of groundwater and soil in compliance with New Mexico Water Quality Control Commission (NMWQCC) regulations on prevention and abatement of water pollution (20 New Mexico Administrative Code 6.2, Subpart IV) and NMOCD requirements to protect public health and the environment with respect to wastes from the refinement of crude oil (Section 70 2 12.8 [22] New Mexico Statute Annotated 1978).

The sampling protocol was modified in 2006, and modifications were implemented during the June 2006 monitoring event. A request to further modify sampling performed at the site was sent to NMOCD in a letter dated November 7, 2014. The request was approved by Mr. Glenn von Gonten in correspondence dated April 24, 2015, and the Addendum to Abatement Plan AP-001 for the former Brickland Refinery was submitted to NMOCD on June 3, 2015. The revised protocol is in general accordance with applicable NMOCD, New Mexico Environment Department, and U.S. Environmental Protection Agency (USEPA) regulations, procedures, and guidelines.

Huntsman maintained a stand-alone light non-aqueous phase liquid (LNAPL) recovery system at the site (at MW-10) as part of the Stage 2 Abatement Plan. The system was installed in December 1998 and shut down in June 2008 because no free-phase product was removed from MW-10 in 2006, 2007, or 2008.

The current groundwater monitoring program conducted as part of Abatement Plan AP-001 includes:

- Collection of water levels and groundwater samples on a quarterly basis at the locations of five off-site monitoring wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S) and five on-site wells (MW-5, MW-8, MW-10, MW-11, and MW-17).
- Analysis of groundwater for benzene at all monitoring well locations.
- Analysis of groundwater for polycyclic aromatic hydrocarbons (PAHs) at MW-8 only.
- Monitoring for LNAPL at all monitoring wells.
- Extraction of LNAPL at Recovery Well MW-10 (when present).
- Submittal of an annual groundwater monitoring report.

The site layout and monitoring well and sampling locations are shown on Figure 2.

2022 Annual Groundwater Monitoring Report

1.2 Scope of Services

Arcadis performed quarterly groundwater monitoring at the site in March, June, September, and December 2022. Table 1 provides a summary of the water sampling methods, purging methods, and laboratory analyses that were performed during the quarterly sampling events. The following activities were included during quarterly monitoring, as required by the Groundwater Monitoring Plan and 2015 Addendum to Stage 2 Abatement Plan as approved by NMOCD:

- Depth-to-groundwater measurements were recorded for five on-site monitoring wells and five off-site monitoring wells. All monitoring wells were resurveyed after the March 2022 sampling event; therefore, water levels were adjusted based on these new measurements beginning with the June sampling event. Historical groundwater elevations for the monitoring wells are provided in Table 2, and groundwater elevation contour maps for the 2022 monitoring events are depicted on Figures 3, 4, 5, and 6.
- Groundwater sampling was conducted in March, June, September, and December 2022 at each of the five off-site monitoring wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S) and five on-site wells (MW-5, MW-8, MW-10, MW-11, and MW-17).
- Analytical testing for the samples included benzene for all wells sampled and PAHs for MW-8 only (using USEPA Test Methods 8260C and 8270D, respectively) during the March, June, September, and December 2022 events. The analytical results for benzene and PAHs are shown in Tables 3 and 4, respectively.
- Ten monitoring wells were monitored for the presence of LNAPL, and a summary of the LNAPL thicknesses is graphed on Figure 7 and also included in Table 5.

Extraction system operations and maintenance reports were not prepared because the extraction system was shut down in June 2008 due to an absence of LNAPL in Recovery Well MW-10.

2 Groundwater Elevation, Hydraulic Gradient, and Flow Direction

The hydraulic gradient beneath the former Brickland Refinery varies slightly across the site. This variability is in part a response to river-stage fluctuations. In March, June, September, and December 2022, the gradient was approximately 0.0006, 0.0006, 0.001, and 0.0003 foot per foot, respectively. The groundwater flow direction was generally to the southeast, parallel to the river.

Historical groundwater elevations for the monitoring wells are provided in Table 2. Water levels are not listed for the well points because the well points were specifically designed to detect LNAPL at a discrete depth and the screened intervals do not correlate with the monitoring well screens. Groundwater elevation contour maps for the March, June, September, and December 2022 monitoring events are depicted on Figures 3, 4, 5, and 6, respectively. All monitoring wells were resurveyed after the March 2022 sampling event; therefore, resurvey measurements were taken into account beginning in June.

Groundwater levels in the monitoring wells are influenced by the stage of the Rio Grande, which borders the site. Due to observed seasonal fluctuations in the river, water levels in the monitoring wells may vary as much as 2 feet over the course of a year. Monitoring of groundwater elevations since June 2003 indicates a consistent

2022 Annual Groundwater Monitoring Report

pattern of higher water elevations in the wells and the river during summer sampling events and lower water elevations during winter sampling events.

3 LNAPL Product Thickness and Removal

3.1 LNAPL Product Thickness

The occurrence of LNAPL in MW-10 was tested with an oil/water interface meter. The potential occurrence of LNAPL in other monitoring wells was evaluated visually during gauging of water levels with an electronic water-level meter. Measurable thicknesses of LNAPL were not found in any wells during the four 2022 monitoring events. Recent and historical measurements dating back to June 2003 are graphed on Figure 7 and listed in Table 5. LNAPL thickness maps were not prepared for this report because none of the wells contained measurable amounts of LNAPL during the four events.

3.2 LNAPL Removal

Historically, approximately 235 gallons of LNAPL have been removed from MW-10 since December 1998, when the product recovery system was installed. LNAPL yields were no longer recovered in measurable amounts during 2006 and 2007, and the recovery system was shut down/disconnected in June 2008. Subsequently, no LNAPL was removed from MW-10 in 2008, 2009, 2010, or 2011. In 2012, manual LNAPL removal was initiated for MW-10 in response to a measurable thickness present in MW-10 as of December 2011. During the March, June, September, and December 2022 sampling events, no product thickness was present in MW-10.

4 Sample Collection and Laboratory Analytical Testing Procedures

4.1 Decontamination for Fluid-Level Measurements

The interface probe was decontaminated prior to each use and between each well to prevent the introduction of external contamination or artifacts into a well. A wash and double-rinse decontamination procedure was used. The procedure consisted of washing the probe with Liquinox, a mild, non-phosphate detergent, and then rinsing twice with water.

4.2 Calibration of Multi-Probe Water Analyzer

The multi-probe analyzer was calibrated by Geotech for each sampling event prior to use at the site. Each calibration was carried out in accordance with the equipment manufacturer's procedures and recommendations.

2022 Annual Groundwater Monitoring Report

4.3 Well Purging and Field Parameter Measurements

The monitoring wells were purged using low-flow/low-stress techniques prior to sampling. Low-flow purging involves removing small volumes of groundwater at very low pumping rates until certain field parameters have stabilized. Field parameter measurements were recorded while each well was purged through the multi-probe flow cell. The groundwater temperature, pH, specific conductance, dissolved oxygen, oxidation reduction (redox) potential, and turbidity were documented on the Groundwater Sampling Logs provided in Appendix A. Purging of each well was continued until three consecutive readings for three field parameters (dissolved oxygen, redox potential, and turbidity) stabilized within 10 percent of one another. When stabilization was achieved, well purging was discontinued and the well was sampled. The total volume of water purged prior to sample collection was recorded on the Groundwater Sampling Log for each well. The purged water was containerized for disposal.

Approximately 1 to 2.5 gallons of water were removed from each well. Field data collected during the purging of each well are provided in Appendix A. Groundwater odor, color, and other physically apparent characteristics were documented. Monitoring well integrity was also documented (see the Daily Field Reports provided in Appendix A).

During the March, June, September, and December 2022 sampling events, all wells sampled were purged with peristaltic pumps. All tubing used with the peristaltic pumps was dedicated and/or replaced at each well. A combined total ranging from approximately 10 to 24 gallons of water was purged from the sampled monitoring wells during each of the four monitoring events. Rhino Environmental Services is handling the collection of purged water from these monitoring events for subsequent nonhazardous disposal at an approved facility.

4.4 Groundwater Sample Collection

Samples were collected for laboratory analysis in the order of volatility of the analytical parameters (benzene first and PAHs second). All samples were labeled with the sampling location, date, time, and testing requirements on self-adhering labels provided by the laboratory.

4.4.1 Benzene

The groundwater samples were analyzed by USEPA Method 8260C for benzene in the March, June, September, and December 2022 monitoring events. Three 40-milliliter (mL) unpreserved glass vials were used as sample containers for volatile organic compounds. Water was collected from the well via tubing directly into the glass vial until a convex meniscus formed above the lip of the bottle. Once capped, the vial was checked for air bubbles (headspace) by turning it upside down, tapping the cap of the inverted bottle, and visually inspecting the bottle contents. No bubbles were observed in the vials shipped to the laboratory.

4.4.2 Polycyclic Aromatic Hydrocarbons

Samples collected from Monitoring Well MW-8 in the March, June, September, and December 2022 monitoring events were analyzed by USEPA Method 8270D for the presence of PAHs. Three 40-mL glass vials with no preservative were used as sample containers for PAHs. Water was collected from the well via tubing placed directly into the sample container until filled to the neck.

2022 Annual Groundwater Monitoring Report

4.5 Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC program includes collection of field blanks, equipment blanks, and duplicate samples. The water samples collected during the monitoring events were placed in ice-filled coolers immediately after collection and shipped to ALS Environmental in Houston, Texas, for analysis. In each event, chain-of-custody forms documenting sample identification numbers, the required analysis for each sample, collection times, and delivery times to the laboratories were completed for each set of samples. Copies of chain-of-custody forms are provided in Appendix B. Descriptions of the QA/QC samples and evaluation of QA/QC results for 2022 are presented below.

4.5.1 Field Blanks

Field blanks were used to determine potential absorption of volatile organics from ambient air into the water samples. The blanks for volatile organics were collected by filling three 40-mL glass vials with distilled water at the time of sampling. Field blanks were analyzed for benzene and/or PAHs during the March, June, September, and December 2022 sampling events. None of the constituents were detected in the field blanks collected during the four sampling events, with the exception of the field blank collected in June 2022 with a detection of naphthalene.

4.5.2 Equipment Blanks

Equipment blanks were collected on non-dedicated or new sampling equipment. During the March, June, September, and December 2022 sampling events, equipment blanks were collected for the Teflon® dipper and the water-level indicator. Immediately following decontamination, equipment blanks were collected by pouring distilled water over the equipment and then filling three 40-mL glass vials with water from the equipment. Equipment blanks were analyzed for benzene and/or PAHs during the March, June, September, and December 2022 sampling events. None of the constituents were detected in the equipment blanks collected during the four sampling events, with the exception of the equipment blank collected in June 2022 with a detection of naphthalene.

4.5.3 Duplicate Samples

Two duplicate samples were collected during each of the four 2022 monitoring events. During the March, June, September, and December sampling events, duplicate samples were collected from Monitoring Wells MW-3D (benzene) and MW-8 (PAHs). For the March, June, September, and December 2022 sampling events, the non-detect analytical result for benzene in the duplicate sample was consistent with the non-detect original result in MW-3D. The duplicate sample result for total PAHs was similar to the original MW-8 result.

5 Groundwater Analytical Results

5.1 Benzene

According to the Stage 2 Abatement Plan, benzene concentrations are measured quarterly during the March, June, September, and December sampling events. Benzene was reported in concentrations above the NMWQCC standard of 10 micrograms per liter (µg/L) in samples collected from Monitoring Well MW-5 in the March, June,

2022 Annual Groundwater Monitoring Report

September, and December 2022 events and from Monitoring Well MW-8 in the June and September 2022 events. Laboratory results for benzene analyses are shown in Table 3, and copies of the laboratory reports are provided in Appendix B.

5.2 Polycyclic Aromatic Hydrocarbons

Samples collected from MW-8 were analyzed for PAHs in March, June, September, and December 2022. Concentrations were reported below the NMWQCC standard of 30 µg/L for total PAHs during all four events. Removing PAHs from the Abatement Plan as a monitoring parameter for Monitoring Well MW-8 is recommended. Concentrations of PAHs have not been detected above the corresponding NMWQCC standard at Monitoring Well MW-8 since June 2016. Laboratory results for PAH analyses are shown in Table 4, and copies of the laboratory reports are provided in Appendix B.

5.3 Trend Analyses and Seasonal Concentration Increases

Graphs showing trends for detected concentrations of benzene and PAHs are provided as Figures 8 and 9, respectively. Measurements for stages in the Rio Grande from the U.S. International Boundary and Water Commission (IBWC) were used to evaluate the relationship between high river stages, water-level elevations in site monitoring wells, and detections of benzene and PAHs. These hydrographs are provided as Figures 10 through 12. River levels for the Rio Grande from August through December were provided by the IBWC.

Historically, there appears to be a relationship between the magnitude of benzene detections reported at MW-5 and MW-8 and the seasonal river stage for the Rio Grande during the June/September sampling event. Figure 10 shows the relationship between elevated seasonal river stages and the water-level elevations measured in the monitoring wells. The hydrographs evaluated during 2022 show that water levels in all site monitoring wells rise concurrently with the elevated river stage, which results during June or September when water is released from Elephant Butte Dam (upstream from Sunland Park near Truth or Consequences, New Mexico) to the Rio Grande.

Historically, the detections of benzene at Monitoring Wells MW-5 and MW-8 have seasonally increased at the same time as the rise in water levels. As shown on Figure 11, it appears that only the benzene concentration at Monitoring Well MW-8 followed this trend in 2022. The benzene concentration at Monitoring Well MW-5 was highest in December as opposed to June or September. The same relationship between the magnitude for PAH detections and the river stage for the Rio Grande has historically existed at MW-8 (Figure 12). This trend is less consistent in 2022. However, even though the highest detection of PAHs occurred during the March event, the PAH concentration was higher in September compared to the concentrations in June.

Overall, it appears that detections of benzene at Monitoring Wells MW-5 and MW-8 and PAH at MW-8 seasonally increase due to the rise in water levels into vadose zone sediments, where residual concentrations are already present. Evaluations of this relationship will continue during future sampling events.

2022 Annual Groundwater Monitoring Report

6 Remediation Performance

6.1 Bioremediation Pilot Testing

Absorbent socks were used during 2011 and the first half of 2012 as a pilot test evaluating bioremediation by enhancing natural attenuation. The absorbent socks use a patented calcium peroxide (45 to 70 percent composition) and calcium hydroxide (10 to 20 percent composition) solid granular material to react with water to release oxygen slowly, which stimulates aerobic biodegradation of groundwater contaminants. During the June 2012 sampling event, the “O-Sox” were removed from MW-5 and MW-8 and have not been replaced. Based upon these conditions, it appears that the absorbent socks used for pilot testing have addressed conditions at MW-5 and MW-8.

6.2 Product Recovery

During the March, June, September, and December 2022 sampling events, no measurable amount of LNAPL was observed in MW-10 or in any of the other monitoring wells.

7 Conclusions

Overall, the reported concentrations in groundwater appear to be stable or decreasing. During the 2022 reporting period, benzene concentrations from two wells (MW-5 and MW-8) exceeded NMWQCC standards. PAHs at MW-8 were reported below NMWQCC standards. Review of laboratory results shows general consistency in benzene concentrations in MW-5 and MW-8. This stable/decreasing trend will be verified with future sampling events.

Historically, there appears to be a relationship between the magnitude of benzene detections reported at MW-5 and MW-8 and the seasonal river stage for the Rio Grande during the June/September sampling event. The hydrographs evaluated during 2022 show that water levels in all site monitoring wells rise concurrently with the elevated river stage, which results during June or September when water is released from Elephant Butte Dam (upstream from Sunland Park near Truth or Consequences, New Mexico) to the Rio Grande. Historically, the detections of benzene at Monitoring Wells MW-5 and MW-8 have seasonally increased at the same time as the rise in water levels. However, during 2022, it appears that only the benzene concentration at Monitoring Well MW-8 followed this trend. The benzene concentration at Monitoring Well MW-5 was highest in December as opposed to June or September. The same relationship between the magnitude of PAH detections and the river stage for the Rio Grande has historically existed at MW-8. This trend is less consistent in 2022. Even though the highest detection of PAHs occurred during the March event, the PAH concentration was higher in September compared to the concentrations in June.

During the March, June, September, and December 2022 sampling events, no measurable amount of LNAPL was observed in MW-10 or in any of the other monitoring wells.

2022 Annual Groundwater Monitoring Report

8 Recommendations

Based upon data collected during the 2022 sampling program, the following recommendations are proposed for the remediation system and monitoring operations at the former Brickland Refinery:

- Continue LNAPL removal, if present, at MW-10 by bailing or pumping at quarterly intervals.
- Continue groundwater monitoring of benzene at MW-3S, MW-3D, MW-5, MW-6S, MW-6D, MW-8, MW-9S, MW 10, MW-11, and MW-17.
- Continue groundwater monitoring of PAHs at MW-8 to evaluate trends in groundwater concentrations.
- Continue evaluations of the relationship between river stages, elevated water-level measurements, and seasonal increases in concentrations of benzene (at MW-5 and MW-8) and PAHs (at MW-8) during future sampling events.
- Remove from the Abatement Plan PAHs as a monitoring parameter for Monitoring Well MW-8. Concentrations of PAHs have not been detected above the corresponding NMWQCC standard at Monitoring Well MW-8 since June 2016.

Tables

Table 2
Monitoring Well Groundwater Elevations
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well ID	TOC ⁽¹⁾	6/18/2003	12/16/2003	6/16/2004	12/16/2004	6/15/2005	12/14/2005	6/13/2006	12/14/2006	6/13/2007	12/11/2007	6/25/2008	1/7/2009	6/30/2009	12/9/2009	6/21/2010	12/7/2010	6/28/2011	12/13/2011	6/19/2012	12/11/2012	6/11/2013	12/3/2013	6/9/2014	12/9/2014	6/8/2015	9/14/2015	12/2/2015
MW-1	Plugged 7/15	3725.55	3723.69	3725.56	3723.6	3726.5	3724.01	3725.89	3724.29	3726.74	3724.57	3726.88	3724.4	3726.94	3724.20	3726.79	3724.08	3726.27	3723.93	3725.83	3724.01	3725.80	3724.07	3726.26	3723.96	3726.46	Plugged 7/15	Plugged 7/15
MW-2	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-3S	3732.20	3724.65	3722.69	3724.61	3722.71	3725.56	3723.1	3725.02	3723.34	3725.82	3723.49	3725.99	3723.53	3725.98	3723.24	3725.88	3723.15	3725.35	3723.05	3724.86	3723.03	3724.68	3723.08	3725.27	3722.84	3725.70	3725.16	3722.57
MW-3D	3732.19	3724.57	3722.61	3724.62	3722.64	3725.49	3723.04	3724.96	3723.29	3725.78	3723.57	3725.96	3723.5	3725.92	3723.68	3725.83	3723.07	3725.37	3722.93	3724.96	3722.91	3724.81	3723.28	3725.37	3722.74	3725.62	3725.27	3722.48
MW-4	Plugged 7/15	3724.87	3722.88	3724.76	3722.96	3725.75	3723.37	3725.21	3723.62	3726.06	3723.77	3726.26	3723.82	3726.22	3723.52	3726.41	3723.41	3725.51	3723.26	3725.11	3723.20	3724.73	3723.34	3725.35	3723.05	3725.72	Plugged 7/15	Plugged 7/15
MW-5	3731.64	3724.91	3722.85	3724.83	3722.98	3725.68	3723.38	3725.15	3723.65	3726.02	3723.84	3726.14	3723.85	3726.21	3723.51	3726.13	3723.54	3725.50*	3722.13*	3724.91*	3723.27	3724.66	3723.37	3725.22	3723.14	3725.60	3725.40	3722.79
MW-6S	3733.28	3724.4	3722.38	3724.4	3722.45	3725.21	3722.9	3724.76	3722.99	3725.53	3723.13	3725.7	3723.29	3725.68	3722.99	3725.70	3722.83	3725.11	3722.69	3724.70	3722.71	3724.50	3722.61	3725.07	3722.50	3725.32	3725.03	3722.35
MW-6D	3733.83	3724.36	3722.33	3724.38	3722.41	3725.22	3722.86	3724.74	3722.98	3725.58	3723.28	3725.76	3723.25	3725.69	3722.95	3725.62	3722.85	3725.06	3722.76	3724.67	3722.70	3724.54	3722.59	3725.19	3722.46	3725.39	3724.99	3722.26
MW-7	Plugged 7/15	3724.76	3722.69	3724.75	3722.82	3725.53	3723.24	3725.06	3723.45	3725.92	3723.78	3726.05	3723.64	3726.39	3723.42	3725.99	3723.26	3725.43	3723.04	3724.99	3723.08	3724.73	3723.06	3725.39	3722.93	3725.70	Plugged 7/15	Plugged 7/15
MW-8	3731.15	3724.67	3722.63	3724.62	3722.84	3725.28	3723.25	3724.91	3723.46	3725.53	3723.67	3725.79	3723.62	3725.78	3723.39	3725.53	3723.22	3725.25*	3721.89*	3724.76*	3723.05	3723.87	3723.04	3724.46	3722.89	3724.76	3725.24	3722.59
MW-9S	3734.42	3724.04	3722.02	3723.97	3722.18	3724.85	3722.65	3724.39	3722.89	3725.4	3723.17	3725.41	3723.17	3725.41	3722.88	3725.35	3723.23	3725.16	3722.32	3724.33	3722.49	3723.98	3722.38	3724.68	3722.32	3724.92	3724.74	3722.14
MW-9D	Plugged 7/05	Dry	Dry	Dry	Dry	Dry	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05
MW-10	3734.53	3725.67	3722.31	3724.41	3722.56	3725.24	3723.11	3724.53	3723.29	3725.83	3723.54	3732.54	3723.47	3725.82	3723.22	3725.73	3722.91	3724.87*	3722.21*	3724.34	3722.55	3724.56	3722.79	3724.88	3722.72	3725.01	3725.08	3722.36
MW-11	3733.39	3724.51	3721.17	3724.42	3722.74	3725.24	3723.21	3724.65	3723.43	3725.77	3723.62	3725.74	3723.53	3725.76	3723.30	3725.69	3723.17	3724.95	3722.94	3724.64	3722.98	3723.80	3722.95	3724.48	3722.78	3724.69	3725.08	3722.54
MW-12	Plugged 7/15	3725.93	3724.09	3725.9	3723.86	3726.74	3724.4	3726.24	3724.66	3727.1	3724.8	3726.95	3724.79	3727.28	3724.49	3727.08	3724.52	3726.70	3724.79	3726.21	3724.33	3726.00	3724.30	3726.54	3724.14	3726.73	Plugged 7/15	Plugged 7/15
MW-13	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-14	Plugged 7/15	3725.3	3722.79	3724.81	3722.88	3725.67	3723.3	3725.17	3723.55	3726.03	3723.82	3726.13	3723.77	3726.14	3723.45	3726.06	3723.58	3725.49	3723.44	3725.09	3724.84	3724.70	3724.16	3725.31	3723.01	3725.66	Plugged 7/15	Plugged 7/15
MW-15	Plugged 7/15	3724.35	3722.38	3724.28	3722.58	3725.16	3723.04	3724.69	3723.42	3725.75	3723.57	3725.73	3723.58	3725.74	3723.26	3725.62	3723.26	3724.99	3723.15	3724.63	3722.81	3724.19	3722.74	3724.83	3722.60	3725.06	Plugged 7/15	Plugged 7/15
MW-16	Plugged 7/15	3724.17	3722.14	3724.13	3722.34	3725	3722.78	3724.48	3723.05	3725.53	3723.29	3725.51	3723.28	3725.51	3722.99	3725.43	3722.78	3724.87	3724.76	3724.64	3724.71	3724.12	**	3724.73	3722.70	3724.99	Plugged 7/15	Plugged 7/15
MW-17	3733.87	3724.67	3722.61	3724.67	3722.71	3725.53	3723.15	3725.06	3723.33	3725.93	3723.63	3726	3723.63	3726.02	3723.28	3726.02	3723.17	3725.40	3723.02	3724.95	3723.05	3724.80	3722.91	3725.44	3722.77	3725.69	3725.28	3722.56

Notes:
⁽¹⁾ - Wells resurveyed on March 24, 2022.
*Oxygen-releasing compound sleeves/socks (O-Sox) were utilized to enhance natural attenuation. Water elevations may be artificially lowered due to displacement caused by the O-Sox
**Roots on probe.
Measurements are reported in feet mean sea level.
Dry - Monitoring point was dry.
Plugged - Plugged and abandoned as of specified date.

Abbreviation:
TOC - Top of casing.

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-3S	6/19/2003	ND
	12/17/2003	ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/24/2008	<1
	1/8/2009	<1
	7/1/2009	<1
	12/10/2009	<1
	6/23/2010	<0.20
	12/7/2010	<0.20
	6/29/2011	<1
	12/14/2011	<1
	6/19/2012	<0.20
	12/11/2012	<0.20
	6/12/2013	<1
	12/4/2013	<5
	6/9/2014	<0.60
	12/10/2014	<1
	6/10/2015	<1
	9/14/2015	<1
	12/2/2015	<1
	3/7/2016	<1
	6/6/2016	<1
	9/13/2016	<1
	12/14/2016	<1
	3/7/2017	<1
	6/6/2017	<1
	9/26/2017	<1
	12/5/2017	<1
	3/6/2018	<1
	6/26/2018	<1
	9/20/2018	<1
	12/11/2018	<1
	3/5/2019	<1
	6/4/2019	<1
	9/18/2019	<1
	12/10/2019	<1
	3/17/2020	<1
	6/1/2020	<1
	9/21/2020	<1
	12/18/2020	<1
	3/8/2021	<1
	6/1/2021	<1
	9/8/2021	<1
	12/8/2021	<1
	3/8/2022	<1
	6/13/2022	<1
	9/6/2022	<1
	12/6/2022	<1
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-3D ⁽¹⁾	6/19/2003	ND
	12/17/2003	ND; ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/24/2008	<1
	1/8/2009	<1
	7/1/2009	<1
	12/10/2009	<1
	6/23/2010	<0.20
	12/7/2010	<1
	6/29/2011	<1
	12/14/2011	<1
	6/19/2012	<0.20
	12/11/2012	<0.20
	6/12/2013	<1
	12/4/2013	<5
	6/9/2014	<0.60
	12/10/2014	<1
	6/10/2015	<1
	9/14/2015	<1
	12/2/2015	<1
	3/7/2016	<1
	6/6/2016	<1
	9/13/2016	<1
	12/14/2016	<1
	3/7/2017	<1
	6/6/2017	<1
	9/26/2017	<1
	12/5/2017	<1
	3/6/2018	<1
	6/26/2018	<1
	9/20/2018	<1
	12/11/2018	<1
	3/5/2019	<1
	6/4/2019	<1
	9/18/2019	<1
	12/10/2019	<1
	3/17/2020	<1
	6/1/2020	<1; <1
	9/21/2020	<1; <1
	12/18/2020	<1; <1
	3/8/2021	<1; <1
	6/1/2021	<1; <1
	9/8/2021	<1; <1
	12/8/2021	<1; <1
	3/8/2022	<1; <1
	6/13/2022	<1; <1
	9/6/2022	<1; <1
	12/6/2022	<1; <1
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-5 ⁽¹⁾	6/21/2010	2,200
	6/30/2011	870
	12/13/2011	2,000
	7/20/2012	400
	12/13/2012	1,100; 910
	6/13/2013	1,200
	12/4/2013	140
	6/10/2014	420
	12/10/2014	580
	6/9/2015	1,900
	9/15/2015	73
	12/3/2015	450
	3/8/2016	460
	6/7/2016	1,200
	9/13/2016	400
	12/14/2016	510
	3/8/2017	230
	6/7/2017	920
	9/27/2017	3,500
	12/6/2017	1,600
	3/7/2018	120
	6/27/2018	2,300
	9/21/2018	1,500
	12/12/2018	120
	3/6/2019	990
	6/5/2019	1,200
	9/19/2019	910
	12/11/2019	1,900
	3/18/2020	1,700
	6/2/2020	1,000
	9/22/2020	750
	12/18/2020	959
	3/8/2021	370
	6/1/2021	150
	9/9/2021	300
	12/9/2021	470
	3/9/2022	250
	6/14/2022	49
	9/6/2022	230
	12/7/2022	300
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-6S ⁽¹⁾	6/19/2003	ND
	12/17/2003	ND
	6/16/2004	ND; ND
	12/16/2004	ND; ND
	6/15/2005	0.8
	12/16/2005	ND
	6/15/2006	ND; ND
	12/14/2006	11; 6.1
	6/14/2007	ND; ND
	12/17/2007	ND; ND
	6/25/2008	<1
	1/8/2009	<1
	7/1/2009	1.7; 1.8
	12/11/2009	<10,000; <10,000
	6/24/2010	<1; <1
	12/8/2010	<0.20
	6/29/2011	0.61J; <1
	12/16/2011	<1; <1
	6/21/2012	<1; <1
	12/12/2012	<0.20
	6/12/2013	<1; <1
	12/4/2013	<10; <10
	6/10/2014	<0.60; <0.60
	12/9/2014	<1
	6/10/2015	<1; <1
	9/15/2015	<1
	12/3/2015	<1
	3/7/2016	<1
	6/6/2016	<1
	9/12/2016	<1
	12/13/2016	<1
	3/8/2017	<1
	6/7/2017	<1
	9/27/2017	<1
	12/5/2017	<1
	3/6/2018	<1
	6/26/2018	<1
	9/20/2018	<1
	12/11/2018	<1
	3/5/2019	<1
	6/4/2019	<1
	9/18/2019	<1
	12/10/2019	<1
	3/17/2020	(2)
	6/1/2020	(2)
	9/21/2020	(2)
	12/18/2020	(2)
	3/8/2021	(2)
	6/1/2021	(2)
	9/8/2021	1.7
	12/8/2021	<1
	3/8/2022	<1
	6/13/2022	<1
	9/6/2022	<1
	12/6/2022	<1
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-6D ⁽¹⁾	6/19/2003	ND
	12/17/2003	ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/25/2008	<1
	1/8/2009	<1
	7/1/2009	<1
	12/11/2009	<1
	6/24/2010	<0.20
	12/8/2010	<1
	6/29/2011	<1
	12/16/2011	<1
	6/21/2012	<0.20
	12/12/2012	<0.20
	6/12/2013	<1
	12/4/2013	<5
	6/10/2014	<0.60
	12/9/2014	<1; <1
	6/10/2015	<1
	9/15/2015	<1
	12/3/2015	<1
	3/8/2016	<1
	6/7/2016	<1
	9/12/2016	<1
	12/13/2016	<1
	3/8/2017	<1
	6/7/2017	<1
	9/27/2017	<1
	12/5/2017	<1; <1
	3/6/2018	<1; <1
	6/26/2018	<1; <1
	9/20/2018	<1; <1
	12/11/2018	<1; <1
	3/5/2019	<1; <1
	6/4/2019	<1; <1
	9/18/2019	<1; <1
	12/10/2019	<1; <1
	3/17/2020	<1; <1
	6/1/2020	<1
	9/21/2020	<1
	12/18/2020	<1
	3/8/2021	<1
	6/1/2021	<1
	9/8/2021	<1
	12/8/2021	<1
	3/8/2022	<1
	6/13/2022	<1
	9/6/2022	<1
	12/6/2022	<1
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-8 ⁽¹⁾	6/22/2010	6,800
	6/30/2011	460
	12/14/2011	9,900
	7/20/2012	2,700
	12/13/2012	5,500
	6/13/2013	4,700
	12/4/2013	270
	6/10/2014	3,300
	12/10/2014	1,600
	6/9/2015	5,100
	9/16/2015	2,400
	12/4/2015	970
	3/8/2016	1,300
	6/7/2016	5,000
	9/13/2016	3,800
	12/14/2016	1,100
	3/8/2017	150
	6/7/2017	2,400; 2,400
	9/27/2017	3,800
	12/6/2017	1,900
	3/7/2018	<1
	6/27/2018	<1
	9/21/2018	630
	12/12/2018	<1
	3/6/2019	<1
	6/5/2019	<1
	9/19/2019	190
	12/11/2019	<1
	3/18/2020	<1
	6/2/2020	630
	9/22/2020	720
	12/18/2020	136
	3/8/2021	550
	6/1/2021	220
	9/9/2021	1,500
	12/9/2021	41
	3/9/2022	<1
	6/14/2022	54
	9/6/2022	230
	12/7/2022	1.2
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-9S ⁽¹⁾	6/19/2003	ND; ND
	12/17/2003	ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/24/2008	<1
	1/8/2009	<1
	7/2/2009	<1
	12/10/2009	<1
	6/23/2010	<0.20
	12/8/2010	<0.20
	6/29/2011	<1
	12/15/2011	<1
	6/21/2012	<0.20
	12/12/2012	<0.20
	6/12/2013	<1
	12/4/2013	<25
	6/9/2014	<0.60
	12/9/2014	<1
	6/10/2015	<1
	9/15/2015	<1
	12/3/2015	<1
	3/8/2016	<1
	6/7/2016	<1
	9/12/2016	<1
	12/13/2016	<1
	3/7/2017	<1
	6/6/2017	<1
	9/26/2017	<1
	12/5/2017	<1
	3/6/2018	<1
	6/26/2018	<1
	9/20/2018	<1
	12/11/2018	<1
	3/5/2019	<1
	6/5/2019 ⁽²⁾	NS
	9/19/2019 ⁽²⁾	NS
	12/11/2019 ⁽²⁾	NS
	3/17/2020	(2)
	6/1/2020	(2)
	9/21/2020	(2)
	12/18/2020	(2)
	3/8/2021	(2)
	6/1/2021	(2)
	9/8/2021	<1
	12/8/2021	<1
	3/8/2022	<1
	6/13/2022	<1
	9/6/2022	<1
	12/6/2022	<1
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-10	6/24/2010	<0.20
	6/30/2011	<1
	12/14/2011	30
	7/20/2012	12
	12/13/2012	15
	6/13/2013	2.8
	12/5/2013	<25
	6/11/2014	<0.60
	12/11/2014	<1
	6/8/2015	23
	9/16/2015	<1
	12/4/2015	<1
	3/8/2016	<1
	6/7/2016	4.6
	9/13/2016	1.6
	12/14/2016	<1
	3/8/2017	1.1
	6/7/2017	2.1
	9/27/2017	1.5
	12/6/2017	<1
	3/7/2018	<1
	6/27/2018	<1
	9/21/2018	<1
	12/12/2018	<1
	3/6/2019	<1
	6/5/2019	<1
	9/19/2019	<1
	12/11/2019	<1
	3/18/2020	<1
	6/2/2020	<1
	9/22/2020	<1
	12/18/2020	0.65J
	3/8/2021	<5
	6/1/2021	<1
	9/9/2021	<1
	12/9/2021	<1
	3/9/2022	<1
	6/14/2022	<1
	9/6/2022	<1
	12/6/2022	<1
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-11	6/22/2010	<0.20
	6/28/2011	4.7
	12/15/2011	NS
	6/19/2012	NS
	12/12/2012	NS
	6/11/2013	<1
	12/3/2013	<25
	6/9/2014	<0.60
	12/11/2014	<1
	6/9/2015	1.3
	9/14/2015	<1
	12/2/2015	<1
	3/7/2016	2.5
	6/6/2016	<1
	9/12/2016	<1
	12/13/2016	<1
	3/7/2017	<1
	6/6/2017	<1
	9/26/2017	<1
	12/5/2017	<1
	3/7/2018	<1
	6/27/2018	<1
	9/21/2018	<1
	12/12/2018	<1
	3/6/2019	<1
	6/5/2019	<1
	9/19/2019	<1
	12/11/2019	<1
	3/18/2020	<1
	6/2/2020	<1
	9/22/2020	<1
	12/18/2020	<1
	3/8/2021	<5
	6/1/2021	<1
	9/9/2021	<1
	12/9/2021	<1
	3/9/2022	<1
	6/14/2022	<1
	9/6/2022	<1
	12/7/2022	<1
NMWQCC Standard (µg/L)		10

Table 3
Benzene Concentrations in Monitoring Wells
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well	Date	Benzene (µg/L)
MW-17 ⁽¹⁾	6/22/2010	<0.20
	6/28/2011	<1
	12/15/2011	NS
	6/19/2012	NS
	12/12/2012	NS
	6/11/2013	6.8
	12/4/2013	<25
	6/9/2014	<0.60
	12/10/2014	<1
	6/9/2015	<1
	9/14/2015	<1; <1
	12/2/2015	<1; <1
	3/7/2016	<1; <1
	6/6/2016	<1; <1
	9/12/2016	2.7; 2.5
	12/13/2016	<1; <1
	3/7/2017	1.3; <1
	6/6/2017	<1; <1
	9/26/2017	<1; <1
	12/5/2017	<1
	3/7/2018	<1
	6/27/2018	<1
	9/21/2018	<1
	12/12/2018	<1
	3/6/2019	<1
	6/4/2019	<1
	9/18/2019	<1
	12/11/2019	<1
	3/17/2020	<1
	6/1/2020	<1
	9/21/2020	<1
	12/18/2020	<1
	3/8/2021	<1
	6/1/2021	<1
	9/9/2021	2.3
	12/9/2021	<1
	3/9/2022	<1
	6/14/2022	<1
	9/6/2022	<1
	12/6/2022	<1
NMWQCC Standard (µg/L)		10

Notes:

⁽¹⁾Monitoring Wells MW-3D, MW-5, MW-6S, MW-6D, MW-8, MW-9S, and MW-17 and respective duplicate samples are reported in the same cell and separated by a semicolon.

⁽²⁾Well damaged/destroyed and could not be sampled.

Results are reported in micrograms per liter (µg/L).

BOLD - Concentrations in bold type indicate levels exceed NMWQCC standards.

J - Analyte detected below quantitation limit.

Abbreviations:

ND - Not detected.

NS - Not sampled.

NMWQCC - New Mexico Water Quality Control Commission.

µg/L - micrograms per liter



Table 4
Total Polycyclic Aromatic Hydrocarbon Concentrations in Monitoring Well MW-8
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico

Total PAH Concentration											
Well ID	12/8/1993	3/25/1994	7/12/1994	9/28/1994	12/13/1994	3/28/1995	6/21/1995	9/1/1995	6/21/1996	6/26/1997	6/25/1998
MW-8	--	250	93	366	236	180	--	140	--	--	--

Total PAH Concentration											
Well ID	6/3/1999	6/14/2000	7/27/2001	6/27/2002	6/19/2003	6/16/2004	6/15/2005	6/14/2006	6/14/2007	6/25/2008	7/2/2009
MW-8	--	--	--	--	--	--	--	--	--	--	--

Total PAH Concentration											
Well ID	7/21/2010	6/28/2011	6/19/2012	6/11/2013	6/9/2014	6/9/2015	9/16/2015	12/4/2015	3/8/2016	6/7/2016	9/13/2016
MW-8	2.21	<0.20	--	43.33	3.279	1.67; 0.86	9.723; 10.742	9.203; 8.707	1.26; 1.63	32.62; 30.139	5.286; 6.543

Total PAH Concentration											
Well ID	12/14/2016	3/8/2017	6/7/2017	9/27/2017	12/6/2017	3/7/2018	6/27/2018	9/21/2018	12/12/2018	3/6/2019	6/5/2019
MW-8	4.857; 5.335	4.251; 4.184	20.251; 16.463	3.211; 3.208	3.654; 5.934	1.565; 1.369	8.195; 7.655	2.741; 2.27	4.269; 3.882	4.257; 2.73	9.529; 6.184

Total PAH Concentration											
Well ID	9/19/2019	12/11/2019	3/18/2020	6/1/2020	9/22/2020	12/18/2020	3/8/2021	6/1/2021	9/9/2021	12/9/2021	3/9/2022
MW-8	2.141; 1.452	1.353; 0.896	5.806; 8.092	0.193; 0.909	4.004; 7.017	2.907; 1.652	5.266; 9.532	0.494; 0.297	1.493; 1.804	0.993; 1.011	0.673; 0.116

Total PAH Concentration			
Well ID	6/14/2022	9/6/2022	12/7/2022
MW-8	0.351; 0.196	0.219; 0.450	0.509; 0.576

2022 Quarterly Data Detail			
March 2022 Data Detail			
Well	Acenaphthene	Acenaphthylene	Naphthalene
MW-8	0.400; 0.116	<0.104; <0.103	0.273; <0.103

June 2022 Data Detail			
Well	Acenaphthene	Acenaphthylene	Naphthalene
MW-8	<0.103; <0.102	0.109; <0.102	0.242; 0.196

September 2022 Data Detail			
Well	Acenaphthene	Acenaphthylene	Naphthalene
MW-8	<0.104; <0.0948	<0.104; 0.130	0.219; 0.320

December 2022 Data Detail			
Well	Acenaphthene	Acenaphthylene	Naphthalene
MW-8	<0.105; 0.170	<0.105; <0.103	0.509; 0.406

Notes:
Results are reported in micrograms per liter (µg/L).
Total PAH concentration is the sum of the low-level PAH concentrations listed in the data detail section. Non-detects were not included.
Duplicate result reported following the semicolon.
-- Not sampled.
BOLD - Concentrations in bold type indicate levels exceed the New Mexico Water Quality Control Commission standard for PAH concentrations (30 µg/L).

Abbreviations:
PAH - Polycyclic aromatic hydrocarbon.

Table 5
LNAPL Thickness Measurements
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico



Well ID	Jun-03	Dec-03	Jun-04	Dec-04	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Jan-09	Jul-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Sep-15	Dec-15	Mar-16	Jun-16	Sep-16	Dec-16
MW-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A
MW-2	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-3S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-3D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A
MW-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-6S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-6D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A
MW-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-9S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-10	0.00	0.13	0.08	0.05	0.10	0.00	Trace	Trace	0.00	Trace	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.11	0.04	0.04	Sheen	Sheen	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00
MW-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A
MW-13	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A
MW-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A
MW-16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NM ⁽¹⁾	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A
MW-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Trace	0.00	0.00	Sheen	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Dry	0.00	Dry	0.00	Dry	Dry	Dry	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Trace	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-14	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Trace	0.00	0.00	0.00	0.00	0.00	0.02	0.00	Tar	Tar	0.33	Tar	0.00	Tar/Dry	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-25	Dry	Dry	Dry	Dry	Dry	Dry	0.70	0.52	0.54	0.52	0.45	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	0.00	P&A	P&A	P&A	P&A	P&A	P&A
WP-26S	0.35	0.60	0.63	0.66	0.66	0.52	0.58	0.47	0.48	0.35	0.73	0.38	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-26D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-27S	0.01	0.00	0.00	0.00	0.00	0.00	Trace	0.02	0.00	Trace	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-27D	0.12	0.26	0.06	0.11	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Dry	0.00	Dry	0.00	0.00	0.00	0.00	NM	NM	NM	NM	NM	0.00	NM ⁽²⁾	NM ⁽²⁾	NM ⁽²⁾	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-32	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Trace	Dry	Dry	NM	NM	NM	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Trace	0.00	0.00	Sheen	0.00	P&A	P&A	P&A	P&A	P&A	P&A	P&A

Notes:
⁽¹⁾Roots on probe.
⁽²⁾Cap could not be removed.
Measurements are reported in feet.
BOLD - Measurable amount of LNAPL observed.
Dry - Monitoring point was dry.
Sheen - Thin layer of LNAPL or oxidation observed; too thin to measure. See field notes for details.
Tar - Thickness measurement not obtainable because of presence of thick, tar-like substance in well point.
Trace - Traces of LNAPL observed; too thin to measure.

Abbreviations:
LNAPL - Light Non-Aqueous Phase Liquid.
NM - Not measured.
P&A - Plugged and abandoned.

Table 5
LNAPL Thickness Measurements
2022 Annual Groundwater Monitoring Report
Former Brickland Refinery
Huntsman International LLC
Sunland Park, New Mexico

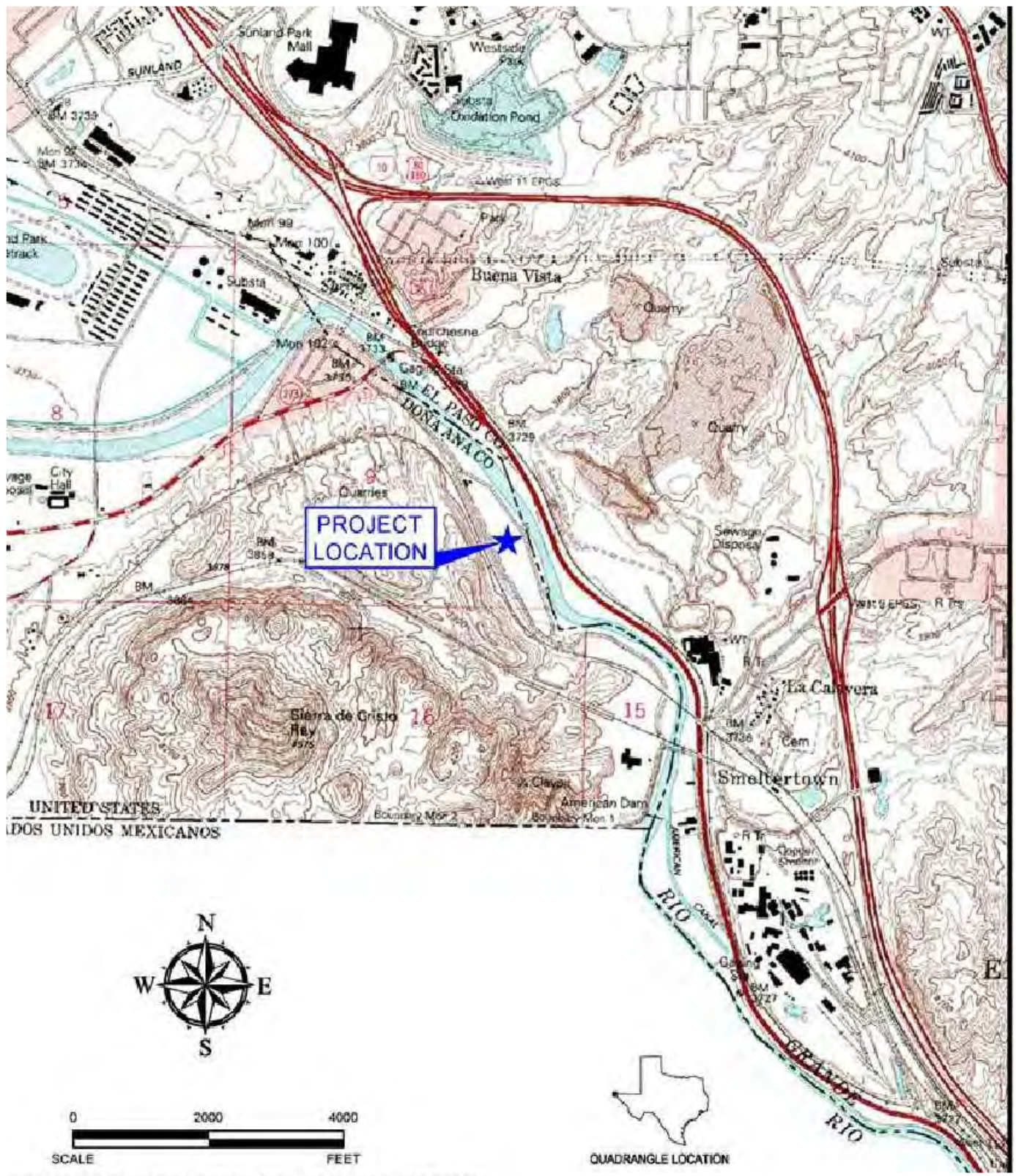


Well ID	Mar-17	Jun-17	Sep-17	Dec-17	Mar-18	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Dec-19	Mar-20	Jun-20	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22
MW-1	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-2	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-3S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-3D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-4	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-5	0.00	0.00	0.00	Heavy sheen	0.05	Heavy sheen	Sheen	Heavy sheen	0.01	0.19	0.02	0.00	0.00	0.00	Heavy sheen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Heavy sheen
MW-6S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Damaged	Damaged	Damaged	Damaged	Damaged	Damaged	0.00	0.00	0.00	0.00	0.00	0.00
MW-6D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-7	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-8	0.00	0.00	0.00	0.00	0.00	Sheen	0.00	Light sheen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-9S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	0.00	0.00	0.00	0.00	0.00	0.00
MW-10	0.00	0.00	Light sheen	Light sheen	0.00	Sheen	0.00	Light sheen	0.00	0.00	Slight sheen	0.00	0.00	0.00	Slight sheen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-12	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-13	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-14	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-15	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-16	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-1	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-2	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-3	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-7	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-14	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-25	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-26S	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-26D	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-27S	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-27D	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-30	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-31	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-32	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
WP-33	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A

Notes:
(1)Roots on probe.
(2)Cap could not be removed.
Measurements are reported in feet.
BOLD - Measurable amount of LNAPL observed.
Dry - Monitoring point was dry.
Sheen - Thin layer of LNAPL or oxidation observed; too thin to measure. See field notes for details.
Tar - Thickness measurement not obtainable because of presence of thick, tar-like substance in well point.
Trace - Traces of LNAPL observed; too thin to measure.

Abbreviations:
LNAPL - Light Non-Aqueous Phase Liquid.
NM - Not measured.
P&A - Plugged and abandoned.

Figures



SOURCE: U.S.G.S. 7.5' QUADRANGLE, SMELTERTOWN, TX, 1994 (c3110635).

FORMER BRICKLAND REFINERY
HUNTSMAN INTERNATIONAL LLC
SUNLAND PARK, NEW MEXICO

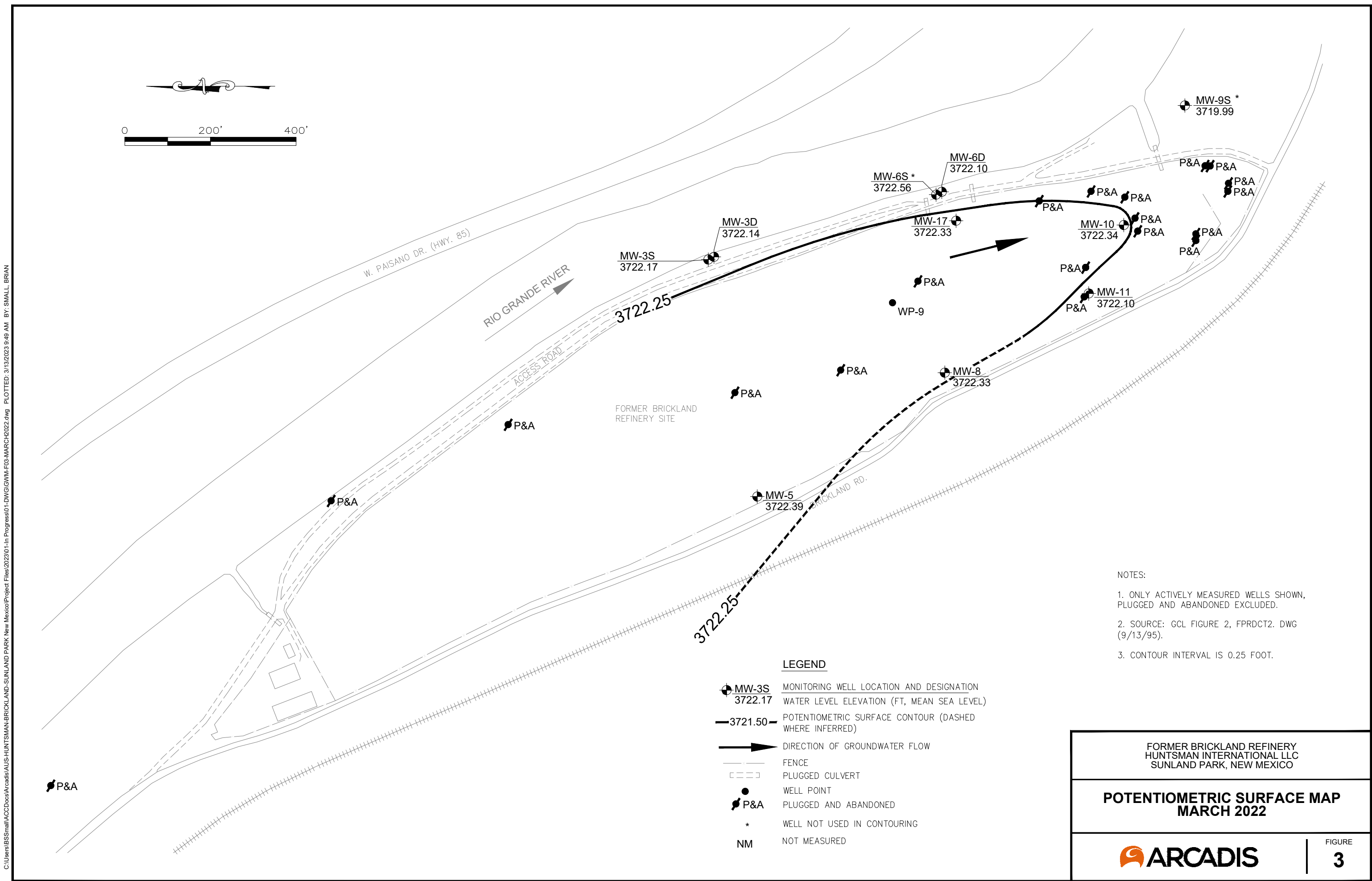
SITE LOCATION MAP



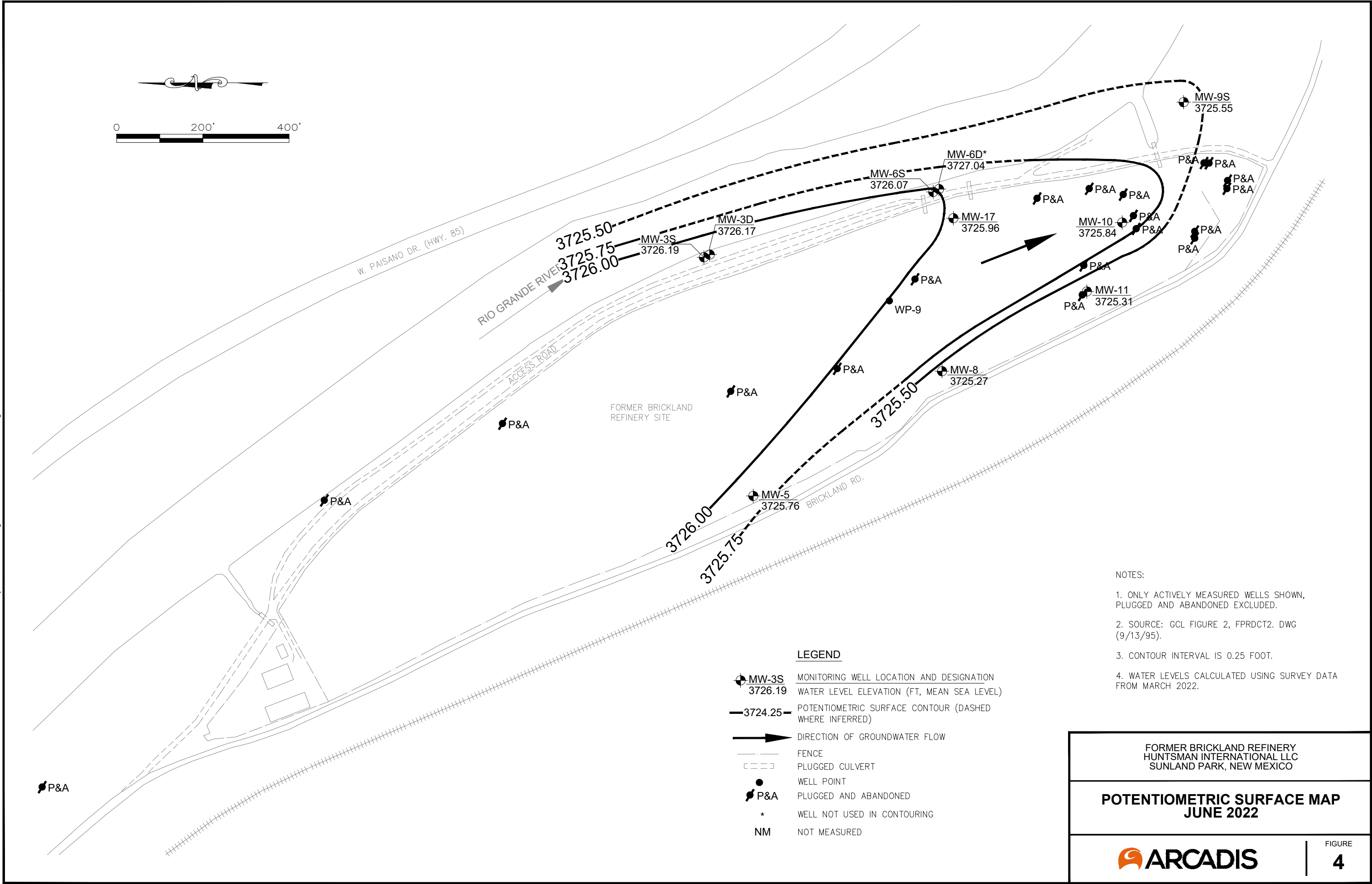
FIGURE

1

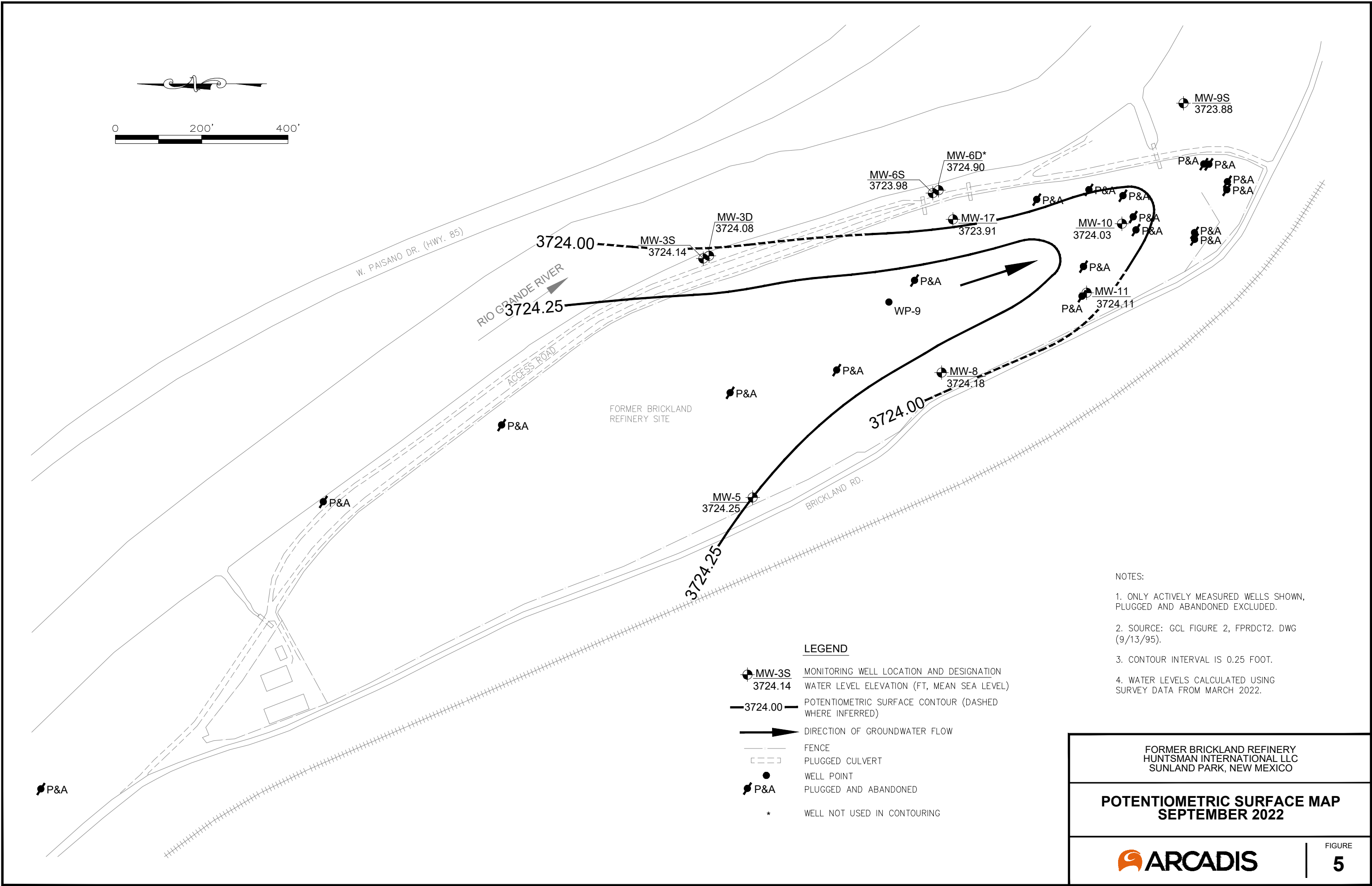




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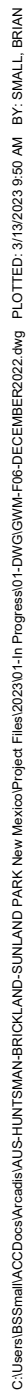
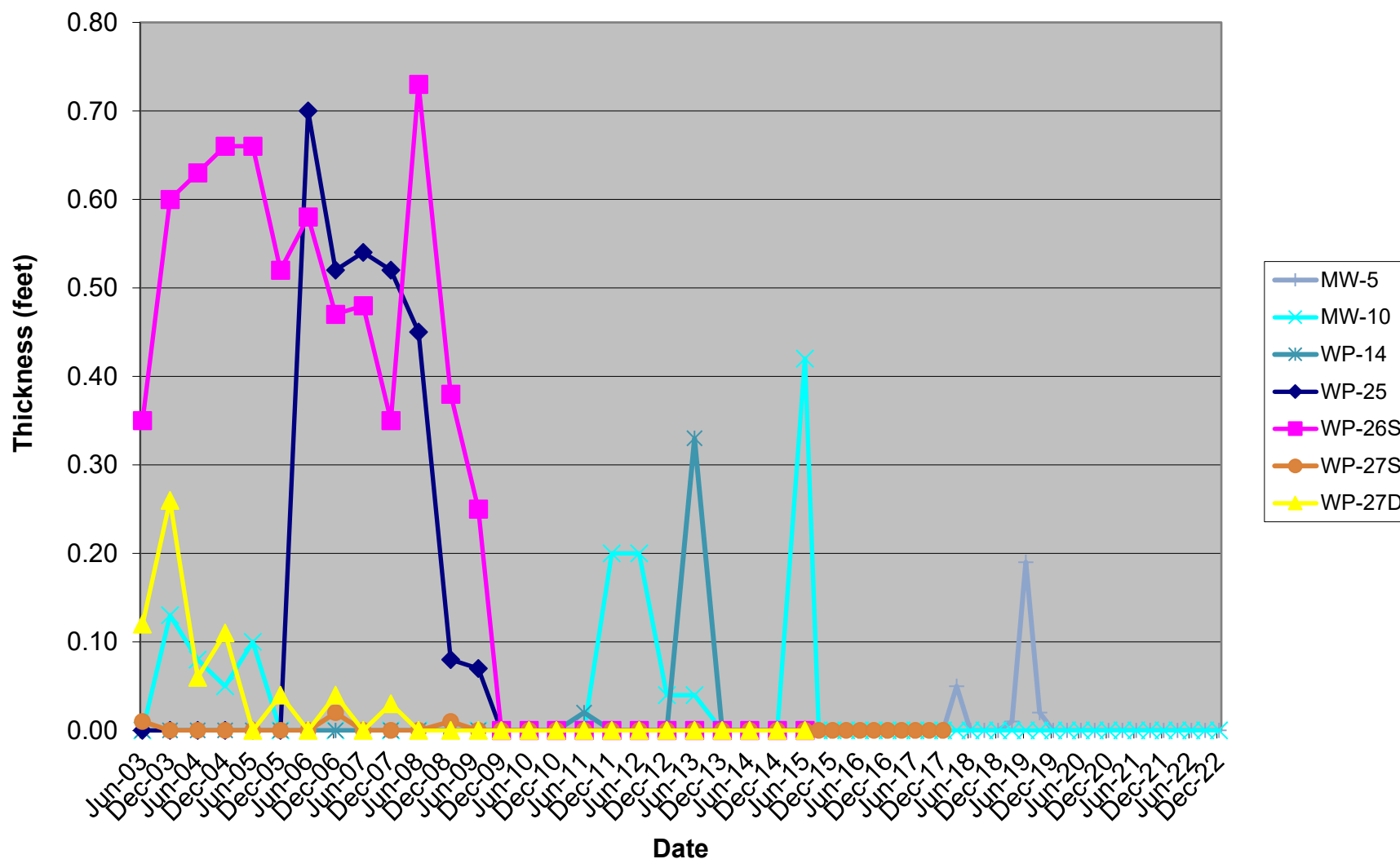


Figure 7 - Historical LNAPL Thickness



Note: WP-14, WP-25, WP-26S, WP-27S, and WP-27D were plugged and abandoned in June 2015.

Figure 8 - Quarterly Benzene Concentrations in Monitoring Wells (2014-2022)

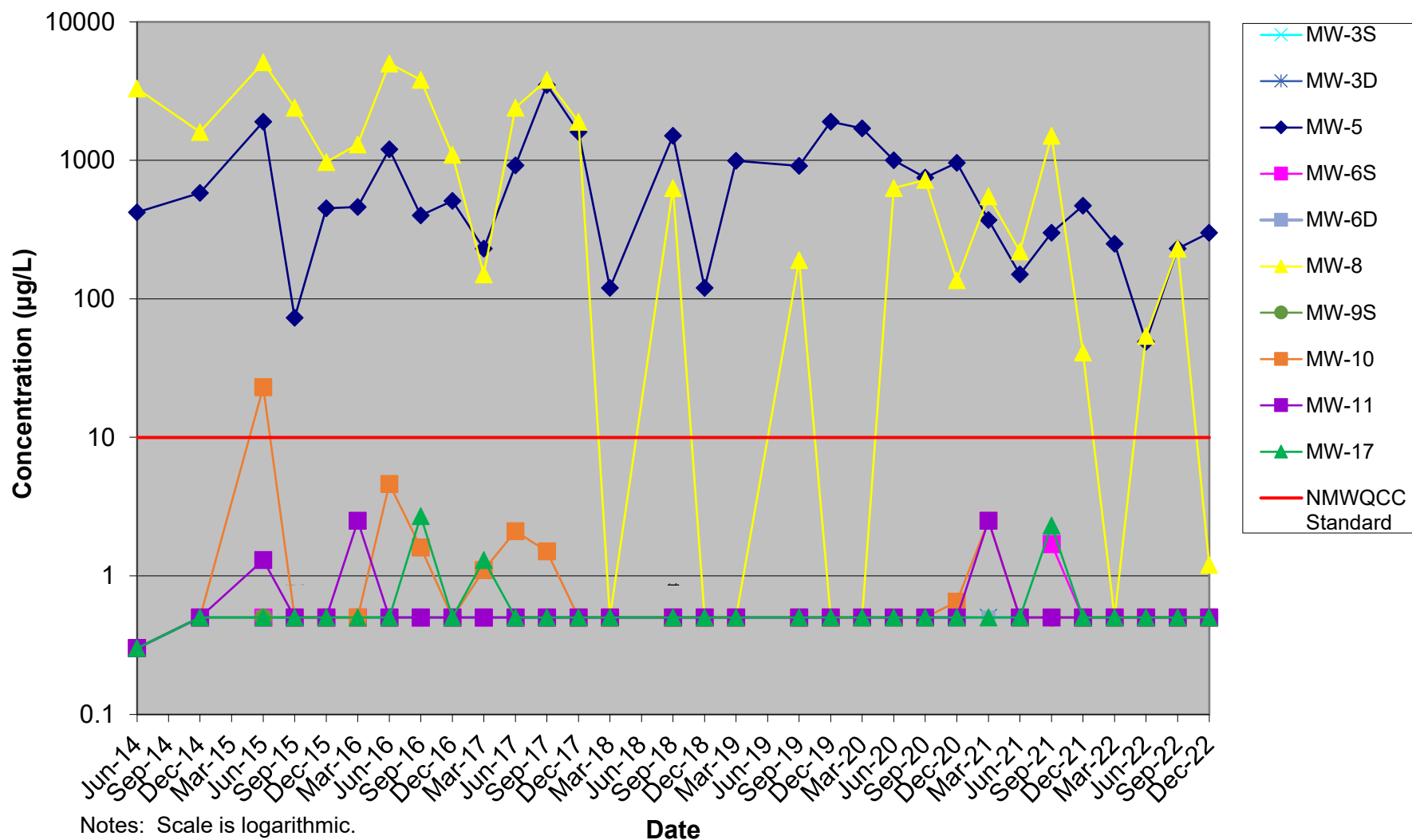
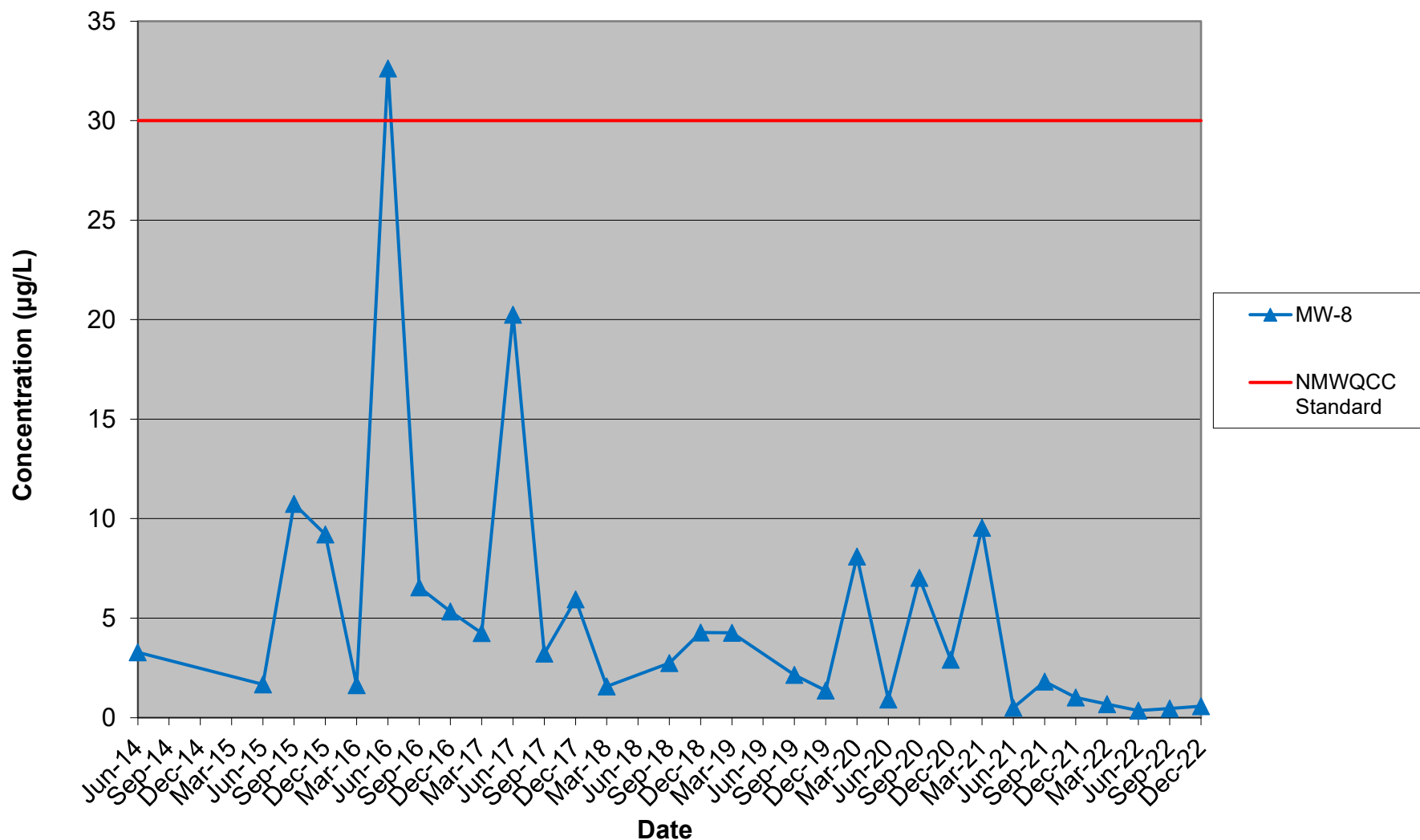


Figure 9 - Quarterly Total PAH Concentrations in Monitoring Well MW-8 (2014-2022)



Notes: NMWQCC Standard for total PAH is 30 µg/L.

The higher detection between the parent and duplicate samples is graphed.

Figure 10 - 2022 Rio Grande at El Paso, Texas, River Stage with Monitoring Well Water-Level Elevations

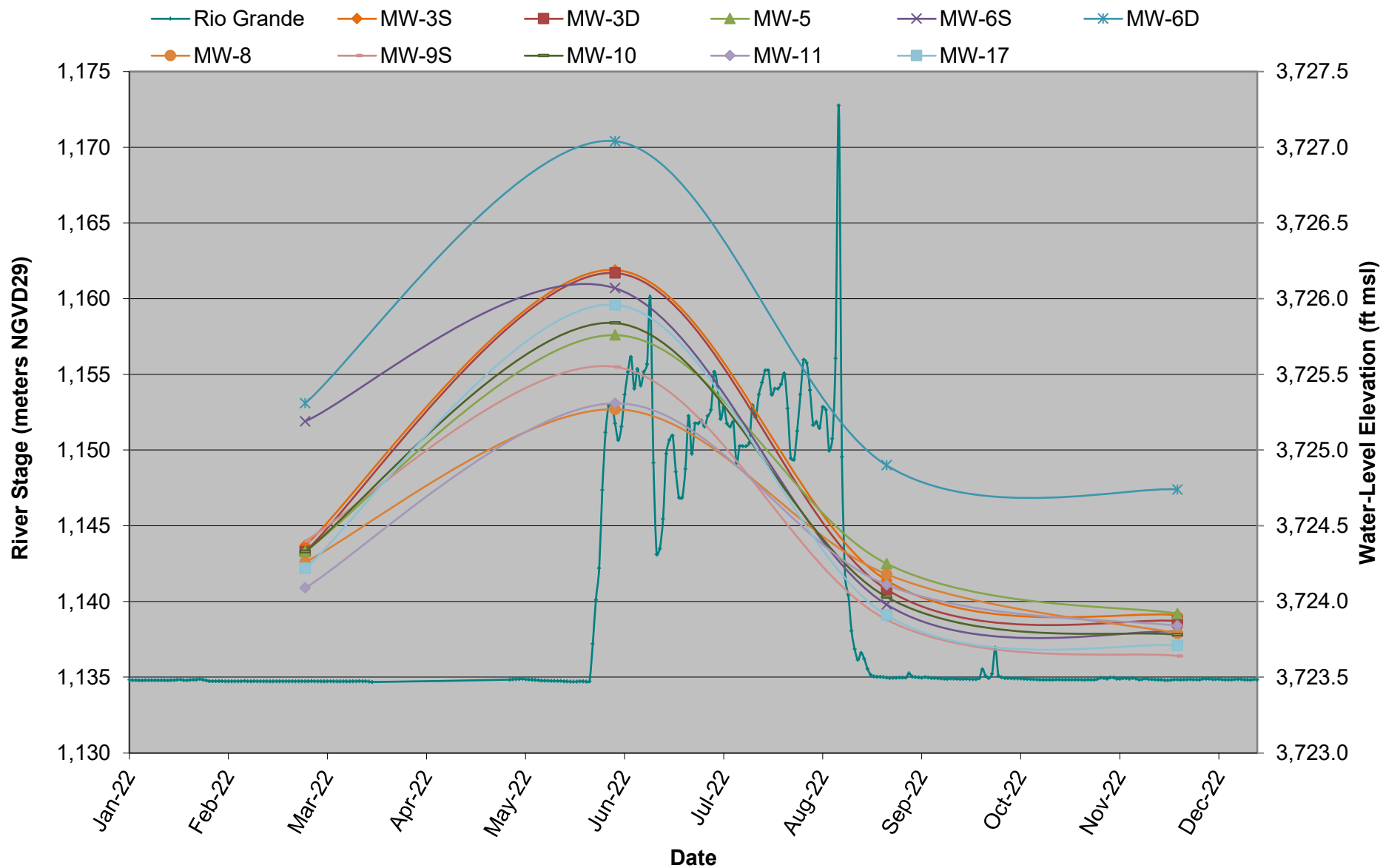


Figure 11 - 2022 Rio Grande at El Paso, Texas, River Stage with Benzene Concentrations in Monitoring Wells

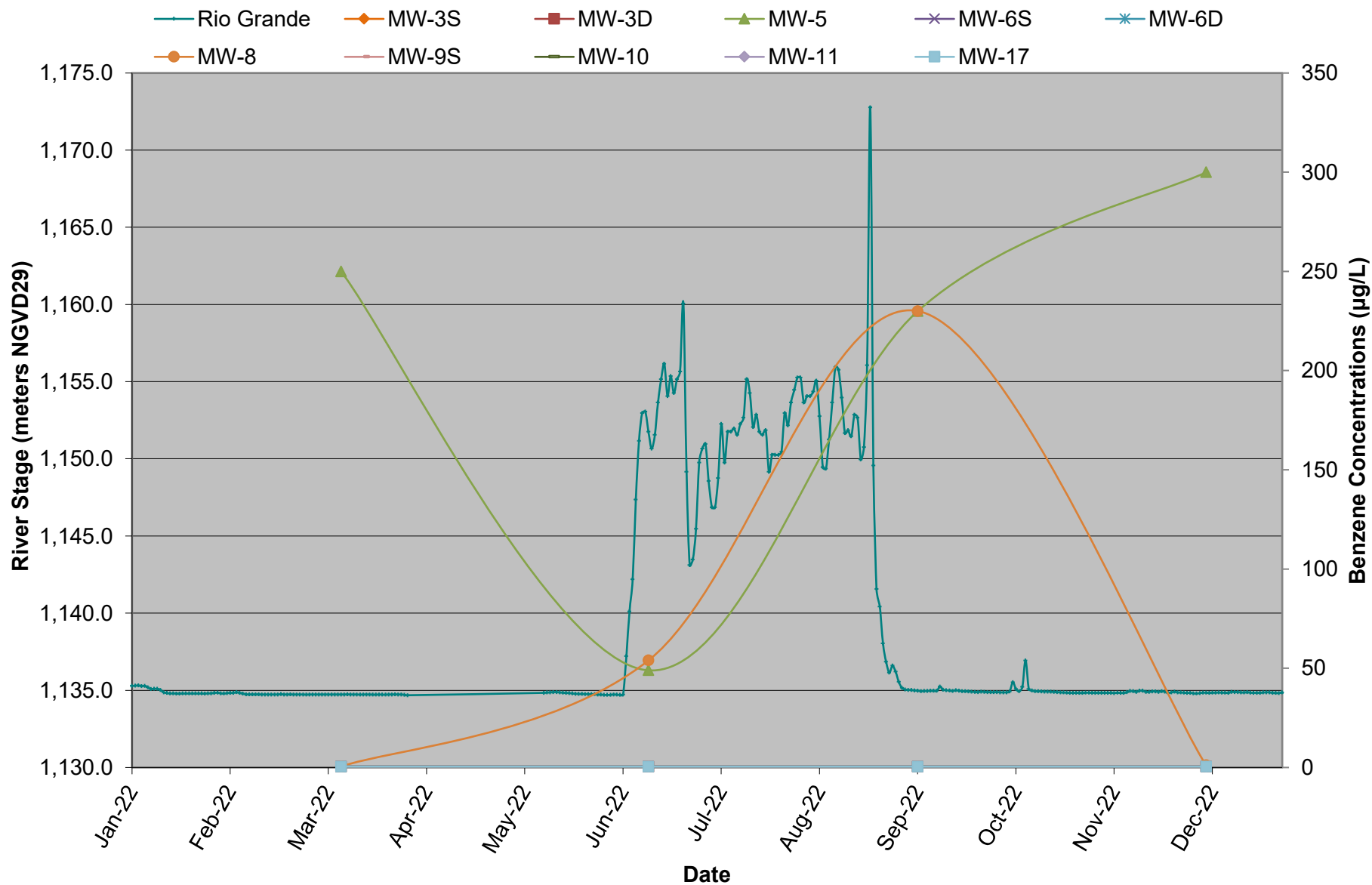
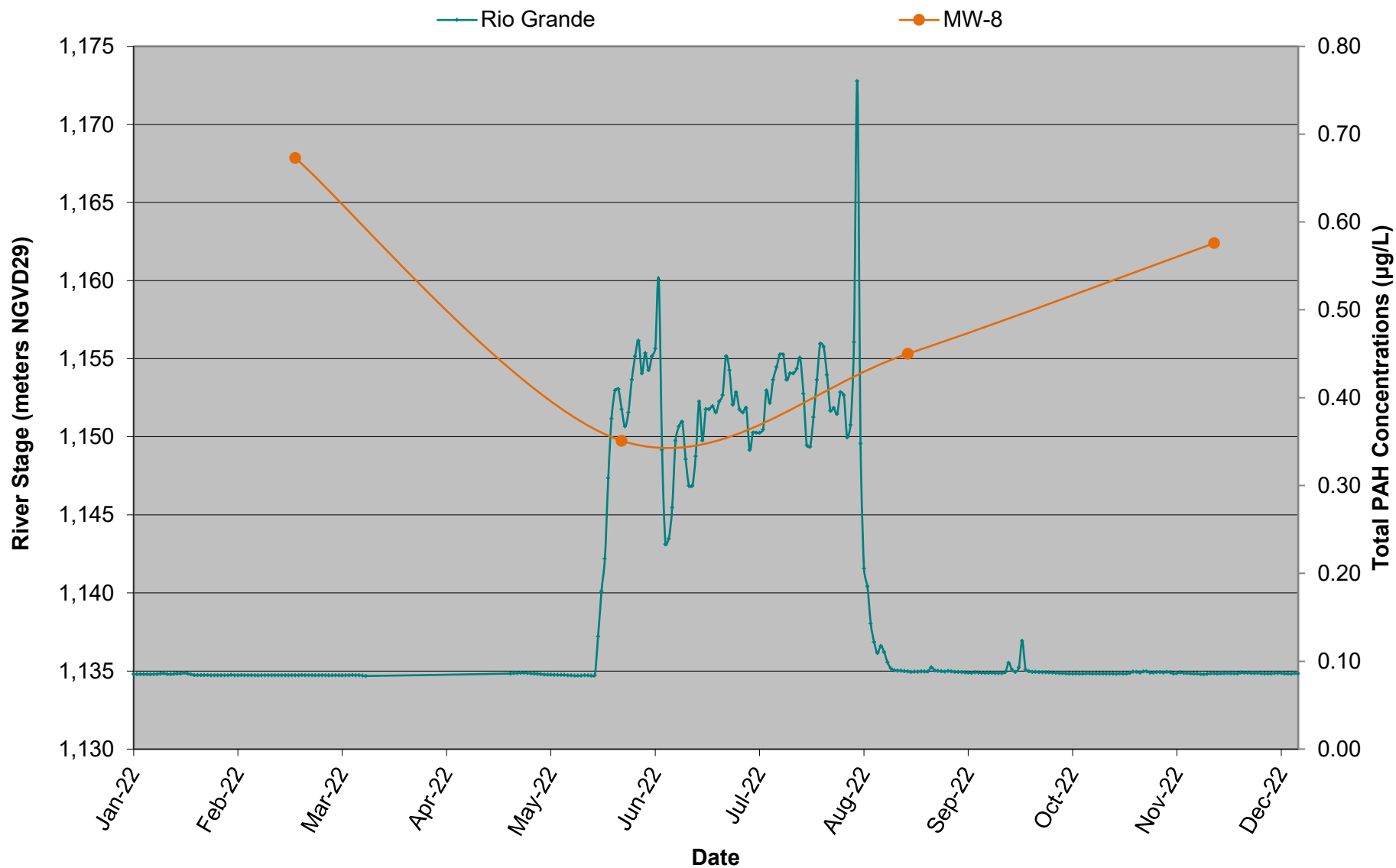


Figure 12 - 2022 Rio Grande at El Paso, Texas, River Stage with Total PAH Concentrations in Monitoring Well MW-8



Appendix A

Field Data

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-3S	Date	03/08/2022
Project Name/Location	Huntsman Brickland Refinery		Weather(°F)	37.9 degrees F and Mostly Clear. The wind is blowing undefined at 0.0 mph.	
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4
				Well Casing Material	PVC
Static Water Level (ft-bmp)	7.83	Total Depth (ft-bmp)	16.5	Water Column(ft)	8.67
				Gallons in Well	5.64
MP Elevation		Pump Intake (ft-bmp)	13.5	Purge Method	Low-Flow
				Sample Method	Low-Flow
Sample Time	09:29	Volumes Purged	0.15	Sample ID	MW-3S
				Sampled by	Jesus Placencia
Purge Start	09:05	Gallons Purged	0.82	Replicate/ Code No.	

Purge End													
Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:07	0	0	200	8.02	0.00	7.12	9.94	0.54	0.8	61.3	144.9	Clear	None
09:12	5	5	200	8.12	0.00	7.13	9.95	0.49	2.08	61.7	143.4	Clear	None
09:17	5	10	200	8.15	0.00	7.13	9.95	0.53	2.07	61.2	141.6	Clear	None
09:22	5	15	200	8.16	0.00	7.15	9.95	0.51	2.02	61.3	141.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	3	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point

in = inches

ft = feet

mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter

NTU = Nephelometric Turbidity Unit

mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-3D	Date	03/08/2022
Project Name/Location	Huntsman Brickland Refinery		Weather(°F)	41.0 degrees F and Mostly Clear. The wind is blowing N at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4
				Well Casing Material	PVC
Static Water Level (ft-bmp)	7.86	Total Depth (ft-bmp)	37.5	Water Column(ft)	29.64
				Gallons in Well	19.26
MP Elevation		Pump Intake (ft-bmp)	10	Purge Method	Low-Flow
				Sample Method	Low-Flow
Sample Time	10:00	Volumes Purged	0.04	Sample ID	MW-3D
				Sampled by	Jesus Placencia
Purge Start	09:38	Gallons Purged	0.79	Replicate/ Code No.	DUP1-030822, FB1-030822 @0950
Purge End	10:09				

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:39	0	0	200	7.9	0.00	7.5	17.62	0.76	6.29	16.7	142.7	Clear	None
09:45	6	6	200	7.9	0.00	7.53	18.01	0.76	6.69	16.8	142.2	Clear	None
09:50	5	11	200	7.9	0.00	7.52	18.09	0.74	6.68	16.7	141.9	Clear	None
09:57	7	18	200	7.9	0.00	7.53	18.09	0.75	6.67	16.8	141.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	9	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point

in = inches

ft = feet

mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter

NTU = Nephelometric Turbidity Unit

mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-5	Date	03/09/2022		
Project Name/Location	Huntsman Brickland Refinery	Weather(°F)	46.0 degrees F and Mostly Clear. The wind is blowing undefined at 0.0 mph.				
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4	Well Casing Material	PVC
Static Water Level (ft-bmp)	7.31	Total Depth (ft-bmp)	15	Water Column(ft)	7.69	Gallons in Well	5
MP Elevation		Pump Intake (ft-bmp)	10	Purge Method	Low-Flow	Sample Method	Low-Flow
Sample Time	09:40	Volumes Purged	0.21	Sample ID	MW-5	Sampled by	Sergio Celis
Purge Start	09:20	Gallons Purged	1.06	Replicate/ Code No.			

Purge End	09:44												
Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:25	0	0	200	7.31	0.00	6.85	20.7	8.13	0.52	18.2	-115.9	Black	Strong
09:30	5	5	200	7.75	0.00	6.81	20.95	4.39	0.4	18.2	-205.9	Black	Strong
09:35	5	10	200	7.75	0.00	6.8	20.96	4.12	0.39	18.3	-210.8	Black	Strong
09:40	5	15	200	7.85	0.00	6.8	20.97	4.1	0.39	18.2	-211.9	Black	Strong

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	3	None

Comments: Sheen present

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-6S	Date	03/08/2022		
Project Name/Location	Huntsman Brickland Refinery	Weather(°F)	46.0 degrees F and Clear. The wind is blowing N at 10.3 mph.				
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4	Well Casing Material	Stainless Steel
Static Water Level (ft-bmp)	8.09	Total Depth (ft-bmp)	20	Water Column(ft)	11.91	Gallons in Well	7.74
MP Elevation		Pump Intake (ft-bmp)	11	Purge Method	Low-Flow	Sample Method	Low-Flow
Sample Time	10:35	Volumes Purged	0.11	Sample ID	MW-6S	Sampled by	Jesus Placencia
Purge Start	10:15	Gallons Purged	0.82	Replicate/ Code No.			

Purge End		10:39											
Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:16	0	0	200	9.01	0.00	7.25	12.79	5.01	0.61	17.4	141.4	Clear	None
10:22	6	6	200	9	0.00	7.19	12.82	5.96	0.5	17.3	140	Clear	None
10:27	5	11	200	9	0.00	7.19	12.8	5.96	0.49	17.4	139	Clear	None
10:32	5	16	200	9	0.00	7.18	12.8	5.66	0.5	17.4	138.3	Clear	None

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	3	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-6D	Date	03/08/2022		
Project Name/Location	Huntsman Brickland Refinery		Weather(°F)	46.0 degrees F and Clear. The wind is blowing N at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4	Well Casing Material	Stainless Steel
Static Water Level (ft-bmp)	8.52	Total Depth (ft-bmp)	38	Water Column(ft)	29.48	Gallons in Well	19.16
MP Elevation		Pump Intake (ft-bmp)	13	Purge Method	Low-Flow	Sample Method	Low-Flow
Sample Time	11:05	Volumes Purged	0.04	Sample ID	MW-6D	Sampled by	Jesus Placencia
Purge Start	10:52	Gallons Purged	0.82	Replicate/ Code No.			

Purge End	11:05												
Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:52	0	0	200	8.56	0.00	7.62	20.08	0.56	4.87	18.5	141.1	Clear	None
10:57	5	5	200	8.56	0.00	7.56	20.13	0.51	4.84	18.3	140.2	Clear	None
11:01	4	9	200	8.56	0.00	7.56	20.16	0.47	5.02	18.4	139.4	Clear	None

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	3	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Released to Imaging: 11/14/2023 2:42:53 PM

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-8	Date	03/09/2022		
Project Name/Location	Huntsman Brickland Refinery		Weather(°F)	46.0 degrees F and Mostly Clear. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4	Well Casing Material	PVC
Static Water Level (ft-bmp)	6.89	Total Depth (ft-bmp)	14.65	Water Column(ft)	7.76	Gallons in Well	5.04
MP Elevation		Pump Intake (ft-bmp)	11	Purge Method	Low-Flow	Sample Method	Low-Flow
Sample Time	10:10	Volumes Purged	0.21	Sample ID	MW-8	Sampled by	Sergio Celis
Purge Start	09:50	Gallons Purged	1.06	Replicate/ Code No.	EB-030922 @ 1020, FB-030922 @ 1015, ED-030922		

Purge End		10:24											
Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:55	0	0	200	7.31	0.00	7.32	11.68	2.11	0.46	19.7	-89.8	Yellow	Strong
10:00	5	5	200	7.31	0.00	7.3	11.63	2	0.4	18.9	-78.8	Yellow	Strong
10:05	5	10	200	7.58	0.00	7.31	11.6	2.2	0.38	18.8	-75.9	Yellow	Strong
10:10	5	15	200	7.66	0.00	7.29	11.59	2.13	0.39	18.4	-72	Yellow	Strong

Constituent Sampled	Container	Number	Preservative
Benzene ,PAHs SW-846 8100	40 mL Glass	21	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-9S	Date	03/08/2022		
Project Name/Location	Huntsman Brickland Refinery	Weather(°F)	46.0 degrees F and Clear. The wind is blowing N at 10.3 mph.				
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4	Well Casing Material	Stainless Steel
Static Water Level (ft-bmp)	10.02	Total Depth (ft-bmp)	38	Water Column(ft)	27.98	Gallons in Well	18.19
MP Elevation		Pump Intake (ft-bmp)	11	Purge Method	Low-Flow	Sample Method	Low-Flow
Sample Time	11:50	Volumes Purged	0.05	Sample ID	MW-9S	Sampled by	Jesus Placencia
Purge Start	11:15	Gallons Purged	0.82	Replicate/ Code No.	EB030822		

Purge End		11:55											
Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:19	0	0	200	10.21	0.00	7.07	19.31	24.6	1.39	18.2	23.2	Clear	None
11:27	8	8	200	10.21	0.00	7.08	19.26	21.1	0.59	18.3	21.7	Clear	None
11:33	6	14	200	10.21	0.00	7.07	19.24	21	0.55	18.3	19.9	Clear	None
11:38	5	19	200	10.21	0.00	7.06	19.26	19.4	0.53	18.3	19.2	Clear	None
11:45	7	26	200	10.21	0.00	7.07	19.24	19.2	0.53	18.3	17.5	Clear	None

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	6	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = millivolt

Groundwater Sampling Form



Project Number

30049071

Well ID

MW-10

Date

03/09/2022

Project Name/Location

Huntsman Brickland Refinery

Weather(°F)

51.1 degrees F and Mostly Clear. The wind is blowing S/SE at 5.8 mph.

Measuring Pt. Description

Top of Inner Casing

Screen Setting (ft-bmp)

--

Casing Diameter (in)

4

Well Casing Material

PVC

Static Water Level (ft-bmp)

10.2

Total Depth (ft-bmp)

19.89

Water Column(ft)

9.69

Gallons in Well

6.3

MP Elevation

Pump Intake (ft-bmp)

12

Purge Method

Low-Flow

Sample Method

Low-Flow

Sample Time

11:35

Volumes Purged

0.18

Sample ID

MW-10

Sampled by

Sergio Celis

Purge Start

11:14

Gallons Purged

1.11

Replicate/ Code No.

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	200	10.41	0.00	7.38	10.8	1.57	0.38	21.4	-29	Yellow	Medium
11:25	5	5	200	10.55	0.00	7.37	10.79	1.74	0.31	21.1	-37.7	Yellow	Medium
11:30	5	10	200	10.62	0.00	7.36	10.81	1.8	0.3	21.2	-45.9	Yellow	Medium
11:35	5	15	200	10.62	0.00	7.37	10.79	1.7	0.31	21.2	-45.8	Yellow	Medium

Constituent Sampled

Benzene

Container

40 mL Glass

Number

3

Preservative

None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot
1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM

Well Locked at Arrival: yes

Condition of Well: Good condition

Well Locked at Departure: yes

Well Completion: Stick-up

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-11	Date	03/09/2022		
Project Name/Location	Huntsman Brickland Refinery		Weather(°F)	51.1 degrees F and Mostly Clear. The wind is blowing S/SE at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4	Well Casing Material	PVC
Static Water Level (ft-bmp)	9.3	Total Depth (ft-bmp)	24.75	Water Column(ft)	15.45	Gallons in Well	10.04
MP Elevation		Pump Intake (ft-bmp)	11	Purge Method	Low-Flow	Sample Method	Low-Flow
Sample Time	11:05	Volumes Purged	0.11	Sample ID	MW-11	Sampled by	Sergio Celis
Purge Start	10:41	Gallons Purged	1.06	Replicate/ Code No.			

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:45	0	0	200	9.34	0.00	7.54	10.27	1.96	0.69	21.3	73.7	Yellow	None
10:50	5	5	200	9.4	0.00	7.49	10.27	1.9	0.48	20.6	73	Yellow	None
10:55	5	10	200	9.63	0.00	7.49	10.28	1.88	0.47	20.6	73	Yellow	None
11:00	5	15	200	9.7	0.00	7.48	10.28	1.8	0.48	20.6	69.1	Yellow	None

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	3	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form



Project Number	30049071	Well ID	MW-17	Date	03/09/2022
Project Name/Location	Huntsman Brickland Refinery		Weather(°F)	39.0 degrees F and Clear. The wind is blowing undefined at 0.0 mph.	
Measuring Pt. Description	Top of Inner Casing	Screen Setting (ft-bmp)	--	Casing Diameter (in)	4
Static Water Level (ft-bmp)	9.65	Total Depth (ft-bmp)	38	Water Column(ft)	28.35
MP Elevation		Pump Intake (ft-bmp)	12	Purge Method	Low-Flow
Sample Time	09:05	Volumes Purged	0.06	Sample ID	MW-17
Purge Start	08:45	Gallons Purged	1.06	Replicate/ Code No.	
Purge End	09:07				

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:50	0	0	200	9.65	0.00	7.28	10.45	23	0.69	15.9	152.2	Clear	None
08:55	5	5	200	9.67	0.00	7.27	10.5	4.33	0.68	15.9	150.7	Clear	None
09:00	5	10	200	9.68	0.00	7.26	10.5	4.21	0.67	15.8	149.8	Clear	None
09:05	5	15	200	9.68	0.00	7.26	10.5	4.14	0.67	15.7	149	Clear	None

Constituent Sampled	Container	Number	Preservative
Benzene	40 mL Glass	3	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Sunland Park, NM	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	Key Number To Well: NA

[illegible]

Control Number: TSM- 5285051



TSM + project number plus date as follows: XXXXXXXX.XXXX.XXXXX - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name: <u>Huntsman</u>		Project Location: <u>Sunland Park, nm</u>	
Date: <u>6/13/22</u>	Time: <u>0700</u>	Conducted by: <u>D. John</u>	Signature/Title: <u>Sampton Field Sup</u>

Issues or concerns from previous day's activities:

Task anticipated to be performed today:

GW Sampling

The following was used to communicate H&S information in this briefing (check all that apply):

- ☐ HASP (including THA)
- ☐ JSAs (specify JSA #s): _____
- ☐ Permits (specify type or #): _____
- ☐ Traffic Safety Plan
- ☐ FHSB (specify sections): _____
- ☐ H&S Standard (specify number): _____
- ☐ H&S checklist (specify type): _____
- ☐ Activity specific hazard analysis:

Activity:

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):

Biological	☒	Chemical	☐	Driving	☐	Electrical	☐
Environmental	☒	Gravity	☐	Mechanical	☐	Motion	☐
Personal Safety	☐	Pressure	☐	Radiation	☒	Sound	☐

Controls required to be used:

PPE Required (If not using JSA or Permit with PPE requirements):

- ☐ Hard hat
- ☒ Safety glasses
- ☐ Face shield
- ☐ Safety goggles
- ☐ Steel/composite toe boots
- ☒ Traffic vest (specify II or III): _____
- ☐ Life Vest (specify type): _____
- ☐ Protective Suit (specify type): _____

☐ Protective gloves (specify type): _____☐ Other (specify): _____

Signature and Certification: I have read and understand the project specific HASP for this project.

SSE Employee*

Non-Life Threatening Injury or Illness
Call WorkCare 1-888-449-7787

Printed Name/Signature/Company	Sign In Time	Sign Out Time
<u>Doug Saton / Sampton / ARCADIS</u>	<u>0730</u>	
<u>Ricardo McCordy / Pina / ARCADIS</u>	<u>7:30</u>	

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.888.449-7787 and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

*Short Service Employee (SSE) working for Arcadis <1 year.

Control Number: TSM- 5285051



TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name: <u>Humboldt</u>		Project Location: <u>Sanland Park, mm</u>	
Date: <u>6/14/22</u>	Time: <u>0725</u>	Conducted by: <u>[Signature]</u>	Signature/Title: <u>[Signature] / Field Sup</u>

Issues or concerns from previous day's activities:

Task anticipated to be performed today:

GW Sampling

The following was used to communicate H&S information in this briefing (check all that apply):

- ☐ HASP (including THA)
☐ JSAs (specify JSA #s): _____
☐ Permits (specify type or #): _____
☐ Traffic Safety Plan
☐ FHSB (specify sections): _____
☐ H&S Standard (specify number): _____
☐ H&S checklist (specify type): _____
☐ Activity specific hazard analysis: _____

Activity:

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):

- | | | | |
|---|-----------------------------------|---|-------------------------------------|
| Biological ☒ | Chemical ☐ | Driving ☐ | Electrical ☐ |
| Environmental ☒ | Gravity ☐ | Mechanical ☐ | Motion ☐ |
| Personal Safety ☐ | Pressure ☐ | Radiation ☒ | Sound ☐ |

Controls required to be used:

PPE Required (if not using JSA or Permit with PPE requirements):

- ☐ Hard hat
☒ Safety glasses
☐ Face shield
☐ Safety goggles
☐ Steel/composite toe boots
☒ Traffic vest (specify II or III): _____
☐ Life Vest (specify type): _____
☐ Protective Suit (specify type): _____

☐ Protective gloves (specify type):☐ Other (specify):

Signature and Certification: I have read and understand the project specific HASP for this project.

SSE Employee*	Non-Life Threatening Injury or Illness Call WorkCare 1-888-449-7787		
	Printed Name/Signature/Company	Sign In Time	Sign Out Time
	<u>Dougston [Signature] / ARCADIS</u>	<u>0725</u>	

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

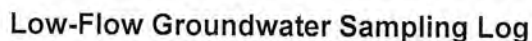
I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.888.449-7787 and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

*Short Service Employee (SSE) working for Arcadis <1 year.



Depth to Water (ft bmp) 6.01 Purge Time _____ Start 0831 Finish 0905

Field Parameter Measurements During Purging

[illegible]

Comments MW-35



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY			Well ID	mw-3D
Project Number	30091090	Site Location	SUNLAND PARK, NM		
Date	6/13/22	Sampled By	DS		
Sampling Time	0945	Recorded By	DS		
Weather		Coded Replicate No.	FD061322		

Instrument Identification

Water Quality Meter(s) HORIBA U-52

Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
-----------------	-----	--------------	----------------------

Casing Diameter 2-INCH/4-INCH

Sounded Depth (ft bmp)

Depth to Water (ft bmp) 6.02 Purge Time _____ Start 409 Finish 0955

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter	Container	No.	Preservative
Benzene	40ml/VOA	3	none

PID Reading 0.0

Comments Fuld Sup ~~FD 060~~ FD 061322 40ml - 3

Field blank FB 061322 0950 0445 W/Ond-3 DPH₂



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	6/13/22	Sampled By	DS
Sampling Time	1025	Recorded By	DS
Weather		Coded Replicate No.	

Well ID MW-65

Instrument Identification

Water Quality Meter(s)	HORIZA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	2-INCH/4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	7.15	Purge Time	Start 0955 Finish 1030

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color <u>clear</u>	Odor <u>-</u>	Appearance <u>clear</u>
Parameter <u>Benzene</u>	Container <u>40ml / VOA</u>	No. <u>3</u>	Preservative <u>none</u>
PID Reading <u>0.1 ppm</u>			
Comments <u>mw -6.5</u>			



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY			Well ID	MW-6D
Project Number	30091090	Site Location	SUNLAND PARK, NM		
Date	6/13/22	Sampled By	DS		
Sampling Time	1100	Recorded By	DS		
Weather		Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) HORIBA U-52

Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
-----------------	-----	--------------	----------------------

Casing Diameter 2-INCH/4-INCH

Sounded Depth (ft bmp)

Depth to Water (ft bmp) 8.02 Purge Time Start 1032 Finish 1105

6.02

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color <u>clear</u>	Odor <u>—</u>	Appearance <u>clear</u>
Parameter <u>Benzene</u>	Container <u>40ml / 100 ml's</u>	No. <u>3</u>	Preservative <u>none</u>

PID Reading 0.0

Comments: /HW-63

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	6/13/22	Sampled By	DS
Sampling Time	1140	Recorded By	DS
Weather		Coded Replicate No.	

Water Quality Meter(s) HORIBA U-52

Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
-----------------	-----	--------------	----------------------

Casing Diameter 2-INCH/4-INCH

Sounded Depth (ft bmp)

Depth to Water (ft bmp) 8.86 Purge Time _____ Start 1110 Finish 1150

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
	Clear	-	Clear

Parameter	Container	No.	Preservative
-----------	-----------	-----	--------------

Benzene 40 ml / was 3 mon

PID Reading 0.0

Comments	Equipment Blank	EB061322	(2)	1145	3 VOA?
----------	-----------------	----------	-----	------	--------



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	6/14/22	Sampled By	DS
Sampling Time	0830	Recorded By	DS
Weather		Coded Replicate No.	
			Well ID: MW-17

Instrument Identification

Water Quality Meter(s) HORIBA U-52

Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
-----------------	-----	--------------	----------------------

Casing Diameter	4-INCH
-----------------	--------

Sounded Depth (ft bmp)

Depth to Water (ft bmp) 8.02 Purge Time Start 0800 Finish 0835

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition Color clear Odor slight odor Appearance clear

Parameter	Container	No.	Preservative
Benzene	40ml / 100ml	3	—

PID Reading 133.3 ppm

Comments mw-17



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	6/14/22	Sampled By	DS
Sampling Time	910	Recorded By	DS
Weather		Coded Replicate No.	

Well ID MW-5

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	8.0 + 6.0	Purge Time	Start 0840 Finish 0915

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color <u>yellow tint</u>	Odor <u>Hydro Odor</u>	Appearance _____
Parameter <u>benzene</u>	Container <u>40ml / vial's</u>	No. <u>3</u>	Preservative _____
_____	_____	_____	_____

PID Reading 70.01 ppm

Comments MW-5



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY			
Project Number	30091040	Site Location	SUNLAND PARK, NM	Well ID MW-8
Date	6/14/22	Sampled By	DS	
Sampling Time	0950	Recorded By	DS	
Weather		Coded Replicate No.		

Instrument Identification

Water Quality Meter(s)	HORI/BA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	5.78	Purge Time	Start 0923 Finish 1009

Field Parameter Measurements During Purgino

[illegible]

Collected Sample Condition	Color <u>Pale yellow</u>	Odor <u>Slight</u>	Appearance _____
Parameter	Container	No.	Preservative
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

PID Reading 334.0 ppm

Comments

mw-8	{PAH, Benzene}	
FD061422	{PAH}	
FB061422	{PAH, Benzene}	② 0955
EB061422	{PAH, Benzene}	② 1000



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	6/14/22	Sampled By	DS
Sampling Time	1045	Recorded By	DS
Weather		Coded Replicate No.	
			Well ID mw-11

Instrument Identification

Water Quality Meter(s)	HORIWA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	8.01	Purge Time	Start 1017 Finish 1050

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter	Container	No.	Preservative
Benzene	40ml/101's	3	
PID Reading			
Comments			



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	6/14/22	Sampled By	DS
Sampling Time	1135	Recorded By	DS
Weather	Coded Replicate No.		
			Well ID MW-10

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	8.73	Purge Time	Start 1103 Finish 1140

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter Benzene	Container 40ml / 100's	No. 3	Preservative —
PID Reading 0.8 ppm			
Comments mw - 10			



DAILY LOG

Project Name and No.

Huntsman Brickland Refinery

Site Location

Sunland Park, nm

Prepared by

D. John

Date/Time	Description of Activities
6/13/22 0730	Arrived on site / Tailgate H&S meeting
0740-0825	Gauged all wells / PID Readings
0831	Pumped and sampled mw-35
0909	Pumped and sampled mw-30 / FB & FID
0955	Pumped and sampled mw-65
1032	Pumped and sampled mw-60
1110	Pumped and sampled mw-95 / EB
1210	Cleaned site / Package & shipped PID / Prepared & stored samples on ICE
1530	Daily log - Prepared Report
6/14/22 0725	Arrived on site / H&S meeting
0800	Pumped and sampled mw-17
0840	Pumped and sampled mw-5
0923	Pumped and sampled mw-8 / FD / FB / EB
1017	Pumped and sampled mw-11
1103	Pumped and sampled mw-10
1205	Package & shipped samples to ALS
1300-1330	Prepared Report

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+1 970 490 1511Everett, WA
+1 425 356 2600Holland, MI
+1 616 399 6070

Chain of Custody Form

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+1 717 944 5541Salt Lake City, UT
+1 801 266 7700York, PA
+1 717 505 5280

Page ____ of ____

COC ID: 262796

Customer Information		Project Information		Parameter/Method Request for Analysis																
Purchase Order	30049071 Task 250	Project Name	30049071 Brickland Refinery 1Q202	A	8260_LL_W (8260 Benzene ("Unpreserved")-7 day HT															
Work Order		Project Number	30049071 Task 250	B	8270_PAH_LVI (8270 PAHs (LVI))															
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C																
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	D																
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E																
				F																
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	G																
Phone	(225) 292-1004	Phone	(303) 471-3699	H																
Fax		Fax		I																
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcad	J																

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-35	6/13/22	0900	W	8	3	X										
2	MW-3D	6/13/22	0945	W	8	3	X										
3	FB 061322	6/13/22	0950	W	8	3	X										
4	FD 061322	6/13/22	-	W	8	3	X										
5	MW-6S	6/13/22	1025	W	8	3	X										
6	MW-6D	6/13/22	1100	W	8	3	X										
7	MW-9S	6/13/22	1140	W	8	3	X										
8	EB 061322	6/13/22	1145	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign Doug Solon		Shipment Method FEDEX		Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour				Results Due Date:					
Relinquished by:	Date: 6/14/22	Time: 1200	Received by:		Notes: [AGM Brickland NM]								
Relinquished by:	Date:	Time:	Received by (Laboratory):		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)						
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):				☒ Level II Std QC ☐ Level III Std QC/Raw Data ☐ Level IV SW846/CLP ☐ Other						
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035													

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

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COC ID: 256081

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+1 801 266 7700South Charleston, WV
+1 304 356 3168York, PA
+1 717 505 5280

Customer Information		Project Information		Parameter/Method Request for Analysis														
Purchase Order	30049071 Task 250	Project Name	30049071 Brickland Refinery 4Q2021	A	8260_LL_W (8260 Benzene ("Unpreserved")-7 day HT)													
Work Order		Project Number	30049071 Task 250	B	8270_PAH_LVI (8270 PAHs (LVI))													
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C														
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	D														
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E														
				F														
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	G														
Phone	(225) 292-1004	Phone	(303) 471-3699	H														
Fax		Fax		I														
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcadi	J														

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	6/14/22	0830	W	8	3	X										
2	MW-5	6/14/22	0910	W	8	3	X										
3	MW-8	6/14/22	0950	W	8	6	X	X									
4	FD 06/14/22	6/14/22	—	W	8	3		X									
5	FB 06/14/22	6/14/22	0955	W	8	6	X	X									
6	EB 06/14/22	6/14/22	1000	W	8	6	X	X									
7	MW-11	6/14/22	1045	W	8	3	X										
8	MW-10	6/14/22	1135	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:		
Doug Solon				☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour						
Relinquished by:	Date:	Time:	Received by:		Notes:					
Dan Jhon	6/14/22	1201			[AGM Brickland NM]					
Relinquished by:	Date:	Time:	Received by (Laboratory):		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
							☒ Level II Std QC ☐ TRRP Checklist ☐ Level III Std QC/Raw Data ☐ TRRP Level IV ☐ Level IV SW846/CLP ☐ Other			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):							
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035										

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 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
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[illegible]

Control Number: TSM- 5285051



TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name: Huntsman QRTly Sampling Project Location: Souland Park, NM
 Date: 9-6-22 Time: _____ Conducted by: D. Solon Signature/Title: Dan Solon / Field Sup

Issues or concerns from previous day's activities:

Task anticipated to be performed today:

Gw Sampling

The following was used to communicate H&S information in this briefing (check all that apply):

- ☐ HASP (including THA)
☐ JSAs (specify JSA #s): _____
☐ Permits (specify type or #): _____
☐ Traffic Safety Plan
☐ FHSHB (specify sections): _____
☐ H&S Standard (specify number): _____
☐ H&S checklist (specify type): _____
☐ Activity specific hazard analysis:

Activity: _____

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):

Biological ☒	Chemical ☐	Driving ☐	Electrical ☐
Environmental ☒	Gravity ☐	Mechanical ☐	Motion ☐
Personal Safety ☐	Pressure ☐	Radiation ☒	Sound ☐

Controls required to be used:

PPE Required (If not using JSA or Permit with PPE requirements):

- ☐ Hard hat
☒ Safety glasses
☐ Face shield
☐ Safety goggles
☒ Steel/composite toe boots
☒ Traffic vest (specify II or III): _____
☐ Life Vest (specify type): _____
☐ Protective Suit (specify type): _____
☒ Protective gloves (specify type): _____

☐ Other (specify): _____

Signature and Certification: I have read and understand the project specific HASP for this project.

SSE Employee*

Non-Life Threatening Injury or Illness
Call WorkCare 1-888-449-7787

Printed Name/Signature/Company	Sign In Time	Sign Out Time
<u>Doug Solon / Amstar / Accuray</u>	<u>0720</u>	
<u>Ricardo M. Lopez / Amstar / Accuray</u>	<u>0720</u>	

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.888.449-7787 and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

*Short Service Employee (SSE) working for Arcadis <1 year.



Low-Flow Groundwater Sampling Log

HUNTSMAN BRICKLAND REFINERY			
Project			
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-6-22	Sampled By	DS
Sampling Time	0855	Recorded By	DS
Weather		Coded Replicate No.	
			Well ID MW-35

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	8.06	Purge Time	Start 0820 Finish 0858

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition

Color Clear

Odor

Appearance

Preservative

Parameter

Container

No.

Preservative

PID Reading

Comments



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-6-22	Sampled By	DS
Sampling Time	0930	Recorded By	DS
Weather		Coded Replicate No.	FD090622
		Well ID	mw-3D

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	8.13	Purge Time	Start 9:00 Finish 0937

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color <u>Clear</u>	Odor _____	Appearance <u>Clear</u>
Parameter <u>Benzene</u>	Container <u>40ml / 100A</u>	No. <u>3 - WELL</u>	Preservative <u>Raw</u>
_____	_____	<u>3 - DuP</u>	_____
_____	_____	<u>3 - Field Blank - DI</u>	_____

PID Reading 0.0 ppm

Comments mli-3D Field Dup - FD090622 -

Field Blank - FB090622 - DI Ho 0935



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-6-22	Sampled By	DS
Sampling Time	1015	Recorded By	DS
Weather		Coded Replicate No.	
			Well ID MW-65

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	9.30	Purge Time	Start 945 Finish 1020

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color <u>Clear</u>	Odor _____	Appearance <u>Clear</u>
Parameter <u>Benzene</u>	Container <u>40ml / VOA</u>	No. <u>3-well</u>	Preservative <u>Raw</u>
_____	_____	_____	_____

PID Reading 0.4 ppm

Comments mw - 65



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-6-22	Sampled By	DS
Sampling Time	1050	Recorded By	DS
Weather		Coded Replicate No.	

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	8.92	Purge Time	Start 10 22 Finish 10 53

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter	Container	No.	Preservative
Benzene	40ml / VOA	3-well	Raw
PID Reading			
3.1 ppm			
Comments			
mw-6A			



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	36091090	Site Location	SUNLAND PARK, NM
Date	9-6-22	Sampled By	DS
Sampling Time	1135	Recorded By	DS
Weather		Coded Replicate No.	

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	10.55	Purge Time	Start 1105 Finish 1140

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter	Container	No.	Preservative
Benzene	40 ml / VOA	3 - WELL	Raw
		3 - Equipment Blank	

PID Reading	4.30 ppm	
Comments	Equipment Blank - EB090622	DI 1140 over o/w probe
	MW-95	



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-3-22	Sampled By	DS
Sampling Time	1225 L	Recorded By	DS
Weather		Coded Replicate No.	
Well ID	mw-17		

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	9.97	Purge Time	Start 1155 Finish 1230

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter <u>Benzene</u>	Container <u>40ml / VOA</u>	No. <u>3 - WELL</u>	Preservative <u>Raw</u>

PID Reading ~~9.96 ppm~~ 27.4 ppm

Comments NW - 1



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-8-22	Sampled By	DS
Sampling Time	1305	Recorded By	DS
Weather		Coded Replicate No.	
			Well ID MW-5

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	7.38	Purge Time	Start 12:35 Finish 13:05

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter	Container	No.	Preservative
Benzene	40 ml / VOA	3-well	Raw

PID Reading ~~7.39 ppm~~ 412.6 ppm

Comments mw-5



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-6-22	Sampled By	DS
Sampling Time	1345	Recorded By	DS
Weather		Coded Replicate No.	FD090622
		Well ID	MW-8

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	16.95	Purge Time	Start 1315 Finish 1345

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color _____	Odor _____	Appearance _____
Parameter	Container	No.	Preservative
_____	_____	_____	_____
_____	_____	_____	_____

PID Reading 105.8 ppm

Comments	1345	MW-8 (PAH Benzene)	(2)	
		FD 090622 (PAH)	-	Field Dup
1350		FB 090622 (PAH Benzene)	-	Field Blank (2) DI H ₂ O
1355		EB 090622 (PAH Benzene)	-	Equipment Blank (2) DF H ₂ O



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-6-22	Sampled By	DS
Sampling Time	1440	Recorded By	DS
Weather		Coded Replicate No.	

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	9.18	Purge Time	Start 1410 Finish 1445

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter <u>Benzene</u>	Container <u>40ml / dark</u>	No. <u>3 - WELL</u>	Preservative <u>Raw</u>

PID Reading 15.2 ppm

Comments *mw-11*



Low-Flow Groundwater Sampling Log

HUNTSMAN BRICKLAND REFINERY			
Project			
Project Number	30091090	Site Location	SUNLAND PARK, NM
Date	9-7-22	Sampled By	JS
Sampling Time	1525	Recorded By	JS
Weather		Coded Replicate No.	
			Well ID MW-10

Instrument Identification

Water Quality Meter(s)	HORIBA U-52		
Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
Casing Diameter	4-INCH		
Sounded Depth (ft bmp)			
Depth to Water (ft bmp)	10.48	Purge Time	Start 1450 Finish 1525

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter	Container	No.	Preservative
Benzene	40ml / VOA	3	Raw

PID Reading 30.7 ppm

Comments mw-10



DAILY LOG

Project Name and No.

Huntsman Brickland Refinery

Site Location

Sonland Park, nm

Prepared by

P. Solon

[illegible]

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+1 425 356 2600Holland, MI
+1 616 399 6070

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Page ____ of ____

COC ID: 276464

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+1 610 948 4903South Charleston, WV
+1 304 356 3168Middletown, PA
+1 717 944 5541Salt Lake City, UT
+1 801 266 7700York, PA
+1 717 505 5280

Customer Information				Project Information				ALS Project Manager:												ALS Work Order #:			
Parameter/Method Request for Analysis																							
Purchase Order	30122717 Task 250	Project Name	30122717 Brickland Refinery 3Q2022	A	8260_LL_W (8260 Benzene (*Unpreserved*)-7 day HT																		
Work Order		Project Number	30122717 Task 250	B	8270_PAH_LVI (8270 PAHs (LVI))																		
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C																			
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	D																			
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E																			
				F																			
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	G																			
Phone	(225) 292-1004	Phone	(303) 471-3699	H																			
Fax		Fax		I																			
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcadi																				

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	mw - 3S	9-6-22	0855	w	8	3	X										
2	mw - 3D	9-6-22	0930	w	8	3	X										
3	FD090622	9-6-22		w	8	3	X										
4	FBE090622	9-6-22	0935	w	8	3	X										
5	mw - 6S	9-6-22	1015	w	8	3	X										
6	mw - 6D	9-6-22	1050	w	8	3	X										
7	mw - 9S	9-6-22	1135	w	8	3	X										
8	EB090622	9-6-22	1140	w	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
		FEDEX		☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour					
Relinquished by:	Date:	Time:	Received by:	Notes:					
	9-6-22	1600		[AGM Brickland NM]					
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
						☒ Level II Std QC ☐ TRRP Checklist			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			☐ Level III Std QC/Raw Data ☐ TRRP Level IV			
						☐ Level IV SW846/CLP			
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035									

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody Form

Page ____ of ____

COC ID: 276465

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Middletown, PA
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Spring City, PA
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Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information				Project Information			Parameter/Method Request for Analysis												
Purchase Order	30122717 Task 250			Project Name	30122717 Brickland Refinery 3Q2022		A	8260_LL_W (8260 Benzene (*Unpreserved*)-7 day HT											
Work Order				Project Number	30122717 Task 250		B	8270_PAH_LVI (8270 PAHs (LVI))											
Company Name	ARCADIS U.S., Inc.			Bill To Company	ARCADIS		C												
Send Report To	Brooke Fontenot			Invoice Attn	Accounts Payable		D												
Address	10352 Plaza Americana Drive			Address	630 Plaza Drive, Suite 600		E												
							F												
City/State/Zip	Baton Rouge, LA 70816			City/State/Zip	Highlands Ranch CO 80129		G												
Phone	(225) 292-1004			Phone	(303) 471-3699		H												
Fax				Fax			I												
e-Mail Address	Brooke.Fontenot@arcadis-us.com			e-Mail Address	Accountspayable.administration@arcad		J												
No.	Sample Description			Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	mw-17			9-6-22	1225	w	8	3	X										
2	mw-5			9-6-22	1305	w	8	3	X										
3	mw-8			9-6-22	1345	w	8	6	X	X									
4	FD 090622			9-6-22	—	w	8	3		X									
5	FB 090622			9-6-22	1350	w	8	6	X	X									
6	EB 090622			9-6-22	1355	w	8	6	X	X									
7	mw-11			9-6-22	1440	w	8	3	X										
8	mw-10			9-6-22	1525	w	8	3	X										
9																			
10																			
Sampler(s) Please Print & Sign				Shipment Method		Required Turnaround Time: (Check Box)				Other				Results Due Date:					
Relinquished by:				Date:		Time:		Received by:				Notes:							
Relinquished by:				Date:		Time:		Received by (Laboratory):				Cooler ID							
Logged by (Laboratory):				Date:		Time:		Checked by (Laboratory):				Cooler Temp.							
Preservative Key:				Date:		Time:		Checked by (Laboratory):				QC Package: (Check One Box Below)							
1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035												☒ Level II Std QC ☐ Level III Std QC/Raw Date ☐ Level IV SW846/CLP ☐ Other							

- Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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Control Number: TSM- 5285051

TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxx - dd/mm/year



TAILGATE HEALTH & SAFETY MEETING FORM			
Project Name: <u>Huntsman RTH Sampling</u>		Project Location: <u>Island Park, NM</u>	
Date: <u>12-6-22</u>	Time: <u>0805</u>	Conducted by: <u>P. Solon</u>	Signature/Title: <u>Pm Solon / Field Sup</u>
Issues or concerns from previous day's activities:			
Task anticipated to be performed today: <u>GW Sampling</u>			
The following was used to communicate H&S information in this briefing (check all that apply): ☐ HASP (including THA) ☐ JSAs (specify JSA #s): _____ ☐ Permits (specify type or #): _____ ☐ Traffic Safety Plan ☐ FHSHB (specify sections): _____ ☐ H&S Standard (specify number): _____ ☐ H&S checklist (specify type): _____ ☐ Activity specific hazard analysis: _____ Activity: _____ Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Biological ☒ Chemical ☐ Driving ☐ Electrical ☐ Environmental ☒ Gravity ☐ Mechanical ☒ Motion ☐ Personal Safety ☐ Pressure ☐ Radiation ☒ Sound ☐		PPE Required (if not using JSA or Permit with PPE requirements): ☐ Hard hat ☒ Safety glasses ☐ Face shield ☐ Safety goggles ☒ Steel/composite toe boots ☒ Traffic vest (specify II or III): _____ ☐ Life Vest (specify type): _____ ☐ Protective Suit (specify type): _____ ☒ Protective gloves (specify type): _____ ☐ Other (specify): _____	
Controls required to be used:			
Signature and Certification: I have read and understand the project specific HASP for this project.			
SSE Employee*	Non-Life Threatening Injury or Illness Call WorkCare 1-888-449-7787		I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.
			I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.
			If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.
			I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.
			All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.
			In the event of an injury, employees will call WorkCare at 1.888.449-7787 and then notify the field supervisor.
			Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager
Printed Name/Signature/Company		Sign In Time	Sign Out Time
<u>Doug Solon / Pm Solon / ARCADIS</u>		<u>0810</u>	
<u>Biranda McCray / End Mgr / Arcadis</u>		<u>0810</u>	

*Short Service Employee (SSE) working for Arcadis <1 year.

Control Number: TSM- 5285051



TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM			
Project Name: <u>Huntsman Ortho Sampling</u>		Project Location: <u>Sunland Park, nm</u>	
Date: <u>12-7-22</u>	Time: _____	Conducted by: <u>D. Solon</u>	Signature/Title: <u>D. Solon / Field Sup</u>
Issues or concerns from previous day's activities: _____			
Task anticipated to be performed today: <u>GW Sampling</u>			
The following was used to communicate H&S information in this briefing (check all that apply): ☐ HASP (including THA) ☐ JSAs (specify JSA #s): _____ ☐ Permits (specify type or #): _____ ☐ Traffic Safety Plan ☐ FHSB (specify sections): _____ ☐ H&S Standard (specify number): _____ ☐ H&S checklist (specify type): _____ ☐ Activity specific hazard analysis: Activity: _____ Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Biological ☒ Chemical ☐ Driving ☒ Electrical ☐ Environmental ☒ Gravity ☐ Mechanical ☒ Motion ☐ Personal Safety ☐ Pressure ☐ Radiation ☒ Sound ☐		PPE Required (If not using JSA or Permit with PPE requirements): ☒ Hard hat ☒ Safety glasses ☐ Face shield ☐ Safety goggles ☒ Steel/composite toe boots ☒ Traffic vest (specify II or III): _____ ☐ Life Vest (specify type): _____ ☐ Protective Suit (specify type): _____ ☒ Protective gloves (specify type): _____ ☐ Other (specify): _____	
Controls required to be used: _____			
Signature and Certification: I have read and understand the project specific HASP for this project.			
SSE Employee*	Non-Life Threatening Injury or Illness Call WorkCare 1-888-449-7787		I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.
	Printed Name/Signature/Company	Sign In Time	Sign Out Time
	<u>Doug Solon / [Signature] / Arcadis</u>	<u>0730</u>	
	<u>Garrett Regusar / [Signature] / Arcadis</u>	<u>0730</u>	
	<u>Scott Waggoner / [Signature] / Arcadis</u>	<u>0910</u>	
			I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.
			If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.
			I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.
			All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.
			In the event of an injury, employees will call WorkCare at 1.888.449-7787 and then notify the field supervisor.
			Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

*Short Service Employee (SSE) working for Arcadis <1 year.

DAILY LOG

Project Name and No.

Huntsman Brickland Refinery PN 30122717

Site Location

Sunland Park, n.w.

Prepared by

D. Schen

[illegible]

**Prepared by**

Thurbonian Brickland Refinery PA 30122 717
Swanland Park, on
D. Solon

[illegible]

[illegible]



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30022717	Site Location	SUNLAND PARK, NM
Date	12-8-22	Sampled By	DS
Sampling Time	0945	Recorded By	DS
Weather		Coded Replicate No.	

Well ID MW-35

Instrument Identification

Water Quality Meter(s)	<u>HOBILO U-52, YSI</u>		
Casing Material	<u>PVC</u>	Purge Method	<u>LOW FLOW PERISTALTIC</u>
Casing Diameter	<u>4-INCH</u>		
Sounded Depth (ft bmp)	<u></u>		
Depth to Water (ft bmp)	<u>8.29</u>	Purge Time	Start <u>9:12</u> Finish <u>0950</u>

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color	Odor	Appearance
Parameter <u>Benzene</u>	Container <u>40 ml / VOA</u>	No. <u>3</u>	Preservative <u>Raw</u>
PID Reading <u>0.0 ppm</u>	Comments <u>MW-3S</u>		



Low-Flow Groundwater Sampling Log

Project	HUNTSMAN BRICKLAND REFINERY		
Project Number	30122717	Site Location	SUNLAND PARK, NM
Date	12-6-22	Sampled By	DS
Sampling Time	1030	Recorded By	DS
Weather		Coded Replicate No.	FD 120522
Well ID	mw-3D		

Instrument Identification

Water Quality Meter(s) HOBAS U-52 YS.I

Casing Material	PVC	Purge Method	LOW FLOW PERISTALTIC
-----------------	-----	--------------	----------------------

Casing Diameter **4-INCH**

Sounded Depth (ft bmp)

Depth to Water (ft bmp) 8.32 Purge Time _____ Start 0955 Finish 1055

Field Parameter Measurements During Purging

[illegible]

Collected Sample Condition	Color <u>clear</u>	Odor <u>None</u>	Appearance <u>clear</u>
Parameter	Container	No.	Preservative
<u>Benzene</u>	<u>40ml/DOA</u>	<u>3 - Well</u>	<u>Raw</u>
		<u>3 - Dup</u>	
		<u>3 - Field Blank</u>	

PID Reading 0.0 ppm

Comments MW-30 Field Sup ~ FB 120622

Field Blank - FB120622 ~ DI 120 (1035)



Low-Flow Groundwater Sampling Log

Project

HUNTSMAN BRICKLAND REFINERY

Project Number**Date**

Sampling Time

Weather

Site Location

SUNLAND PARK, NM

Well ID MW-65

Sampled By

Recorded By

Coded Replicate No.

Instrument Identification

Water Quality Meter(s)

~~MORIBA U-52~~ YS I

Casing Material

PVC

Purge Method

Casing Diameter

4-INCH

LOW FLOW PERISTALTIC

Sounded Depth (ft bmp)**Depth to Water (ft bmp)**

Purge Time

Start 1047

Finish 1125

Field Parameter Measurements During Purging

[illegible]**Collected Sample Condition**

Color *clear*

Odor None

Appearance *clear*

Parameter

Containers

No. _____

Preservative

PID Reading

Comments



Weather

HUNTSMAN BRICKLAND REFINERY

SUNLAND PARK, NM

PS

DS

Coded Replicate No.

Well ID MW-6D

Water Quality Meter(s)

~~HORIBA U-52~~ YS I

PVC

Purge Method

4-INCH

LOW FLOW PERISTALTIC

Sounded Depth (ft bmp)**Depth to Water (ft bmp)**

Purge Time

Start 1130

Finish 1210

Field Parameter Measurements During Purging

Collected Sample Condition

Color clay

Odor none

Appearance *clear*

Parameter

Benzene

Container
40 ml / 50A

No.

2

Preservative

Law

PID Reading 0.0 ppm

Comments MW-10

https://arcadiso365-my.sharepoint.com/personal/douglas_solon_arcadis-us_com/Documents/Documents/GROUNDWATER SAMPLING 2021/lowflowsampforms-1 - Sheet1



Page ____ of ____

Low-Flow Groundwater Sampling Log

Project

Project Number

Date _____

Sampling Time

Weather

~~TOT/Access~~

Site Location

Sampled By

Recorded By

Coded Replicate No.

EL PASO - TX

Well ID mw-17

Instrument Identification

Water Quality Meter(s)

Casing Material

Casing Diameter

Sounded Depth (ft bmp)**Depth to Water (ft bmp)**

PVC

2-INCH/4-INCH

Purge Method

LOW FLOW PERISTALTIC/PUMP

Purge Time

Start 0740

Finish 0820

Field Parameter Measurements During Purging

[illegible]**Collected Sample Condition**

Parameter

Color clear

Container

Odor *None*

No.

Appearance

Preservative

PID Reading

Comments



Low-Flow Groundwater Sampling Log

Project

Project Number

Date _____

Sampling Time

Weather

IGT/Aerreo

Site Location

Sampled By

Recorded By

Coded Replicate No.

EL PASO - TX

Well ID MW-5

Instrument Identification

Water Quality Meter(s)

Casing Material

Casing Diameter

Sounded Depth (ft bmp)**Depth to Water (ft bmp)**

PVC

Purge Method

LOW FLOW PERISTALTIC/PUMP

~~2-INCH-4-INCH~~

Purge Time

Start 0930

Finish 1010

Field Parameter Measurements During Purging

[illegible]**Collected Sample Condition**

Parameter

Color

Container

Odor

No.

Appearance

Preservative

Raw

PID Reading

Comments

https://arcadis0365-my.sharepoint.com/personal/douglas_solon_arcadis-us_com/Documents/Documents/GROUNDWATER SAMPLING 2021/howflowsampsforms-1 - Sheet1



FOIA/Asarco Huntzman

30122707

EL PASO - TX

Well ID MW-10

12-17-22

PS

1155

DS

Coded Replicate No.

Y27

PVC

Purge Method

LOW FLOW PERISTALTIC/PUMP

2-INCH/4-INCH

10.73

Purge Time

Start 1125

Finish 1200

Field Parameter Measurements During Purging

Color Clear

Odor sl. Hydro Odor

Appearance Slight Streen

Parameter
Benzene

Container
40ml / JDA

No. 3

Preservative
Raw

PID Reading 9.8 2012

Comments *mlw-cd*

Cincinnati, OH
+1 513 733 5336Fort Collins, CO
+1 970 490 1511Everett, WA
+1 425 356 2600Holland, MI
+1 616 399 6070

Chain of Custody Form

Houston, TX
+1 281 530 5656Spring City, PA
+1 610 948 4903South Charleston, WV
+1 304 356 3168Middletown, PA
+1 717 944 5541Salt Lake City, UT
+1 801 266 7700York, PA
+1 717 505 5280

Page ____ of ____

COC ID: 285144

Customer Information		Project Information		Parameter/Method Request for Analysis														
Purchase Order	30122717 Task 250	Project Name	30122717 Brickland Refinery 4Q2020	A	8260_LL_W (8260 Benzene ("Unpreserved")-7 day HT													
Work Order		Project Number	30122717 Task 250	B	8270_PAH_LVI (8270 PAHs (LVI))													
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C														
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	D														
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E														
				F														
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	G														
Phone	(225) 292-1004	Phone	(303) 471-3699	H														
Fax		Fax		I														
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcad	J														

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-3S	12-6-22	0945	W	8	3	X										
2	MW-3D	12-6-22	1030	W	8	3	X										
3	FB 120622	12-6-22	1035	W	8	3	X										
4	FD 120622	12-6-22	-	W	8	3	X										
5	MW-6S	12-6-22	1120	W	8	3	X										
6	MW-6D	12-6-22	1205	W	8	3	X										
7	MW-9S	12-6-22	1300	W	8	3	X										
8	FB 120622	12-6-22	1305	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign Doug Sdon		Shipment Method FED EX		Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour				Results Due Date:		
Relinquished by:	Date: 12-07-22	Time: 1430	Received by:		Notes: [AGM Brickland NM]					
Relinquished by:	Date:	Time:	Received by (Laboratory):		Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):				☒ Level II Std QC ☐ TRRP Checklist ☐ Level III Std QC/Row Date ☐ TRRP Level IV ☐ Level IV SWS/CLP ☐ Other			
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035										

- Notes:
- Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 - Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 - The Chain of Custody is a legal document. All information must be completed accurately.

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+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 285143

Houston, TX
+1 281 530 5656

Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

ALS Project Manager:

ALS Work Order #:

Customer Information

Purchase Order	30122717 Task 250
Work Order	
Company Name	ARCADIS U.S., Inc.
Send Report To	Brooke Fontenot
Address	10352 Plaza Americana Drive
City/State/Zip	Baton Rouge, LA 70816
Phone	(225) 292-1004
Fax	
e-Mail Address	Brooke.Fontenot@arcadis-us.com

Project Information

Project Name	30122717 Brickland Refinery 4Q2020
Project Number	30122717 Task 250
Bill To Company	ARCADIS
Invoice Attn	Accounts Payable
Address	630 Plaza Drive, Suite 600
City/State/Zip	Highlands Ranch CO 80129
Phone	(303) 471-3699
Fax	
e-Mail Address	Accountspayable.administration@arcad

Parameter/Method Request for Analysis

A	8260_LL_W (8260 Benzene (*Unpreserved*)-7 day HT
B	8270_PAH_LVI (8270 PAHs (LVI))
C	
D	
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	12-07-22	0815	W	8	3	X										
2	MW-11	12-07-22	0910	W	8	3	X										
3	MW-5	12-07-22	1005	W	8	3	X										
4	MW-8	12-07-22	1050	W	8	6	X	X									
5	FD120722	12-07-22	-	W	8	3		X									
6	FB120722	12-07-22	1055	W	8	6	X	X									
7	EB120722	12-07-22	1100	W	8	6	X	X									
8	MW-10	12-07-22	1155	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign

Doug Solon Tompkins

Shipment Method

FEDEX

Required Turnaround Time: (Check Box)

☒ STD: 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:

Doug Solon Tompkins

Date:

12-07-22

Time:

1431

Received by:

Notes:

[AGM Brickland NM]

Relinquished by:

Date:

Time:

Received by (Laboratory):

Cooler ID

Cooler Temp.

QC Package: (Check One Box Below)

Logged by (Laboratory):

Date:

Time:

Checked by (Laboratory):

☒ Level II Std QC ☐ TRRP Checklist
☐ Level III Std GC/Raw Data ☐ TRRP Level IV
☐ Level IV SWM/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

- Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Appendix B

Laboratory Analytical Reports



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

March 14, 2022

Brooke Fontenot
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS22030473**

Laboratory Results for: **30049071 Brickland Refinery 1Q2022**

Dear Brooke Fontenot,

ALS Environmental received 8 sample(s) on Mar 09, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER

Dane J. Wacasey

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Work Order: HS22030473

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22030473-01	MW-3S-202238	Water		08-Mar-2022 09:30	09-Mar-2022 10:30	☐
HS22030473-02	MW-3D-202238	Water		08-Mar-2022 10:00	09-Mar-2022 10:30	☐
HS22030473-03	DUP1-	Water		08-Mar-2022 00:00	09-Mar-2022 10:30	☐
HS22030473-04	FB1-	Water		08-Mar-2022 10:00	09-Mar-2022 10:30	☐
HS22030473-05	MW-6S-202238	Water		08-Mar-2022 10:40	09-Mar-2022 10:30	☐
HS22030473-06	MW-6D-202238	Water		08-Mar-2022 11:05	09-Mar-2022 10:30	☐
HS22030473-07	MW-9S-202238	Water		08-Mar-2022 11:50	09-Mar-2022 10:30	☐
HS22030473-08	EB030822	Water		08-Mar-2022 12:00	09-Mar-2022 10:30	☐

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Work Order: HS22030473

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R403933

Sample ID: MW-3S-202238 (HS22030473-01)

- Toluene-d8 is outside recovery limits. Associated analytes are not reported.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-3S-202238
Collection Date: 08-Mar-2022 09:30

ANALYTICAL REPORT

WorkOrder:HS22030473
Lab ID:HS22030473-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 11:08
Surr: 1,2-Dichloroethane-d4	85.4		70-126	%REC	1	10-Mar-2022 11:08
Surr: 4-Bromofluorobenzene	92.6		77-113	%REC	1	10-Mar-2022 11:08
Surr: Dibromofluoromethane	86.9		77-123	%REC	1	10-Mar-2022 11:08
Surr: Toluene-d8	134	S	82-127	%REC	1	10-Mar-2022 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-3D-202238
Collection Date: 08-Mar-2022 10:00

ANALYTICAL REPORT

WorkOrder:HS22030473
Lab ID:HS22030473-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 11:29
Surr: 1,2-Dichloroethane-d4	98.8		70-126	%REC	1	10-Mar-2022 11:29
Surr: 4-Bromofluorobenzene	91.9		77-113	%REC	1	10-Mar-2022 11:29
Surr: Dibromofluoromethane	92.1		77-123	%REC	1	10-Mar-2022 11:29
Surr: Toluene-d8	101		82-127	%REC	1	10-Mar-2022 11:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30049071 Brickland Refinery 1Q2022	WorkOrder:HS22030473
Sample ID:	DUP1-	Lab ID:HS22030473-03
Collection Date:	08-Mar-2022 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 11:50
Surr: 1,2-Dichloroethane-d4	99.8		70-126	%REC	1	10-Mar-2022 11:50
Surr: 4-Bromofluorobenzene	93.2		77-113	%REC	1	10-Mar-2022 11:50
Surr: Dibromofluoromethane	92.5		77-123	%REC	1	10-Mar-2022 11:50
Surr: Toluene-d8	101		82-127	%REC	1	10-Mar-2022 11:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: FB1-
Collection Date: 08-Mar-2022 10:00

ANALYTICAL REPORT

WorkOrder:HS22030473
Lab ID:HS22030473-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 10:26
Surr: 1,2-Dichloroethane-d4	86.6		70-126	%REC	1	10-Mar-2022 10:26
Surr: 4-Bromofluorobenzene	94.1		77-113	%REC	1	10-Mar-2022 10:26
Surr: Dibromofluoromethane	86.4		77-123	%REC	1	10-Mar-2022 10:26
Surr: Toluene-d8	99.1		82-127	%REC	1	10-Mar-2022 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-6S-202238
Collection Date: 08-Mar-2022 10:40

ANALYTICAL REPORT

WorkOrder:HS22030473
Lab ID:HS22030473-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 12:12
Surr: 1,2-Dichloroethane-d4	74.2		70-126	%REC	1	10-Mar-2022 12:12
Surr: 4-Bromofluorobenzene	94.7		77-113	%REC	1	10-Mar-2022 12:12
Surr: Dibromofluoromethane	88.3		77-123	%REC	1	10-Mar-2022 12:12
Surr: Toluene-d8	102		82-127	%REC	1	10-Mar-2022 12:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-6D-202238
Collection Date: 08-Mar-2022 11:05

ANALYTICAL REPORT

WorkOrder:HS22030473
Lab ID:HS22030473-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 12:33
Surr: 1,2-Dichloroethane-d4	99.4		70-126	%REC	1	10-Mar-2022 12:33
Surr: 4-Bromofluorobenzene	92.9		77-113	%REC	1	10-Mar-2022 12:33
Surr: Dibromofluoromethane	92.0		77-123	%REC	1	10-Mar-2022 12:33
Surr: Toluene-d8	100		82-127	%REC	1	10-Mar-2022 12:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-9S-202238
Collection Date: 08-Mar-2022 11:50

ANALYTICAL REPORT

WorkOrder:HS22030473
Lab ID:HS22030473-07
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 12:54
Surr: 1,2-Dichloroethane-d4	98.4		70-126	%REC	1	10-Mar-2022 12:54
Surr: 4-Bromofluorobenzene	93.1		77-113	%REC	1	10-Mar-2022 12:54
Surr: Dibromofluoromethane	91.8		77-123	%REC	1	10-Mar-2022 12:54
Surr: Toluene-d8	101		82-127	%REC	1	10-Mar-2022 12:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: EB030822
Collection Date: 08-Mar-2022 12:00

ANALYTICAL REPORT

WorkOrder:HS22030473
Lab ID:HS22030473-08
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	10-Mar-2022 10:47
Surr: 1,2-Dichloroethane-d4	98.5		70-126	%REC	1	10-Mar-2022 10:47
Surr: 4-Bromofluorobenzene	93.7		77-113	%REC	1	10-Mar-2022 10:47
Surr: Dibromofluoromethane	93.4		77-123	%REC	1	10-Mar-2022 10:47
Surr: Toluene-d8	101		82-127	%REC	1	10-Mar-2022 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030473

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R403933 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22030473-01	MW-3S-202238	08 Mar 2022 09:30			10 Mar 2022 11:08	1
HS22030473-02	MW-3D-202238	08 Mar 2022 10:00			10 Mar 2022 11:29	1
HS22030473-03	DUP1-	08 Mar 2022 00:00			10 Mar 2022 11:50	1
HS22030473-04	FB1-	08 Mar 2022 10:00			10 Mar 2022 10:26	1
HS22030473-05	MW-6S-202238	08 Mar 2022 10:40			10 Mar 2022 12:12	1
HS22030473-06	MW-6D-202238	08 Mar 2022 11:05			10 Mar 2022 12:33	1
HS22030473-07	MW-9S-202238	08 Mar 2022 11:50			10 Mar 2022 12:54	1
HS22030473-08	EB030822	08 Mar 2022 12:00			10 Mar 2022 10:47	1

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030473

QC BATCH REPORT

Batch ID: R403933 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220310	Units: ug/L		Analysis Date: 10-Mar-2022 10:05					
Client ID:	Run ID: VOA7_403933	SeqNo: 6540421		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	42.89	1.0	50	0	85.8	70 - 123			
Surr: 4-Bromofluorobenzene	47.33	1.0	50	0	94.7	77 - 113			
Surr: Dibromofluoromethane	43.47	1.0	50	0	86.9	73 - 126			
Surr: Toluene-d8	49.02	1.0	50	0	98.0	81 - 120			

LCS	Sample ID: VLCSW-220310	Units: ug/L		Analysis Date: 10-Mar-2022 09:22					
Client ID:	Run ID: VOA7_403933	SeqNo: 6540420		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.06	1.0	20	0	90.3	74 - 120			
Surr: 1,2-Dichloroethane-d4	50.52	1.0	50	0	101	70 - 123			
Surr: 4-Bromofluorobenzene	50.5	1.0	50	0	101	77 - 113			
Surr: Dibromofluoromethane	47.53	1.0	50	0	95.1	73 - 126			
Surr: Toluene-d8	48.04	1.0	50	0	96.1	81 - 120			

MS	Sample ID: HS22030481-01MS	Units: ug/L		Analysis Date: 10-Mar-2022 13:36					
Client ID:	Run ID: VOA7_403933	SeqNo: 6540431		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	16.32	1.0	20	0	81.6	70 - 127			
Surr: 1,2-Dichloroethane-d4	41.71	1.0	50	0	83.4	70 - 126			
Surr: 4-Bromofluorobenzene	48.87	1.0	50	0	97.7	77 - 113			
Surr: Dibromofluoromethane	42.72	1.0	50	0	85.4	77 - 123			
Surr: Toluene-d8	49	1.0	50	0	98.0	82 - 127			

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030473

QC BATCH REPORT

Batch ID: R403933 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD		Sample ID: HS22030481-01MSD		Units: ug/L		Analysis Date: 10-Mar-2022 13:57				
Client ID:		Run ID: VOA7_403933		SeqNo: 6540432		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	16.02	1.0	20	0	80.1	70 - 127	16.32	1.85	20	
Surr: 1,2-Dichloroethane-d4	49.55	1.0	50	0	99.1	70 - 126	41.71	17.2	20	
Surr: 4-Bromofluorobenzene	49.7	1.0	50	0	99.4	77 - 113	48.87	1.68	20	
Surr: Dibromofluoromethane	47.03	1.0	50	0	94.1	77 - 123	42.72	9.59	20	
Surr: Toluene-d8	49.17	1.0	50	0	98.3	82 - 127	49	0.361	20	
The following samples were analyzed in this batch:										
HS22030473-01		HS22030473-02		HS22030473-03		HS22030473-04				
HS22030473-05		HS22030473-06		HS22030473-07		HS22030473-08				

ALS Houston, US

Date: 14-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030473

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US

Date: 14-Mar-22

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Florida	E87611-34	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
Texas	T104704231-21-28	30-Apr-2022

ALS Houston, US

Date: 14-Mar-22

Sample Receipt Checklist

Work Order ID: HS22030473

Date/Time Received: 09-Mar-2022 10:30

Client Name: Arcadis-Baton Rouge

Received by: Pablo Martinez

Completed By: <u>/S/ Pablo Martinez</u>	09-Mar-2022 15:23	Reviewed by: <u>/S/ Dane J. Wacasey</u>	11-Mar-2022 16:43
eSignature	Date/Time	eSignature	Date/Time

Matrices: **WATER**Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	COC IDs:262797
Samplers name present on COC?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	0.9°C/1.4°C UC/C		
Cooler(s)/Kit(s):	44780		
Date/Time sample(s) sent to storage:	3/9/22 15:25		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☒
pH adjusted?	Yes ☐	No ☐	N/A ☒
pH adjusted by:			

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:



+1 513 733 5336
Everett, WA
+1 425 356 2600

+1 970 490 1511
Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 262797

Houston, TX
+1 281 530 5636
Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903
Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3163
York, PA
+1 717 505 5280

Page 124 of 257

Customer Information			ALS Project Manager:			ALS Work Order #:												
Project Information			Parameter/Method Request for Analysis															
Purchase Order	30049071-1Q2022	Project Name	30049071-1Q2022	A	30049071-1Q2022													
Work Order		Project Number	30049071-1Q2022	B	30049071-1Q2022													
Company Name	ARCADIS U.S. Inc.	Bill To Company	ARCADIS	C														
Send Report To	W. R. R. R. R. R.	Invoice Attn	30049071-1Q2022	D														
Address	30049071-1Q2022	Address	30049071-1Q2022	E														
City/State/Zip	30049071-1Q2022	City/State/Zip	30049071-1Q2022	F														
Phone	30049071-1Q2022	Phone	30049071-1Q2022	G														
Fax	30049071-1Q2022	Fax	30049071-1Q2022	H														
e-Mail Address	30049071-1Q2022	e-Mail Address	30049071-1Q2022	I														
HS22030473 ARCADIS U.S. Inc. 30049071 Brickland Refinery 1Q2022																		
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold	
1	MW-35-202238	3/8/22	0930	W		3	X											
2	MW-3D-202238	3/8/22	1000	W		3	X											
3	DUPI-	"	"	W		3	X											
4	FB1-	"	1000	W		3	X											
5	MW-6S-202238	"	1040	W		3	X											
6	MW-6D-202238	"	1105	W		3	X											
7	MW-9S-202238	"	1150	W		3	X											
8	FB030822	"	1200	W		3	X											
9						3												
10																		
Sampler(s) Please Print & Sign			Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:									
Relinquished by: Jesus Placencia			Date: 3/8/22		Time: 1300		Received by:		Notes: 30049071-1Q2022									
Relinquished by:			Date: 3/8/22		Time: 1600		Received by (Laboratory):		Cooler ID: 19786									
Logged by (Laboratory):			Date:		Time:		Checked by (Laboratory):		Cooler Temp: 2.9C		QC Package: (Check One Box Below)							
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035									19786		19786							

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

 ALS 10450 Stancil Rd., Suite Houston, Texas 77096 Tel. +1 281 530 5656 Fax. +1 281 530 5887	CUSTODY SEAL		Serial Breaks: 000
	Date: 3/1/22	Time: 15:00	Pr
	Name: [Signature]	Company: [Signature]	Date: 3/1/22

TRK# 0201	2706 3702 2180	WED - 09 MAR 10:30A
NH SGRA		PRIORITY OVERNIGHT
44780		AHS
TX-US		77099 IAH





10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

March 22, 2022

Brooke Fontenot
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS22030517**

Laboratory Results for: **30049071 Brickland Refinery 1Q2022**

Dear Brooke Fontenot,

ALS Environmental received 8 sample(s) on Mar 10, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

Dane J. Wacasey

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Work Order: HS22030517

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22030517-01	MW-17	Water		09-Mar-2022 09:05	10-Mar-2022 09:30	☐
HS22030517-02	MW-5	Water		09-Mar-2022 09:40	10-Mar-2022 09:30	☐
HS22030517-03	MW-8	Water		09-Mar-2022 10:10	10-Mar-2022 09:30	☐
HS22030517-04	FB-030922	Water		09-Mar-2022 10:15	10-Mar-2022 09:30	☐
HS22030517-05	EB-030922	Water		09-Mar-2022 10:20	10-Mar-2022 09:30	☐
HS22030517-06	FD-030922	Water		09-Mar-2022 00:00	10-Mar-2022 09:30	☐
HS22030517-07	MW-11	Water		09-Mar-2022 11:05	10-Mar-2022 09:30	☐
HS22030517-08	MW-10	Water		09-Mar-2022 11:35	10-Mar-2022 09:30	☐

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Work Order: HS22030517

CASE NARRATIVE

GCMS Semivolatiles by Method SW8270

Batch ID: 176284

Sample ID: LCSD-176284

- The RPD between the LCS and LCSD was outside of the control limit.

GCMS Volatiles by Method SW8260

Batch ID: R404071

Sample ID: MW-5 (HS22030517-02)

- Lowest practical dilution due to sample matrix and/or high concentration of non-target analyte(s).

Batch ID: R404010

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-17
Collection Date: 09-Mar-2022 09:05

ANALYTICAL REPORT

WorkOrder:HS22030517
Lab ID:HS22030517-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	12-Mar-2022 01:58
Surr: 1,2-Dichloroethane-d4	86.5		70-126	%REC	1	12-Mar-2022 01:58
Surr: 4-Bromofluorobenzene	85.2		77-113	%REC	1	12-Mar-2022 01:58
Surr: Dibromofluoromethane	86.8		77-123	%REC	1	12-Mar-2022 01:58
Surr: Toluene-d8	99.0		82-127	%REC	1	12-Mar-2022 01:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-5
Collection Date: 09-Mar-2022 09:40

ANALYTICAL REPORT

WorkOrder:HS22030517
Lab ID:HS22030517-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	0.25		0.010	mg/L	10	12-Mar-2022 04:50
Surr: 1,2-Dichloroethane-d4	85.8		70-126	%REC	10	12-Mar-2022 04:50
Surr: 4-Bromofluorobenzene	87.7		77-113	%REC	10	12-Mar-2022 04:50
Surr: Dibromofluoromethane	86.6		77-123	%REC	10	12-Mar-2022 04:50
Surr: Toluene-d8	98.8		82-127	%REC	10	12-Mar-2022 04:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 1Q2022
 Sample ID: MW-8
 Collection Date: 09-Mar-2022 10:10

ANALYTICAL REPORT

WorkOrder:HS22030517
 Lab ID:HS22030517-03
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	12-Mar-2022 02:20
Surr: 1,2-Dichloroethane-d4	88.8		70-126	%REC	1	12-Mar-2022 02:20
Surr: 4-Bromofluorobenzene	86.7		77-113	%REC	1	12-Mar-2022 02:20
Surr: Dibromofluoromethane	86.5		77-123	%REC	1	12-Mar-2022 02:20
Surr: Toluene-d8	100		82-127	%REC	1	12-Mar-2022 02:20
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 11-Mar-2022 Analyst: GEY		
Acenaphthene	0.000400		0.000104	mg/L	1	16-Mar-2022 19:39
Acenaphthylene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Anthracene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Benz(a)anthracene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Benzo(a)pyrene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Benzo(b)fluoranthene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Benzo(g,h,i)perylene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Benzo(k)fluoranthene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Chrysene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Dibenz(a,h)anthracene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Fluoranthene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Fluorene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Indeno(1,2,3-cd)pyrene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Naphthalene	0.000273		0.000104	mg/L	1	16-Mar-2022 19:39
Phenanthrene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Pyrene	< 0.000104		0.000104	mg/L	1	16-Mar-2022 19:39
Surr: 2-Fluorobiphenyl	81.3		32-130	%REC	1	16-Mar-2022 19:39
Surr: 4-Terphenyl-d14	108		40-135	%REC	1	16-Mar-2022 19:39
Surr: Nitrobenzene-d5	77.5		45-142	%REC	1	16-Mar-2022 19:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 1Q2022
 Sample ID: FB-030922
 Collection Date: 09-Mar-2022 10:15

ANALYTICAL REPORT

WorkOrder:HS22030517
 Lab ID:HS22030517-04
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	11-Mar-2022 20:15
Surr: 1,2-Dichloroethane-d4	84.8		70-126	%REC	1	11-Mar-2022 20:15
Surr: 4-Bromofluorobenzene	85.7		77-113	%REC	1	11-Mar-2022 20:15
Surr: Dibromofluoromethane	86.8		77-123	%REC	1	11-Mar-2022 20:15
Surr: Toluene-d8	99.2		82-127	%REC	1	11-Mar-2022 20:15
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 11-Mar-2022 Analyst: GEY		
Acenaphthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Acenaphthylene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Benz(a)anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Benzo(a)pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Benzo(b)fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Benzo(g,h,i)perylene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Benzo(k)fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Chrysene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Dibenz(a,h)anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Fluorene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Indeno(1,2,3-cd)pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Naphthalene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Phenanthrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 19:59
Surr: 2-Fluorobiphenyl	98.3		32-130	%REC	1	16-Mar-2022 19:59
Surr: 4-Terphenyl-d14	81.3		40-135	%REC	1	16-Mar-2022 19:59
Surr: Nitrobenzene-d5	123		45-142	%REC	1	16-Mar-2022 19:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 1Q2022
 Sample ID: EB-030922
 Collection Date: 09-Mar-2022 10:20

ANALYTICAL REPORT

WorkOrder:HS22030517
 Lab ID:HS22030517-05
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	12-Mar-2022 00:13
Surr: 1,2-Dichloroethane-d4	85.2		70-126	%REC	1	12-Mar-2022 00:13
Surr: 4-Bromofluorobenzene	84.3		77-113	%REC	1	12-Mar-2022 00:13
Surr: Dibromofluoromethane	87.1		77-123	%REC	1	12-Mar-2022 00:13
Surr: Toluene-d8	99.4		82-127	%REC	1	12-Mar-2022 00:13
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 11-Mar-2022 Analyst: GEY		
Acenaphthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Acenaphthylene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Benz(a)anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Benzo(a)pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Benzo(b)fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Benzo(g,h,i)perylene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Benzo(k)fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Chrysene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Dibenz(a,h)anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Fluorene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Indeno(1,2,3-cd)pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Naphthalene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Phenanthrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:19
Surr: 2-Fluorobiphenyl	54.2		32-130	%REC	1	16-Mar-2022 20:19
Surr: 4-Terphenyl-d14	81.2		40-135	%REC	1	16-Mar-2022 20:19
Surr: Nitrobenzene-d5	87.7		45-142	%REC	1	16-Mar-2022 20:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 1Q2022
 Sample ID: FD-030922
 Collection Date: 09-Mar-2022 00:00

ANALYTICAL REPORT

WorkOrder:HS22030517
 Lab ID:HS22030517-06
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 11-Mar-2022	Analyst: GEY	
Acenaphthene	0.000116		0.000103	mg/L	1	16-Mar-2022 20:39
Acenaphthylene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Benz(a)anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Benzo(a)pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Benzo(b)fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Benzo(g,h,i)perylene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Benzo(k)fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Chrysene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Dibenz(a,h)anthracene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Fluoranthene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Fluorene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Indeno(1,2,3-cd)pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Naphthalene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Phenanthrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Pyrene	< 0.000103		0.000103	mg/L	1	16-Mar-2022 20:39
Surr: 2-Fluorobiphenyl	41.6		32-130	%REC	1	16-Mar-2022 20:39
Surr: 4-Terphenyl-d14	99.5		40-135	%REC	1	16-Mar-2022 20:39
Surr: Nitrobenzene-d5	83.9		45-142	%REC	1	16-Mar-2022 20:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-11
Collection Date: 09-Mar-2022 11:05

ANALYTICAL REPORT

WorkOrder:HS22030517
Lab ID:HS22030517-07
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	12-Mar-2022 02:41
Surr: 1,2-Dichloroethane-d4	84.5		70-126	%REC	1	12-Mar-2022 02:41
Surr: 4-Bromofluorobenzene	84.0		77-113	%REC	1	12-Mar-2022 02:41
Surr: Dibromofluoromethane	85.5		77-123	%REC	1	12-Mar-2022 02:41
Surr: Toluene-d8	99.8		82-127	%REC	1	12-Mar-2022 02:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
Sample ID: MW-10
Collection Date: 09-Mar-2022 11:35

ANALYTICAL REPORT

WorkOrder:HS22030517
Lab ID:HS22030517-08
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	12-Mar-2022 03:02
Surr: 1,2-Dichloroethane-d4	87.2		70-126	%REC	1	12-Mar-2022 03:02
Surr: 4-Bromofluorobenzene	86.2		77-113	%REC	1	12-Mar-2022 03:02
Surr: Dibromofluoromethane	86.7		77-123	%REC	1	12-Mar-2022 03:02
Surr: Toluene-d8	97.1		82-127	%REC	1	12-Mar-2022 03:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Mar-22

Weight / Prep Log

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

Batch ID: 176284	Start Date: 11 Mar 2022 15:50	End Date: 11 Mar 2022 17:30
Method: SW3511	Prep Code: 3511_PAH	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22030517-03	1	31.66 (mL)	2 (mL)	0.06317	40 mL Amber
HS22030517-04	1	32.11 (mL)	2 (mL)	0.06229	40 mL Amber
HS22030517-05	1	32.01 (mL)	2 (mL)	0.06248	40 mL Amber
HS22030517-06	1	32.16 (mL)	2 (mL)	0.06219	40 mL Amber

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 176284 (0)		Test Name : LOW-LEVEL PAHS - 8270D			Matrix: Water	
HS22030517-03	MW-8	09 Mar 2022 10:10		11 Mar 2022 15:50	16 Mar 2022 19:39	1
HS22030517-04	FB-030922	09 Mar 2022 10:15		11 Mar 2022 15:50	16 Mar 2022 19:59	1
HS22030517-05	EB-030922	09 Mar 2022 10:20		11 Mar 2022 15:50	16 Mar 2022 20:19	1
HS22030517-06	FD-030922	09 Mar 2022 00:00		11 Mar 2022 15:50	16 Mar 2022 20:39	1
Batch ID: R404010 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22030517-04	FB-030922	09 Mar 2022 10:15			11 Mar 2022 20:15	1
Batch ID: R404071 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22030517-01	MW-17	09 Mar 2022 09:05			12 Mar 2022 01:58	1
HS22030517-02	MW-5	09 Mar 2022 09:40			12 Mar 2022 04:50	10
HS22030517-03	MW-8	09 Mar 2022 10:10			12 Mar 2022 02:20	1
HS22030517-05	EB-030922	09 Mar 2022 10:20			12 Mar 2022 00:13	1
HS22030517-07	MW-11	09 Mar 2022 11:05			12 Mar 2022 02:41	1
HS22030517-08	MW-10	09 Mar 2022 11:35			12 Mar 2022 03:02	1

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

QC BATCH REPORT

Batch ID: 176284 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D						
MBLK	Sample ID: MBLK-176284	Units: ug/L		Analysis Date: 16-Mar-2022 14:37						
Client ID:	Run ID: SV-6_404357	SeqNo: 6551447		PrepDate: 11-Mar-2022		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.100	0.100								
Acenaphthylene	< 0.100	0.100								
Anthracene	< 0.100	0.100								
Benz(a)anthracene	< 0.100	0.100								
Benzo(a)pyrene	< 0.100	0.100								
Benzo(b)fluoranthene	< 0.100	0.100								
Benzo(g,h,i)perylene	< 0.100	0.100								
Benzo(k)fluoranthene	< 0.100	0.100								
Chrysene	< 0.100	0.100								
Dibenz(a,h)anthracene	< 0.100	0.100								
Fluoranthene	< 0.100	0.100								
Fluorene	< 0.100	0.100								
Indeno(1,2,3-cd)pyrene	< 0.100	0.100								
Naphthalene	< 0.100	0.100								
Phenanthrene	< 0.100	0.100								
Pyrene	< 0.100	0.100								
Surr: 2-Fluorobiphenyl	2.769	0.100	3.03	0	91.4	32 - 130				
Surr: 4-Terphenyl-d14	2.342	0.100	3.03	0	77.3	40 - 135				
Surr: Nitrobenzene-d5	3.802	0.100	3.03	0	125	45 - 142				

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

QC BATCH REPORT

Batch ID: 176284 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
LCS		Sample ID: LCS-176284		Units: ug/L		Analysis Date: 16-Mar-2022 14:57			
Client ID:		Run ID: SV-6_404357		SeqNo: 6551448		PrepDate: 11-Mar-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	3.865	0.100	3.03	0	128	40 - 140			
Acenaphthylene	3.068	0.100	3.03	0	101	40 - 140			
Anthracene	3.462	0.100	3.03	0	114	40 - 140			
Benz(a)anthracene	1.784	0.100	3.03	0	58.9	40 - 140			
Benzo(a)pyrene	1.274	0.100	3.03	0	42.0	40 - 140			
Benzo(b)fluoranthene	1.424	0.100	3.03	0	47.0	40 - 140			
Benzo(g,h,i)perylene	1.529	0.100	3.03	0	50.5	40 - 140			
Benzo(k)fluoranthene	1.219	0.100	3.03	0	40.2	40 - 140			
Chrysene	1.813	0.100	3.03	0	59.8	40 - 140			
Dibenz(a,h)anthracene	1.352	0.100	3.03	0	44.6	40 - 140			
Fluoranthene	3.164	0.100	3.03	0	104	40 - 140			
Fluorene	3.347	0.100	3.03	0	110	40 - 140			
Indeno(1,2,3-cd)pyrene	1.254	0.100	3.03	0	41.4	40 - 140			
Naphthalene	3.18	0.100	3.03	0	105	40 - 140			
Phenanthrene	3.013	0.100	3.03	0	99.5	40 - 140			
Pyrene	2.333	0.100	3.03	0	77.0	40 - 140			
Surr: 2-Fluorobiphenyl	2.677	0.100	3.03	0	88.4	32 - 130			
Surr: 4-Terphenyl-d14	1.366	0.100	3.03	0	45.1	40 - 135			
Surr: Nitrobenzene-d5	2.66	0.100	3.03	0	87.8	45 - 142			

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

QC BATCH REPORT

Batch ID: 176284 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
LCSD		Sample ID: LCSD-176284		Units: ug/L		Analysis Date: 16-Mar-2022 15:17			
Client ID:		Run ID: SV-6_404357		SeqNo: 6551449		PrepDate: 11-Mar-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	3.761	0.100	3.03	0	124	40 - 140	3.865	2.72	25
Acenaphthylene	2.978	0.100	3.03	0	98.3	40 - 140	3.068	2.97	25
Anthracene	3.878	0.100	3.03	0	128	40 - 140	3.462	11.3	25
Benz(a)anthracene	2.528	0.100	3.03	0	83.4	40 - 140	1.784	34.5	25 R
Benzo(a)pyrene	2.898	0.100	3.03	0	95.6	40 - 140	1.274	77.9	25 R
Benzo(b)fluoranthene	1.635	0.100	3.03	0	54.0	40 - 140	1.424	13.8	25
Benzo(g,h,i)perylene	1.986	0.100	3.03	0	65.6	40 - 140	1.529	26	25 R
Benzo(k)fluoranthene	1.827	0.100	3.03	0	60.3	40 - 140	1.219	39.9	25 R
Chrysene	2.724	0.100	3.03	0	89.9	40 - 140	1.813	40.2	25 R
Dibenz(a,h)anthracene	1.936	0.100	3.03	0	63.9	40 - 140	1.352	35.5	25 R
Fluoranthene	3.4	0.100	3.03	0	112	40 - 140	3.164	7.18	25
Fluorene	3.126	0.100	3.03	0	103	40 - 140	3.347	6.81	25
Indeno(1,2,3-cd)pyrene	1.755	0.100	3.03	0	57.9	40 - 140	1.254	33.3	25 R
Naphthalene	3.814	0.100	3.03	0	126	40 - 140	3.18	18.1	25
Phenanthrene	3.199	0.100	3.03	0	106	40 - 140	3.013	5.98	25
Pyrene	2.982	0.100	3.03	0	98.4	40 - 140	2.333	24.4	25
Surr: 2-Fluorobiphenyl	2.363	0.100	3.03	0	78.0	32 - 130	2.677	12.5	25
Surr: 4-Terphenyl-d14	2.171	0.100	3.03	0	71.6	40 - 135	1.366	45.5	25 R
Surr: Nitrobenzene-d5	2.816	0.100	3.03	0	92.9	45 - 142	2.66	5.68	25
The following samples were analyzed in this batch:									
HS22030517-03		HS22030517-04		HS22030517-05		HS22030517-06			

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

QC BATCH REPORT

Batch ID: R404010 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220311	Units: ug/L		Analysis Date: 11-Mar-2022 11:53					
Client ID:	Run ID: VOA7_404010	SeqNo: 6541602		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	44.38	1.0	50	0	88.8	70 - 123			
Surr: 4-Bromofluorobenzene	43.44	1.0	50	0	86.9	77 - 113			
Surr: Dibromofluoromethane	44.44	1.0	50	0	88.9	73 - 126			
Surr: Toluene-d8	49.01	1.0	50	0	98.0	81 - 120			
LCS	Sample ID: VLCSW-220311	Units: ug/L		Analysis Date: 11-Mar-2022 11:11					
Client ID:	Run ID: VOA7_404010	SeqNo: 6541601		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	16.93	1.0	20	0	84.6	74 - 120			
Surr: 1,2-Dichloroethane-d4	43.96	1.0	50	0	87.9	70 - 123			
Surr: 4-Bromofluorobenzene	46.84	1.0	50	0	93.7	77 - 113			
Surr: Dibromofluoromethane	44.78	1.0	50	0	89.6	73 - 126			
Surr: Toluene-d8	48.36	1.0	50	0	96.7	81 - 120			
MS	Sample ID: HS22030505-01MS	Units: ug/L		Analysis Date: 11-Mar-2022 13:39					
Client ID:	Run ID: VOA7_404010	SeqNo: 6541607		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	15.64	1.0	20	0	78.2	70 - 127			
Surr: 1,2-Dichloroethane-d4	42.25	1.0	50	0	84.5	70 - 126			
Surr: 4-Bromofluorobenzene	48.4	1.0	50	0	96.8	77 - 113			
Surr: Dibromofluoromethane	44.39	1.0	50	0	88.8	77 - 123			
Surr: Toluene-d8	48.95	1.0	50	0	97.9	82 - 127			

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

QC BATCH REPORT

Batch ID: R404010 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD	Sample ID: HS22030505-01MSD	Units: ug/L		Analysis Date: 11-Mar-2022 14:00						
Client ID:	Run ID: VOA7_404010		SeqNo: 6541608		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15.55	1.0	20	0	77.7	70 - 127	15.64	0.558	20	
Surr: 1,2-Dichloroethane-d4	45.22	1.0	50	0	90.4	70 - 126	42.25	6.79	20	
Surr: 4-Bromofluorobenzene	47.43	1.0	50	0	94.9	77 - 113	48.4	2.02	20	
Surr: Dibromofluoromethane	44.84	1.0	50	0	89.7	77 - 123	44.39	1.01	20	
Surr: Toluene-d8	49.38	1.0	50	0	98.8	82 - 127	48.95	0.868	20	
The following samples were analyzed in this batch: HS22030517-04										

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

QC BATCH REPORT

Batch ID: R404071 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220311	Units: ug/L		Analysis Date: 11-Mar-2022 23:51					
Client ID:	Run ID: VOA7_404071	SeqNo: 6542906		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	42.13	1.0	50	0	84.3	70 - 123			
Surr: 4-Bromofluorobenzene	42.71	1.0	50	0	85.4	77 - 113			
Surr: Dibromofluoromethane	42.77	1.0	50	0	85.5	73 - 126			
Surr: Toluene-d8	50.14	1.0	50	0	100	81 - 120			

LCS	Sample ID: VLCSW-220311	Units: ug/L		Analysis Date: 11-Mar-2022 23:09					
Client ID:	Run ID: VOA7_404071	SeqNo: 6542997		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	17.9	1.0	20	0	89.5	74 - 120			
Surr: 1,2-Dichloroethane-d4	44.03	1.0	50	0	88.1	70 - 123			
Surr: 4-Bromofluorobenzene	45.37	1.0	50	0	90.7	77 - 113			
Surr: Dibromofluoromethane	44.63	1.0	50	0	89.3	73 - 126			
Surr: Toluene-d8	48.79	1.0	50	0	97.6	81 - 120			

MS	Sample ID: HS22030579-01MS	Units: ug/L		Analysis Date: 12-Mar-2022 00:55					
Client ID:	Run ID: VOA7_404071	SeqNo: 6542998		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	17.37	1.0	20	0	86.8	70 - 127			
Surr: 1,2-Dichloroethane-d4	42.43	1.0	50	0	84.9	70 - 126			
Surr: 4-Bromofluorobenzene	45.35	1.0	50	0	90.7	77 - 113			
Surr: Dibromofluoromethane	44.55	1.0	50	0	89.1	77 - 123			
Surr: Toluene-d8	49.03	1.0	50	0	98.1	82 - 127			

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

QC BATCH REPORT

Batch ID: R404071 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD	Sample ID:	HS22030579-01MSD			Units: ug/L		Analysis Date: 12-Mar-2022 01:16			
	Client ID:	Run ID: VOA7_404071		SeqNo: 6542999		PrepDate:		DF: 1		
	Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
	Benzene	16.93	1.0	20	0	84.7	70 - 127	17.37	2.53	20
	Surr: 1,2-Dichloroethane-d4	43.62	1.0	50	0	87.2	70 - 126	42.43	2.76	20
Surr: 4-Bromofluorobenzene	45.05	1.0	50	0	90.1	77 - 113	45.35	0.651	20	
Surr: Dibromofluoromethane	44.97	1.0	50	0	89.9	77 - 123	44.55	0.929	20	
Surr: Toluene-d8	48.28	1.0	50	0	96.6	82 - 127	49.03	1.54	20	
The following samples were analyzed in this batch:		HS22030517-01 HS22030517-07		HS22030517-02 HS22030517-08		HS22030517-03		HS22030517-05		

ALS Houston, US

Date: 22-Mar-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 1Q2022
WorkOrder: HS22030517

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US

Date: 22-Mar-22

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Florida	E87611-34	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
Texas	T104704231-21-28	30-Apr-2022

ALS Houston, US

Date: 22-Mar-22

Sample Receipt Checklist

Work Order ID: HS22030517

Date/Time Received: 10-Mar-2022 09:30

Client Name: Arcadis-Baton Rouge

Received by: Pablo Martinez

Completed By: /S/ Pablo Martinez	10-Mar-2022 13:18	Reviewed by: /S/ Dane J. Wacasey	11-Mar-2022 17:09
eSignature	Date/Time	eSignature	Date/Time

Matrices: **WATER**Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	COC IDs:262795
Samplers name present on COC?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	0.4°C/0.9°C UC/C IR 31		
Cooler(s)/Kit(s):	BLACK		
Date/Time sample(s) sent to storage:	3/10/22 13:30		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☒
pH adjusted?	Yes ☐	No ☐	N/A ☒
pH adjusted by:			

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:

Cincinnati, OH
+1 513 733 5336Everett, WA
+1 425 356 2600Fort Collins, CO
+1 970 490 1511Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 262795

Houston, TX
+1 281 530 5656Middletown, PA
+1 717 944 5541Spring City, PA
+1 610 948 4903Salt Lake City, UT
+1 801 266 7700South Charleston, WV
+1 304 356 3168York, PA
+1 717 505 5280

Customer Information			Project Information			ALS Project Manager:													ALS Work Order #:		
Parameter/Method Request for Analysis																					
Purchase Order	30049071 Task 250		Project Name	30049071 Brickland Refinery 1Q2022		A	8260_LL_W (8260 Benzene ("Unpreserved")-7 day HT														
Work Order			Project Number	30049071 Task 250		B	8270_PAH_LVI (8270 PAHs (LVI))														
Company Name	ARCADIS U.S., Inc.		Bill To Company	ARCADIS		C															
Send Report To	Brooke Fontenot		Invoice Attn	Accounts Payable		D															
Address	10352 Plaza Americana Drive		Address	630 Plaza Drive, Suite 600		E															
City/State/Zip	Baton Rouge, LA 70816		City/State/Zip	Highlands Ranch CO 80129		F															
Phone	(225) 292-1004		Phone	(303) 471-3599		G															
Fax			Fax			H															
e-Mail Address	Brooke.Fontenot@arcadis-us.com		e-Mail Address	Accounts.payable.administration@arcadis.com		I															
HS22030517 ARCADIS U.S., Inc. 30049071 Brickland Refinery 1Q2022																					
No.	Sample Description		Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
1	MW-17		3/9/22	0905	W	None	3	X													
2	MW-5			0940	W	None	3	X													
3	MW-8			1010	W	None	6	X	X												
4	FB-030922			1015	W	None	6	X	X												
5	FB-030922			1020	W	None	6	X	X												
6	FD-030922				W	None	3		X												
7	MW-11			1105	W	None	3	X													
8	MW-10			1135	W	None	3	X													
9																					
10																					
Sampler(s) Please Print & Sign			Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:												
Relinquished by: <i>Jessie Pham</i>			Date: 3/9/22 Time: 1:50		☒ 5-10 Business Days ☐ 5-10 Days ☐ 3-5 Days ☐ As Soon As Possible				Notes: [AGM Brickland NM]												
Relinquished by:			Date: 3/6/22 Time: 4:30		Received by (Laboratory): <i>Mike</i>				Cooler ID: Black				Cooler Temp: 0.4C								
Logged by (Laboratory):			Date: Time:		Checked by (Laboratory):				QC Package: (Check One Box Below)												
									☒ Used II Std. Ct. ☐ Used II Std. GOR by Date ☐ Used by Analyst/CP				☐ TAPPA Certified ☐ TAPPA Certified								
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035																					

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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TRK# 2706 8317 0600 THU - 10 MAR 10:30A
0201 PRIORITY OVERNIGHT
AHS
NH SGRA Black 77099
TX-US IAH





10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 23, 2022

Brooke Fontenot
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS22060791**

Laboratory Results for: **30049071 Brickland Refinery 2Q2022**

Dear Brooke Fontenot,

ALS Environmental received 16 sample(s) on Jun 15, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL

Dane J. Wacasey

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Work Order: HS22060791

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22060791-01	MW-3S	Water		13-Jun-2022 09:00	15-Jun-2022 10:10	☐
HS22060791-02	MW-3D	Water		13-Jun-2022 09:45	15-Jun-2022 10:10	☐
HS22060791-03	FB061322	Water		13-Jun-2022 09:50	15-Jun-2022 10:10	☐
HS22060791-04	FD061322	Water		13-Jun-2022 00:00	15-Jun-2022 10:10	☐
HS22060791-05	MW-6S	Water		13-Jun-2022 10:25	15-Jun-2022 10:10	☐
HS22060791-06	MW-6D	Water		13-Jun-2022 11:00	15-Jun-2022 10:10	☐
HS22060791-07	MW-9S	Water		13-Jun-2022 11:40	15-Jun-2022 10:10	☐
HS22060791-08	EB061322	Water		13-Jun-2022 11:45	15-Jun-2022 10:10	☐
HS22060791-09	MW-17	Water		14-Jun-2022 08:30	15-Jun-2022 10:10	☐
HS22060791-10	MW-5	Water		14-Jun-2022 09:10	15-Jun-2022 10:10	☐
HS22060791-11	MW-8	Water		14-Jun-2022 09:50	15-Jun-2022 10:10	☐
HS22060791-12	FD061422	Water		14-Jun-2022 00:00	15-Jun-2022 10:10	☐
HS22060791-13	FB061422	Water		14-Jun-2022 09:55	15-Jun-2022 10:10	☐
HS22060791-14	EB061422	Water		14-Jun-2022 10:00	15-Jun-2022 10:10	☐
HS22060791-15	MW-11	Water		14-Jun-2022 10:45	15-Jun-2022 10:10	☐
HS22060791-16	MW-10	Water		14-Jun-2022 11:35	15-Jun-2022 10:10	☐

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Work Order: HS22060791

CASE NARRATIVE

GCMS Semivolatiles by Method SW8270

Batch ID: 180037

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R410861,R411021

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

ALS Houston, US

Date: 23-Jun-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30049071 Brickland Refinery 2Q2022	WorkOrder:HS22060791
Sample ID:	MW-3S	Lab ID:HS22060791-01
Collection Date:	13-Jun-2022 09:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 13:31
Surr: 1,2-Dichloroethane-d4	103		70-126	%REC	1	16-Jun-2022 13:31
Surr: 4-Bromofluorobenzene	96.0		77-113	%REC	1	16-Jun-2022 13:31
Surr: Dibromofluoromethane	99.9		77-123	%REC	1	16-Jun-2022 13:31
Surr: Toluene-d8	100		82-127	%REC	1	16-Jun-2022 13:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: MW-3D
Collection Date: 13-Jun-2022 09:45

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 13:52
Surr: 1,2-Dichloroethane-d4	106		70-126	%REC	1	16-Jun-2022 13:52
Surr: 4-Bromofluorobenzene	99.1		77-113	%REC	1	16-Jun-2022 13:52
Surr: Dibromofluoromethane	101		77-123	%REC	1	16-Jun-2022 13:52
Surr: Toluene-d8	101		82-127	%REC	1	16-Jun-2022 13:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: FB061322
Collection Date: 13-Jun-2022 09:50

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 12:05
Surr: 1,2-Dichloroethane-d4	102		70-126	%REC	1	16-Jun-2022 12:05
Surr: 4-Bromofluorobenzene	95.3		77-113	%REC	1	16-Jun-2022 12:05
Surr: Dibromofluoromethane	103		77-123	%REC	1	16-Jun-2022 12:05
Surr: Toluene-d8	100.0		82-127	%REC	1	16-Jun-2022 12:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: FD061322
Collection Date: 13-Jun-2022 00:00

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 14:14
Surr: 1,2-Dichloroethane-d4	107		70-126	%REC	1	16-Jun-2022 14:14
Surr: 4-Bromofluorobenzene	96.3		77-113	%REC	1	16-Jun-2022 14:14
Surr: Dibromofluoromethane	100		77-123	%REC	1	16-Jun-2022 14:14
Surr: Toluene-d8	99.6		82-127	%REC	1	16-Jun-2022 14:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: MW-6S
Collection Date: 13-Jun-2022 10:25

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 14:35
Surr: 1,2-Dichloroethane-d4	103		70-126	%REC	1	16-Jun-2022 14:35
Surr: 4-Bromofluorobenzene	99.3		77-113	%REC	1	16-Jun-2022 14:35
Surr: Dibromofluoromethane	104		77-123	%REC	1	16-Jun-2022 14:35
Surr: Toluene-d8	102		82-127	%REC	1	16-Jun-2022 14:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30049071 Brickland Refinery 2Q2022	WorkOrder:HS22060791
Sample ID:	MW-6D	Lab ID:HS22060791-06
Collection Date:	13-Jun-2022 11:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 14:56
Surr: 1,2-Dichloroethane-d4	108		70-126	%REC	1	16-Jun-2022 14:56
Surr: 4-Bromofluorobenzene	97.6		77-113	%REC	1	16-Jun-2022 14:56
Surr: Dibromofluoromethane	102		77-123	%REC	1	16-Jun-2022 14:56
Surr: Toluene-d8	101		82-127	%REC	1	16-Jun-2022 14:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: MW-9S
Collection Date: 13-Jun-2022 11:40

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-07
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 15:18
Surr: 1,2-Dichloroethane-d4	106		70-126	%REC	1	16-Jun-2022 15:18
Surr: 4-Bromofluorobenzene	100		77-113	%REC	1	16-Jun-2022 15:18
Surr: Dibromofluoromethane	99.4		77-123	%REC	1	16-Jun-2022 15:18
Surr: Toluene-d8	100		82-127	%REC	1	16-Jun-2022 15:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: EB061322
Collection Date: 13-Jun-2022 11:45

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-08
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 12:26
Surr: 1,2-Dichloroethane-d4	99.0		70-126	%REC	1	16-Jun-2022 12:26
Surr: 4-Bromofluorobenzene	98.4		77-113	%REC	1	16-Jun-2022 12:26
Surr: Dibromofluoromethane	96.8		77-123	%REC	1	16-Jun-2022 12:26
Surr: Toluene-d8	101		82-127	%REC	1	16-Jun-2022 12:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30049071 Brickland Refinery 2Q2022	WorkOrder:HS22060791
Sample ID:	MW-17	Lab ID:HS22060791-09
Collection Date:	14-Jun-2022 08:30	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 15:39
Surr: 1,2-Dichloroethane-d4	100		70-126	%REC	1	16-Jun-2022 15:39
Surr: 4-Bromofluorobenzene	96.2		77-113	%REC	1	16-Jun-2022 15:39
Surr: Dibromofluoromethane	101		77-123	%REC	1	16-Jun-2022 15:39
Surr: Toluene-d8	101		82-127	%REC	1	16-Jun-2022 15:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: MW-5
Collection Date: 14-Jun-2022 09:10

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-10
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	0.049		0.0010	mg/L	1	19-Jun-2022 15:38
Surr: 1,2-Dichloroethane-d4	93.4		70-126	%REC	1	19-Jun-2022 15:38
Surr: 4-Bromofluorobenzene	95.4		77-113	%REC	1	19-Jun-2022 15:38
Surr: Dibromofluoromethane	95.7		77-123	%REC	1	19-Jun-2022 15:38
Surr: Toluene-d8	97.8		82-127	%REC	1	19-Jun-2022 15:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 2Q2022
 Sample ID: MW-8
 Collection Date: 14-Jun-2022 09:50

ANALYTICAL REPORT

WorkOrder:HS22060791
 Lab ID:HS22060791-11
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	0.054		0.0010	mg/L	1	16-Jun-2022 16:22
Surr: 1,2-Dichloroethane-d4	106		70-126	%REC	1	16-Jun-2022 16:22
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	16-Jun-2022 16:22
Surr: Dibromofluoromethane	101		77-123	%REC	1	16-Jun-2022 16:22
Surr: Toluene-d8	101		82-127	%REC	1	16-Jun-2022 16:22
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 16-Jun-2022		Analyst: JLJ
Acenaphthene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Acenaphthylene	0.000109		0.000103	mg/L	1	17-Jun-2022 11:46
Anthracene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Benz(a)anthracene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Benzo(a)pyrene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Benzo(b)fluoranthene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Benzo(g,h,i)perylene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Benzo(k)fluoranthene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Chrysene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Dibenz(a,h)anthracene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Fluoranthene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Fluorene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Indeno(1,2,3-cd)pyrene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Naphthalene	0.000242		0.000103	mg/L	1	17-Jun-2022 11:46
Phenanthrene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Pyrene	< 0.000103		0.000103	mg/L	1	17-Jun-2022 11:46
Surr: 2-Fluorobiphenyl	81.9		32-130	%REC	1	17-Jun-2022 11:46
Surr: 4-Terphenyl-d14	69.8		40-135	%REC	1	17-Jun-2022 11:46
Surr: Nitrobenzene-d5	119		45-142	%REC	1	17-Jun-2022 11:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 2Q2022
 Sample ID: FD061422
 Collection Date: 14-Jun-2022 00:00

ANALYTICAL REPORT

WorkOrder:HS22060791
 Lab ID:HS22060791-12
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 16-Jun-2022		Analyst: JLJ
Acenaphthene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Acenaphthylene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Anthracene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Benz(a)anthracene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Benzo(a)pyrene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Benzo(b)fluoranthene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Benzo(g,h,i)perylene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Benzo(k)fluoranthene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Chrysene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Dibenz(a,h)anthracene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Fluoranthene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Fluorene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Indeno(1,2,3-cd)pyrene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Naphthalene	0.000196		0.000102	mg/L	1	17-Jun-2022 12:06
Phenanthrene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Pyrene	< 0.000102		0.000102	mg/L	1	17-Jun-2022 12:06
Surr: 2-Fluorobiphenyl	70.2		32-130	%REC	1	17-Jun-2022 12:06
Surr: 4-Terphenyl-d14	61.3		40-135	%REC	1	17-Jun-2022 12:06
Surr: Nitrobenzene-d5	103		45-142	%REC	1	17-Jun-2022 12:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 2Q2022
 Sample ID: FB061422
 Collection Date: 14-Jun-2022 09:55

ANALYTICAL REPORT

WorkOrder:HS22060791
 Lab ID:HS22060791-13
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 12:48
Surr: 1,2-Dichloroethane-d4	99.4		70-126	%REC	1	16-Jun-2022 12:48
Surr: 4-Bromofluorobenzene	97.2		77-113	%REC	1	16-Jun-2022 12:48
Surr: Dibromofluoromethane	96.9		77-123	%REC	1	16-Jun-2022 12:48
Surr: Toluene-d8	99.0		82-127	%REC	1	16-Jun-2022 12:48
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 16-Jun-2022 Analyst: JLJ		
Acenaphthene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Acenaphthylene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Anthracene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Benz(a)anthracene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Benzo(a)pyrene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Benzo(b)fluoranthene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Benzo(g,h,i)perylene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Benzo(k)fluoranthene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Chrysene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Dibenz(a,h)anthracene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Fluoranthene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Fluorene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Indeno(1,2,3-cd)pyrene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Naphthalene	0.000251		0.000101	mg/L	1	17-Jun-2022 19:13
Phenanthrene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Pyrene	< 0.000101		0.000101	mg/L	1	17-Jun-2022 19:13
Surr: 2-Fluorobiphenyl	59.8		32-130	%REC	1	17-Jun-2022 19:13
Surr: 4-Terphenyl-d14	82.9		40-135	%REC	1	17-Jun-2022 19:13
Surr: Nitrobenzene-d5	112		45-142	%REC	1	17-Jun-2022 19:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 2Q2022
 Sample ID: EB061422
 Collection Date: 14-Jun-2022 10:00

ANALYTICAL REPORT

WorkOrder:HS22060791
 Lab ID:HS22060791-14
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260				Analyst: AKP
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 13:09
Surr: 1,2-Dichloroethane-d4	100		70-126	%REC	1	16-Jun-2022 13:09
Surr: 4-Bromofluorobenzene	93.8		77-113	%REC	1	16-Jun-2022 13:09
Surr: Dibromofluoromethane	99.5		77-123	%REC	1	16-Jun-2022 13:09
Surr: Toluene-d8	101		82-127	%REC	1	16-Jun-2022 13:09
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 16-Jun-2022		Analyst: JLJ
Acenaphthene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Acenaphthylene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Anthracene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Benz(a)anthracene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Benzo(a)pyrene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Benzo(b)fluoranthene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Benzo(g,h,i)perylene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Benzo(k)fluoranthene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Chrysene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Dibenz(a,h)anthracene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Fluoranthene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Fluorene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Indeno(1,2,3-cd)pyrene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Naphthalene	0.000223		0.0000999	mg/L	1	17-Jun-2022 12:46
Phenanthrene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Pyrene	< 0.0000999		0.0000999	mg/L	1	17-Jun-2022 12:46
Surr: 2-Fluorobiphenyl	72.5		32-130	%REC	1	17-Jun-2022 12:46
Surr: 4-Terphenyl-d14	91.6		40-135	%REC	1	17-Jun-2022 12:46
Surr: Nitrobenzene-d5	130		45-142	%REC	1	17-Jun-2022 12:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
Sample ID: MW-11
Collection Date: 14-Jun-2022 10:45

ANALYTICAL REPORT

WorkOrder:HS22060791
Lab ID:HS22060791-15
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 16:44
Surr: 1,2-Dichloroethane-d4	104		70-126	%REC	1	16-Jun-2022 16:44
Surr: 4-Bromofluorobenzene	96.2		77-113	%REC	1	16-Jun-2022 16:44
Surr: Dibromofluoromethane	103		77-123	%REC	1	16-Jun-2022 16:44
Surr: Toluene-d8	98.8		82-127	%REC	1	16-Jun-2022 16:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30049071 Brickland Refinery 2Q2022	WorkOrder:HS22060791
Sample ID:	MW-10	Lab ID:HS22060791-16
Collection Date:	14-Jun-2022 11:35	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	16-Jun-2022 17:05
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	16-Jun-2022 17:05
Surr: 4-Bromofluorobenzene	97.0		77-113	%REC	1	16-Jun-2022 17:05
Surr: Dibromofluoromethane	102		77-123	%REC	1	16-Jun-2022 17:05
Surr: Toluene-d8	99.3		82-127	%REC	1	16-Jun-2022 17:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Jun-22

Weight / Prep Log

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

Batch ID: 180037	Start Date: 16 Jun 2022 09:21	End Date: 16 Jun 2022 11:22
Method: SW3511	Prep Code: 3511_PAH	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22060791-11	1	32.1 (mL)	2 (mL)	0.06231	40 mL Amber
HS22060791-12	1	32.28 (mL)	2 (mL)	0.06196	40 mL Amber
HS22060791-13	1	32.71 (mL)	2 (mL)	0.06114	40 mL Amber
HS22060791-14	1	33.04 (mL)	2 (mL)	0.06053	40 mL Amber

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 180037 (0)		Test Name : LOW-LEVEL PAHS - 8270D			Matrix: Water	
HS22060791-11	MW-8	14 Jun 2022 09:50		16 Jun 2022 09:21	17 Jun 2022 11:46	1
HS22060791-12	FD061422	14 Jun 2022 00:00		16 Jun 2022 09:21	17 Jun 2022 12:06	1
HS22060791-13	FB061422	14 Jun 2022 09:55		16 Jun 2022 09:21	17 Jun 2022 19:13	1
HS22060791-14	EB061422	14 Jun 2022 10:00		16 Jun 2022 09:21	17 Jun 2022 12:46	1
Batch ID: R410861 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22060791-01	MW-3S	13 Jun 2022 09:00			16 Jun 2022 13:31	1
HS22060791-02	MW-3D	13 Jun 2022 09:45			16 Jun 2022 13:52	1
HS22060791-03	FB061322	13 Jun 2022 09:50			16 Jun 2022 12:05	1
HS22060791-04	FD061322	13 Jun 2022 00:00			16 Jun 2022 14:14	1
HS22060791-05	MW-6S	13 Jun 2022 10:25			16 Jun 2022 14:35	1
HS22060791-06	MW-6D	13 Jun 2022 11:00			16 Jun 2022 14:56	1
HS22060791-07	MW-9S	13 Jun 2022 11:40			16 Jun 2022 15:18	1
HS22060791-08	EB061322	13 Jun 2022 11:45			16 Jun 2022 12:26	1
HS22060791-09	MW-17	14 Jun 2022 08:30			16 Jun 2022 15:39	1
HS22060791-11	MW-8	14 Jun 2022 09:50			16 Jun 2022 16:22	1
HS22060791-13	FB061422	14 Jun 2022 09:55			16 Jun 2022 12:48	1
HS22060791-14	EB061422	14 Jun 2022 10:00			16 Jun 2022 13:09	1
HS22060791-15	MW-11	14 Jun 2022 10:45			16 Jun 2022 16:44	1
HS22060791-16	MW-10	14 Jun 2022 11:35			16 Jun 2022 17:05	1
Batch ID: R411021 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22060791-10	MW-5	14 Jun 2022 09:10			19 Jun 2022 15:38	1

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

QC BATCH REPORT

Batch ID: 180037 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
MBLK	Sample ID: MBLK-180037	Units: ug/L		Analysis Date: 17-Jun-2022 11:25					
Client ID:	Run ID: SV-6_411289	SeqNo: 6707427		PrepDate: 16-Jun-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	< 0.100	0.100							
Acenaphthylene	< 0.100	0.100							
Anthracene	< 0.100	0.100							
Benz(a)anthracene	< 0.100	0.100							
Benzo(a)pyrene	< 0.100	0.100							
Benzo(b)fluoranthene	< 0.100	0.100							
Benzo(g,h,i)perylene	< 0.100	0.100							
Benzo(k)fluoranthene	< 0.100	0.100							
Chrysene	< 0.100	0.100							
Dibenz(a,h)anthracene	< 0.100	0.100							
Fluoranthene	< 0.100	0.100							
Fluorene	< 0.100	0.100							
Indeno(1,2,3-cd)pyrene	< 0.100	0.100							
Naphthalene	< 0.100	0.100							
Phenanthrene	< 0.100	0.100							
Pyrene	< 0.100	0.100							
Surr: 2-Fluorobiphenyl	2.031	0.100	3.03	0	67.0	32 - 130			
Surr: 4-Terphenyl-d14	1.743	0.100	3.03	0	57.5	40 - 135			
Surr: Nitrobenzene-d5	2.605	0.100	3.03	0	86.0	45 - 142			

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
 Project: 30049071 Brickland Refinery 2Q2022
 WorkOrder: HS22060791

QC BATCH REPORT

Batch ID: 180037 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
LCS		Sample ID: LCS-180037		Units: ug/L		Analysis Date: 17-Jun-2022 10:45			
Client ID:		Run ID: SV-6_411289		SeqNo: 6707425		PrepDate: 16-Jun-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	3.628	0.100	3.03	0	120	40 - 140			
Acenaphthylene	3.528	0.100	3.03	0	116	40 - 140			
Anthracene	3.685	0.100	3.03	0	122	40 - 140			
Benz(a)anthracene	3.075	0.100	3.03	0	101	40 - 140			
Benzo(a)pyrene	3.303	0.100	3.03	0	109	40 - 140			
Benzo(b)fluoranthene	3.506	0.100	3.03	0	116	40 - 140			
Benzo(g,h,i)perylene	2.264	0.100	3.03	0	74.7	40 - 140			
Benzo(k)fluoranthene	3.197	0.100	3.03	0	106	40 - 140			
Chrysene	3.446	0.100	3.03	0	114	40 - 140			
Dibenz(a,h)anthracene	2.602	0.100	3.03	0	85.9	40 - 140			
Fluoranthene	3.919	0.100	3.03	0	129	40 - 140			
Fluorene	3.481	0.100	3.03	0	115	40 - 140			
Indeno(1,2,3-cd)pyrene	2.66	0.100	3.03	0	87.8	40 - 140			
Naphthalene	3.951	0.100	3.03	0	130	40 - 140			
Phenanthrene	3.731	0.100	3.03	0	123	40 - 140			
Pyrene	2.901	0.100	3.03	0	95.7	40 - 140			
Surr: 2-Fluorobiphenyl	2.947	0.100	3.03	0	97.3	32 - 130			
Surr: 4-Terphenyl-d14	2.941	0.100	3.03	0	97.1	40 - 135			
Surr: Nitrobenzene-d5	3.942	0.100	3.03	0	130	45 - 142			

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

QC BATCH REPORT

Batch ID: 180037 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
LCSD		Sample ID: LCSD-180037		Units: ug/L		Analysis Date: 17-Jun-2022 11:05			
Client ID:		Run ID: SV-6_411289		SeqNo: 6707426		PrepDate: 16-Jun-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	3.971	0.100	3.03	0	131	40 - 140	3.628	9.02	25
Acenaphthylene	3.954	0.100	3.03	0	130	40 - 140	3.528	11.4	25
Anthracene	3.931	0.100	3.03	0	130	40 - 140	3.685	6.45	25
Benz(a)anthracene	2.964	0.100	3.03	0	97.8	40 - 140	3.075	3.67	25
Benzo(a)pyrene	2.835	0.100	3.03	0	93.6	40 - 140	3.303	15.3	25
Benzo(b)fluoranthene	3.406	0.100	3.03	0	112	40 - 140	3.506	2.92	25
Benzo(g,h,i)perylene	2.109	0.100	3.03	0	69.6	40 - 140	2.264	7.1	25
Benzo(k)fluoranthene	2.816	0.100	3.03	0	92.9	40 - 140	3.197	12.7	25
Chrysene	3.602	0.100	3.03	0	119	40 - 140	3.446	4.44	25
Dibenz(a,h)anthracene	2.228	0.100	3.03	0	73.5	40 - 140	2.602	15.5	25
Fluoranthene	4.058	0.100	3.03	0	134	40 - 140	3.919	3.48	25
Fluorene	3.904	0.100	3.03	0	129	40 - 140	3.481	11.5	25
Indeno(1,2,3-cd)pyrene	2.349	0.100	3.03	0	77.5	40 - 140	2.66	12.4	25
Naphthalene	4.099	0.100	3.03	0	135	40 - 140	3.951	3.67	25
Phenanthrene	4.131	0.100	3.03	0	136	40 - 140	3.731	10.2	25
Pyrene	3.244	0.100	3.03	0	107	40 - 140	2.901	11.2	25
Surr: 2-Fluorobiphenyl	3.255	0.100	3.03	0	107	32 - 130	2.947	9.93	25
Surr: 4-Terphenyl-d14	3.25	0.100	3.03	0	107	40 - 135	2.941	9.99	25
Surr: Nitrobenzene-d5	4.06	0.100	3.03	0	134	45 - 142	3.942	2.94	25
The following samples were analyzed in this batch:									
HS22060791-11		HS22060791-12		HS22060791-13		HS22060791-14			

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

QC BATCH REPORT

Batch ID: R410861 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220616	Units: ug/L		Analysis Date: 16-Jun-2022 11:22					
Client ID:	Run ID: VOA4_410861	SeqNo: 6697781		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	49.97	1.0	50	0	99.9	70 - 123			
Surr: 4-Bromofluorobenzene	48.8	1.0	50	0	97.6	77 - 113			
Surr: Dibromofluoromethane	49.68	1.0	50	0	99.4	73 - 126			
Surr: Toluene-d8	50.37	1.0	50	0	101	81 - 120			

LCS	Sample ID: VLCSW-220616	Units: ug/L		Analysis Date: 16-Jun-2022 10:39					
Client ID:	Run ID: VOA4_410861	SeqNo: 6697780		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.72	1.0	20	0	104	74 - 120			
Surr: 1,2-Dichloroethane-d4	48.82	1.0	50	0	97.6	70 - 123			
Surr: 4-Bromofluorobenzene	50.41	1.0	50	0	101	77 - 113			
Surr: Dibromofluoromethane	51.73	1.0	50	0	103	73 - 126			
Surr: Toluene-d8	50.08	1.0	50	0	100	81 - 120			

MS	Sample ID: HS22060764-02MS	Units: ug/L		Analysis Date: 16-Jun-2022 19:14					
Client ID:	Run ID: VOA4_410861	SeqNo: 6697803		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	22.55	1.0	20	6.037	82.6	70 - 127			
Surr: 1,2-Dichloroethane-d4	51.62	1.0	50	0	103	70 - 126			
Surr: 4-Bromofluorobenzene	50.97	1.0	50	0	102	77 - 113			
Surr: Dibromofluoromethane	51.11	1.0	50	0	102	77 - 123			
Surr: Toluene-d8	49.98	1.0	50	0	100.0	82 - 127			

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

QC BATCH REPORT

Batch ID: R410861 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C							
MS	Sample ID:	HS22060764-02MS			Units:	ug/L		Analysis Date:		16-Jun-2022 18:52	
	Client ID:	Run ID: VOA4_410861			SeqNo: 6697802		PrepDate:		DF: 1		
	Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzene		22.19	1.0	20	6.037	80.8	70 - 127				
Surr: 1,2-Dichloroethane-d4		50.67	1.0	50	0	101	70 - 126				
Surr: 4-Bromofluorobenzene		51.02	1.0	50	0	102	77 - 113				
Surr: Dibromofluoromethane		50.98	1.0	50	0	102	77 - 123				
Surr: Toluene-d8		49.85	1.0	50	0	99.7	82 - 127				
The following samples were analyzed in this batch:											
		HS22060791-01		HS22060791-02		HS22060791-03		HS22060791-04			
		HS22060791-05		HS22060791-06		HS22060791-07		HS22060791-08			
		HS22060791-09		HS22060791-11		HS22060791-13		HS22060791-14			
		HS22060791-15		HS22060791-16							

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

QC BATCH REPORT

Batch ID: R411021 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220619	Units: ug/L		Analysis Date: 19-Jun-2022 10:38					
Client ID:	Run ID: VOA4_411021	SeqNo: 6701621		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	46.82	1.0	50	0	93.6	70 - 123			
Surr: 4-Bromofluorobenzene	47.58	1.0	50	0	95.2	77 - 113			
Surr: Dibromofluoromethane	47.77	1.0	50	0	95.5	73 - 126			
Surr: Toluene-d8	49.26	1.0	50	0	98.5	81 - 120			

LCS	Sample ID: VLCSW-220619	Units: ug/L		Analysis Date: 19-Jun-2022 09:55					
Client ID:	Run ID: VOA4_411021	SeqNo: 6701620		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	21.46	1.0	20	0	107	74 - 120			
Surr: 1,2-Dichloroethane-d4	47.3	1.0	50	0	94.6	70 - 123			
Surr: 4-Bromofluorobenzene	49.47	1.0	50	0	98.9	77 - 113			
Surr: Dibromofluoromethane	50.07	1.0	50	0	100	73 - 126			
Surr: Toluene-d8	50.5	1.0	50	0	101	81 - 120			

MS	Sample ID: HS22060886-01MS	Units: ug/L		Analysis Date: 19-Jun-2022 18:16					
Client ID:	Run ID: VOA4_411021	SeqNo: 6701642		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.54	1.0	20	0	103	70 - 127			
Surr: 1,2-Dichloroethane-d4	47.01	1.0	50	0	94.0	70 - 126			
Surr: 4-Bromofluorobenzene	48.46	1.0	50	0	96.9	77 - 113			
Surr: Dibromofluoromethane	50.53	1.0	50	0	101	77 - 123			
Surr: Toluene-d8	49.94	1.0	50	0	99.9	82 - 127			

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

QC BATCH REPORT

Batch ID: R411021 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD		Sample ID: HS22060886-01MSD		Units: ug/L		Analysis Date: 19-Jun-2022 18:38				
Client ID:		Run ID: VOA4_411021		SeqNo: 6701643		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.81	1.0	20	0	104	70 - 127	20.54	1.3	20	
Surr: 1,2-Dichloroethane-d4	46.99	1.0	50	0	94.0	70 - 126	47.01	0.0508	20	
Surr: 4-Bromofluorobenzene	48.62	1.0	50	0	97.2	77 - 113	48.46	0.328	20	
Surr: Dibromofluoromethane	49.53	1.0	50	0	99.1	77 - 123	50.53	2.01	20	
Surr: Toluene-d8	51.36	1.0	50	0	103	82 - 127	49.94	2.8	20	
The following samples were analyzed in this batch: HS22060791-10										

ALS Houston, US

Date: 23-Jun-22

Client: ARCADIS U.S., Inc.
Project: 30049071 Brickland Refinery 2Q2022
WorkOrder: HS22060791

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US

Date: 23-Jun-22

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-34	30-Jun-2022
Illinois	2000322022-9	09-May-2023
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2021-2022	30-Jun-2022
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
Oklahoma	2021-080	31-Aug-2022
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932021-12	30-Jul-2022

ALS Houston, US

Date: 23-Jun-22

Sample Receipt Checklist

Work Order ID: HS22060791

Date/Time Received: 15-Jun-2022 10:10

Client Name: Arcadis-Baton Rouge

Received by: Paresh M. Giga

Completed By: /S/ Pablo Martinez

15-Jun-2022 13:38

eSignature

Date/Time

Reviewed by: /S/ Dane J. Wacasey

22-Jun-2022 18:05

eSignature

Date/Time

Matrices: **WATER**Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?

Yes ☒No ☐Not Present ☐

Custody seals intact on shipping container/cooler?

Yes ☒No ☐Not Present ☐

Custody seals intact on sample bottles?

Yes ☐No ☐Not Present ☒

VOA/TX1005/TX1006 Solids in hermetically sealed vials?

Yes ☐No ☐Not Present ☒

Chain of custody present?

Yes ☒No ☐

2 Page(s)

Chain of custody signed when relinquished and received?

Yes ☒No ☐

COC IDs:262796/256081

Samplers name present on COC?

Yes ☒No ☐

Chain of custody agrees with sample labels?

Yes ☒No ☐

Samples in proper container/bottle?

Yes ☒No ☐

Sample containers intact?

Yes ☒No ☐

Sufficient sample volume for indicated test?

Yes ☒No ☐

All samples received within holding time?

Yes ☒No ☐

Container/Temp Blank temperature in compliance?

Yes ☒No ☐

Temperature(s)/Thermometer(s):

1.9°C/2.4°C UC/C

IR 31

Cooler(s)/Kit(s):

47543

Date/Time sample(s) sent to storage:

6/15/22 13:45

Water - VOA vials have zero headspace?

Yes ☒No ☐No VOA vials submitted ☐

Water - pH acceptable upon receipt?

Yes ☐No ☐N/A ☒

pH adjusted?

Yes ☐No ☐N/A ☒

pH adjusted by:

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:



Chain of Custody Form

Page ____ of ____

COC ID: 262796

Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order	30049071 Task 250	Project Name	30049071 Brickland Refinery 1Q2022	Parameter/Method Request for Analysis			
Work Order		Project Number	30049071 Task 250	A	8260_LL_W (8260 Benzene ("Unpreserved")-7 day HT		
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	B	8270_PAH_LVI (8270 PAHs (LVI))		
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	C			
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	D			
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	E			
Phone	(225) 292-1004	Phone	(303) 471-3599	F			
Fax		Fax		G			
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcadis-us.com	H			
				I			
				HS22060791 ARCADIS U.S., Inc. 30049071 Brickland Refinery 2Q2022			

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-3S	6/13/22	0900	W	8	3	X										
2	MW-3D	6/13/22	0945	W	8	3	X										
3	FB 061322	6/13/22	0950	W	8	3	X										
4	FD 061322	6/13/22	-	W	8	3	X										
5	MW-6S	6/13/22	1025	W	8	3	X										
6	MW-6D	6/13/22	1100	W	8	3	X										
7	MW-9S	6/13/22	1140	W	8	3	X										
8	EB 061322	6/13/22	1145	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign <i>Donna Salom</i>		Shipment Method FEDEX		Required Turnaround Time: (Check Box) ☒ 1-2 Business Days ☐ 3-5 Business Days ☐ 7-10 Business Days ☐ Other		Results Due Date:	
Relinquished by: <i>Donna Salom</i>	Date: 6/14/22	Time: 1200	Received by: <i>[Signature]</i>	Notes: [AGM Brickland NM]			
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>[Signature]</i>	Cooler ID: 47543	Cooler Temp.: 6°C	QC Package: (Check One Box Below) ☒ None ☐ 100% ☐ 50% ☐ 25% ☐ 10% ☐ 5% ☐ 1%	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory): <i>[Signature]</i>				

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

Notes: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Cincinnati, OH
+1 513 733 5336Everett, WA
+1 425 356 2600Fort Collins, CO
+1 970 490 1511Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 256081

Houston, TX
+1 281 530 5656Middletown, PA
+1 717 944 5541Spring City, PA
+1 610 948 4903Salt Lake City, UT
+1 801 266 7700South Charleston, WV
+1 304 356 3168York, PA
+1 717 505 5280

Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order	30049071 Task 250	Project Name	30049071 Brickland Refinery 4Q2021	Parameter/Method Request for Analysis			
Work Order		Project Number	30049071 Task 250	A	8260_LL_W (8260 Benzene ("Unpreserved")-7 day HIT		
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	B	8270_PAH_LVI (8270 PAHs (LVI))		
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	C			
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	D			
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	E			
Phone	(225) 292-1004	Phone	(303) 471-3699	F			
Fax		Fax		G			
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcadi	H			
				I			

HS22060791

ARCADIS U.S., Inc.
30049071 Brickland Refinery 2Q2022

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	6/14/22	0830	W	8	3	X										
2	MW-5	6/14/22	0910	W	8	3	X										
3	MW-8	6/14/22	0950	W	8	6	X	X									
4	FD 061422	6/14/22	—	W	8	3	X	X									
5	FB 061422	6/14/22	0955	W	8	6	X	X									
6	EB 061422	6/14/22	1000	W	8	6	X	X									
7	MW-11	6/14/22	1045	W	8	3	X										
8	MW-10	6/14/22	1135	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)		Results Due Date:	
<i>Doug Silva</i> Relinquished by: <i>Doug Silva</i> Relinquished by: _____		Date: 6/14/22 Time: 1201 Received by: _____ Received by (Laboratory): _____ Checked by (Laboratory): _____		☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour		Notes: [AGM Brickland NM] Cooler ID: _____ Cooler Temp.: _____ QC Package: (Check One Box Below) ☒ Level II Std QC ☐ Level III Std QC/Paw Date ☐ Level IV SWB46/CLP ☐ Other: _____	
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035							

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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 ALS 10450 St. Louis Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 565-1122 FAX. +1 281 565-1122	CUSTOMER SEAL Date: <u>6/15/23</u> Time: <u>12:00</u> Name: <u>ALH</u> Company: <u>ALH</u>		Seal Broken By: <u>ALH</u> Date: <u>6/15/23</u>

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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September 14, 2022

Brooke Fontenot
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS22090277**

Laboratory Results for: **30122717 Brickland Refinery 3Q2022**

Dear Brooke Fontenot,

ALS Environmental received 16 sample(s) on Sep 07, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dane J. Wacasey'.

Generated By: DANE.WACASEY

Dane J. Wacasey

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Work Order: HS22090277

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22090277-01	MW-3S	Water		06-Sep-2022 08:55	07-Sep-2022 09:20	☐
HS22090277-02	MW-3D	Water		06-Sep-2022 09:30	07-Sep-2022 09:20	☐
HS22090277-03	FD090622	Water		06-Sep-2022 00:00	07-Sep-2022 09:20	☐
HS22090277-04	FB090622	Water		06-Sep-2022 09:35	07-Sep-2022 09:20	☐
HS22090277-05	MW-6S	Water		06-Sep-2022 10:15	07-Sep-2022 09:20	☐
HS22090277-06	MW-6D	Water		06-Sep-2022 10:50	07-Sep-2022 09:20	☐
HS22090277-07	MW-9S	Water		06-Sep-2022 11:35	07-Sep-2022 09:20	☐
HS22090277-08	EB090622	Water		06-Sep-2022 11:40	07-Sep-2022 09:20	☐
HS22090277-09	MW-17	Water		06-Sep-2022 12:25	07-Sep-2022 09:20	☐
HS22090277-10	MW-5	Water		06-Sep-2022 13:05	07-Sep-2022 09:20	☐
HS22090277-11	MW-8	Water		06-Sep-2022 13:45	07-Sep-2022 09:20	☐
HS22090277-12	FD090622	Water		06-Sep-2022 00:00	07-Sep-2022 09:20	☐
HS22090277-13	FB090622	Water		06-Sep-2022 13:50	07-Sep-2022 09:20	☐
HS22090277-14	EB090622	Water		06-Sep-2022 13:55	07-Sep-2022 09:20	☐
HS22090277-15	MW-11	Water		06-Sep-2022 14:40	07-Sep-2022 09:20	☐
HS22090277-16	MW-10	Water		06-Sep-2022 15:25	07-Sep-2022 09:20	☐

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Work Order: HS22090277

CASE NARRATIVE

GCMS Semivolatiles by Method SW8270

Batch ID: 183339

Sample ID: HS22090281-01MS

- MS and MSD are for an unrelated sample

GCMS Volatiles by Method SW8260

Batch ID: R416857

Sample ID: MW-5 (HS22090277-10)

- Lowest practical dilution due to sample matrix and/or high concentration of non-target analyte(s).

Sample ID: MW-8 (HS22090277-11)

- Lowest practical dilution due to sample matrix and/or high concentration of non-target analyte(s).

Batch ID: R416740

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Sample ID: MW-3S
Collection Date: 06-Sep-2022 08:55

ANALYTICAL REPORT

WorkOrder:HS22090277
Lab ID:HS22090277-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	08-Sep-2022 13:28
Surr: 1,2-Dichloroethane-d4	103		70-126	%REC	1	08-Sep-2022 13:28
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	08-Sep-2022 13:28
Surr: Dibromofluoromethane	103		77-123	%REC	1	08-Sep-2022 13:28
Surr: Toluene-d8	104		82-127	%REC	1	08-Sep-2022 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 3Q2022	WorkOrder:HS22090277
Sample ID:	MW-3D	Lab ID:HS22090277-02
Collection Date:	06-Sep-2022 09:30	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	08-Sep-2022 13:48
Surr: 1,2-Dichloroethane-d4	104		70-126	%REC	1	08-Sep-2022 13:48
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	08-Sep-2022 13:48
Surr: Dibromofluoromethane	103		77-123	%REC	1	08-Sep-2022 13:48
Surr: Toluene-d8	103		82-127	%REC	1	08-Sep-2022 13:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 3Q2022	WorkOrder:HS22090277
Sample ID:	FD090622	Lab ID:HS22090277-03
Collection Date:	06-Sep-2022 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	08-Sep-2022 14:08
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	08-Sep-2022 14:08
Surr: 4-Bromofluorobenzene	103		77-113	%REC	1	08-Sep-2022 14:08
Surr: Dibromofluoromethane	102		77-123	%REC	1	08-Sep-2022 14:08
Surr: Toluene-d8	103		82-127	%REC	1	08-Sep-2022 14:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Sample ID: FB090622
Collection Date: 06-Sep-2022 09:35

ANALYTICAL REPORT

WorkOrder:HS22090277
Lab ID:HS22090277-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	09-Sep-2022 20:33
Surr: 1,2-Dichloroethane-d4	103		70-126	%REC	1	09-Sep-2022 20:33
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	09-Sep-2022 20:33
Surr: Dibromofluoromethane	102		77-123	%REC	1	09-Sep-2022 20:33
Surr: Toluene-d8	104		82-127	%REC	1	09-Sep-2022 20:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Sample ID: MW-6S
Collection Date: 06-Sep-2022 10:15

ANALYTICAL REPORT

WorkOrder:HS22090277
Lab ID:HS22090277-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	08-Sep-2022 14:27
Surr: 1,2-Dichloroethane-d4	106		70-126	%REC	1	08-Sep-2022 14:27
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	08-Sep-2022 14:27
Surr: Dibromofluoromethane	103		77-123	%REC	1	08-Sep-2022 14:27
Surr: Toluene-d8	103		82-127	%REC	1	08-Sep-2022 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 3Q2022	WorkOrder:HS22090277
Sample ID:	MW-6D	Lab ID:HS22090277-06
Collection Date:	06-Sep-2022 10:50	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	08-Sep-2022 14:47
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	08-Sep-2022 14:47
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	08-Sep-2022 14:47
Surr: Dibromofluoromethane	101		77-123	%REC	1	08-Sep-2022 14:47
Surr: Toluene-d8	104		82-127	%REC	1	08-Sep-2022 14:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 3Q2022	WorkOrder:HS22090277
Sample ID:	MW-9S	Lab ID:HS22090277-07
Collection Date:	06-Sep-2022 11:35	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260				Analyst: AKP
Benzene	< 0.0010		0.0010	mg/L	1	08-Sep-2022 15:07
Surr: 1,2-Dichloroethane-d4	106		70-126	%REC	1	08-Sep-2022 15:07
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	08-Sep-2022 15:07
Surr: Dibromofluoromethane	102		77-123	%REC	1	08-Sep-2022 15:07
Surr: Toluene-d8	103		82-127	%REC	1	08-Sep-2022 15:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Sample ID: EB090622
Collection Date: 06-Sep-2022 11:40

ANALYTICAL REPORT

WorkOrder:HS22090277
Lab ID:HS22090277-08
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	09-Sep-2022 20:53
Surr: 1,2-Dichloroethane-d4	101		70-126	%REC	1	09-Sep-2022 20:53
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	09-Sep-2022 20:53
Surr: Dibromofluoromethane	99.9		77-123	%REC	1	09-Sep-2022 20:53
Surr: Toluene-d8	104		82-127	%REC	1	09-Sep-2022 20:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Sample ID: MW-17
Collection Date: 06-Sep-2022 12:25

ANALYTICAL REPORT

WorkOrder:HS22090277
Lab ID:HS22090277-09
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	09-Sep-2022 22:51
Surr: 1,2-Dichloroethane-d4	104		70-126	%REC	1	09-Sep-2022 22:51
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	09-Sep-2022 22:51
Surr: Dibromofluoromethane	102		77-123	%REC	1	09-Sep-2022 22:51
Surr: Toluene-d8	103		82-127	%REC	1	09-Sep-2022 22:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 3Q2022	WorkOrder:HS22090277
Sample ID:	MW-5	Lab ID:HS22090277-10
Collection Date:	06-Sep-2022 13:05	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	0.23		0.025	mg/L	25	09-Sep-2022 23:52
Surr: 1,2-Dichloroethane-d4	106		70-126	%REC	25	09-Sep-2022 23:52
Surr: 4-Bromofluorobenzene	101		77-113	%REC	25	09-Sep-2022 23:52
Surr: Dibromofluoromethane	103		77-123	%REC	25	09-Sep-2022 23:52
Surr: Toluene-d8	103		82-127	%REC	25	09-Sep-2022 23:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 3Q2022
 Sample ID: MW-8
 Collection Date: 06-Sep-2022 13:45

ANALYTICAL REPORT

WorkOrder: HS22090277
 Lab ID: HS22090277-11
 Matrix: Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method: SW8260				Analyst: AKP
Benzene	0.23		0.025	mg/L	25	10-Sep-2022 00:15
Surr: 1,2-Dichloroethane-d4	103		70-126	%REC	25	10-Sep-2022 00:15
Surr: 4-Bromofluorobenzene	100		77-113	%REC	25	10-Sep-2022 00:15
Surr: Dibromofluoromethane	102		77-123	%REC	25	10-Sep-2022 00:15
Surr: Toluene-d8	103		82-127	%REC	25	10-Sep-2022 00:15
LOW-LEVEL PAHS - 8270D		Method: SW8270		Prep: SW3511 / 08-Sep-2022		Analyst: MBG
Acenaphthene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Acenaphthylene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Anthracene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Benz(a)anthracene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Benzo(a)pyrene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Benzo(b)fluoranthene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Benzo(g,h,i)perylene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Benzo(k)fluoranthene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Chrysene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Dibenz(a,h)anthracene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Fluoranthene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Fluorene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Indeno(1,2,3-cd)pyrene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Naphthalene	0.000219		0.000104	mg/L	1	13-Sep-2022 16:23
Phenanthrene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Pyrene	< 0.000104		0.000104	mg/L	1	13-Sep-2022 16:23
Surr: 2-Fluorobiphenyl	74.0		32-130	%REC	1	13-Sep-2022 16:23
Surr: 4-Terphenyl-d14	69.4		40-135	%REC	1	13-Sep-2022 16:23
Surr: Nitrobenzene-d5	78.1		45-142	%REC	1	13-Sep-2022 16:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 3Q2022
 Sample ID: FD090622
 Collection Date: 06-Sep-2022 00:00

ANALYTICAL REPORT

WorkOrder:HS22090277
 Lab ID:HS22090277-12
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 08-Sep-2022		Analyst: MBG
Acenaphthene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Acenaphthylene	0.000130		0.0000948	mg/L	1	13-Sep-2022 16:43
Anthracene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Benz(a)anthracene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Benzo(a)pyrene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Benzo(b)fluoranthene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Benzo(g,h,i)perylene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Benzo(k)fluoranthene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Chrysene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Dibenz(a,h)anthracene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Fluoranthene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Fluorene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Indeno(1,2,3-cd)pyrene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Naphthalene	0.000320		0.0000948	mg/L	1	13-Sep-2022 16:43
Phenanthrene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Pyrene	< 0.0000948		0.0000948	mg/L	1	13-Sep-2022 16:43
Surr: 2-Fluorobiphenyl	70.5		32-130	%REC	1	13-Sep-2022 16:43
Surr: 4-Terphenyl-d14	72.7		40-135	%REC	1	13-Sep-2022 16:43
Surr: Nitrobenzene-d5	109		45-142	%REC	1	13-Sep-2022 16:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 3Q2022
 Sample ID: FB090622
 Collection Date: 06-Sep-2022 13:50

ANALYTICAL REPORT

WorkOrder:HS22090277
 Lab ID:HS22090277-13
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260				Analyst: AKP
Benzene	< 0.0010		0.0010	mg/L	1	09-Sep-2022 21:13
Surr: 1,2-Dichloroethane-d4	101		70-126	%REC	1	09-Sep-2022 21:13
Surr: 4-Bromofluorobenzene	100		77-113	%REC	1	09-Sep-2022 21:13
Surr: Dibromofluoromethane	102		77-123	%REC	1	09-Sep-2022 21:13
Surr: Toluene-d8	104		82-127	%REC	1	09-Sep-2022 21:13
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 08-Sep-2022		Analyst: MBG
Acenaphthene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Acenaphthylene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Anthracene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Benz(a)anthracene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Benzo(a)pyrene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Benzo(b)fluoranthene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Benzo(g,h,i)perylene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Benzo(k)fluoranthene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Chrysene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Dibenz(a,h)anthracene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Fluoranthene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Fluorene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Indeno(1,2,3-cd)pyrene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Naphthalene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Phenanthrene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Pyrene	< 0.0000995		0.0000995	mg/L	1	13-Sep-2022 17:03
Surr: 2-Fluorobiphenyl	68.7		32-130	%REC	1	13-Sep-2022 17:03
Surr: 4-Terphenyl-d14	110		40-135	%REC	1	13-Sep-2022 17:03
Surr: Nitrobenzene-d5	86.1		45-142	%REC	1	13-Sep-2022 17:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 3Q2022
 Sample ID: EB090622
 Collection Date: 06-Sep-2022 13:55

ANALYTICAL REPORT

WorkOrder:HS22090277
 Lab ID:HS22090277-14
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	09-Sep-2022 21:32
Surr: 1,2-Dichloroethane-d4	101		70-126	%REC	1	09-Sep-2022 21:32
Surr: 4-Bromofluorobenzene	100		77-113	%REC	1	09-Sep-2022 21:32
Surr: Dibromofluoromethane	102		77-123	%REC	1	09-Sep-2022 21:32
Surr: Toluene-d8	103		82-127	%REC	1	09-Sep-2022 21:32
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 08-Sep-2022 Analyst: MBG		
Acenaphthene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Acenaphthylene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Anthracene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Benz(a)anthracene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Benzo(a)pyrene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Benzo(b)fluoranthene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Benzo(g,h,i)perylene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Benzo(k)fluoranthene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Chrysene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Dibenz(a,h)anthracene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Fluoranthene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Fluorene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Indeno(1,2,3-cd)pyrene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Naphthalene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Phenanthrene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Pyrene	< 0.000106		0.000106	mg/L	1	13-Sep-2022 17:23
Surr: 2-Fluorobiphenyl	68.3		32-130	%REC	1	13-Sep-2022 17:23
Surr: 4-Terphenyl-d14	111		40-135	%REC	1	13-Sep-2022 17:23
Surr: Nitrobenzene-d5	86.5		45-142	%REC	1	13-Sep-2022 17:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Sample ID: MW-11
Collection Date: 06-Sep-2022 14:40

ANALYTICAL REPORT

WorkOrder:HS22090277
Lab ID:HS22090277-15
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	09-Sep-2022 23:11
Surr: 1,2-Dichloroethane-d4	107		70-126	%REC	1	09-Sep-2022 23:11
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	09-Sep-2022 23:11
Surr: Dibromofluoromethane	104		77-123	%REC	1	09-Sep-2022 23:11
Surr: Toluene-d8	103		82-127	%REC	1	09-Sep-2022 23:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
Sample ID: MW-10
Collection Date: 06-Sep-2022 15:25

ANALYTICAL REPORT

WorkOrder:HS22090277
Lab ID:HS22090277-16
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	< 0.0010		0.0010	mg/L	1	09-Sep-2022 23:30
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	09-Sep-2022 23:30
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	09-Sep-2022 23:30
Surr: Dibromofluoromethane	102		77-123	%REC	1	09-Sep-2022 23:30
Surr: Toluene-d8	103		82-127	%REC	1	09-Sep-2022 23:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

Batch ID: 183339	Start Date: 08 Sep 2022 11:00	End Date: 08 Sep 2022 15:20
Method: SW3511	Prep Code: 3511_PAH	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22090277-11	1	31.85 (mL)	2 (mL)	0.06279	40 mL Amber
HS22090277-12	1	34.8 (mL)	2 (mL)	0.05747	40 mL Amber
HS22090277-13	1	33.16 (mL)	2 (mL)	0.06031	40 mL Amber
HS22090277-14	1	31.07 (mL)	2 (mL)	0.06437	40 mL Amber

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 183339 (0)		Test Name : LOW-LEVEL PAHS - 8270D			Matrix: Water	
HS22090277-11	MW-8	06 Sep 2022 13:45		08 Sep 2022 11:00	13 Sep 2022 16:23	1
HS22090277-12	FD090622	06 Sep 2022 00:00		08 Sep 2022 11:00	13 Sep 2022 16:43	1
HS22090277-13	FB090622	06 Sep 2022 13:50		08 Sep 2022 11:00	13 Sep 2022 17:03	1
HS22090277-14	EB090622	06 Sep 2022 13:55		08 Sep 2022 11:00	13 Sep 2022 17:23	1
Batch ID: R416740 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22090277-01	MW-3S	06 Sep 2022 08:55			08 Sep 2022 13:28	1
HS22090277-02	MW-3D	06 Sep 2022 09:30			08 Sep 2022 13:48	1
HS22090277-03	FD090622	06 Sep 2022 00:00			08 Sep 2022 14:08	1
HS22090277-05	MW-6S	06 Sep 2022 10:15			08 Sep 2022 14:27	1
HS22090277-06	MW-6D	06 Sep 2022 10:50			08 Sep 2022 14:47	1
HS22090277-07	MW-9S	06 Sep 2022 11:35			08 Sep 2022 15:07	1
Batch ID: R416857 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22090277-04	FB090622	06 Sep 2022 09:35			09 Sep 2022 20:33	1
HS22090277-08	EB090622	06 Sep 2022 11:40			09 Sep 2022 20:53	1
HS22090277-09	MW-17	06 Sep 2022 12:25			09 Sep 2022 22:51	1
HS22090277-10	MW-5	06 Sep 2022 13:05			09 Sep 2022 23:52	25
HS22090277-11	MW-8	06 Sep 2022 13:45			10 Sep 2022 00:15	25
HS22090277-13	FB090622	06 Sep 2022 13:50			09 Sep 2022 21:13	1
HS22090277-14	EB090622	06 Sep 2022 13:55			09 Sep 2022 21:32	1
HS22090277-15	MW-11	06 Sep 2022 14:40			09 Sep 2022 23:11	1
HS22090277-16	MW-10	06 Sep 2022 15:25			09 Sep 2022 23:30	1

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: 183339 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D						
MBLK	Sample ID: MBLK-183339	Units: ug/L		Analysis Date: 13-Sep-2022 09:33						
Client ID:	Run ID: SV-6_417133		SeqNo: 6848924		PrepDate: 08-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.100	0.100								
Acenaphthylene	< 0.100	0.100								
Anthracene	< 0.100	0.100								
Benz(a)anthracene	< 0.100	0.100								
Benzo(a)pyrene	< 0.100	0.100								
Benzo(b)fluoranthene	< 0.100	0.100								
Benzo(g,h,i)perylene	< 0.100	0.100								
Benzo(k)fluoranthene	< 0.100	0.100								
Chrysene	< 0.100	0.100								
Dibenz(a,h)anthracene	< 0.100	0.100								
Fluoranthene	< 0.100	0.100								
Fluorene	< 0.100	0.100								
Indeno(1,2,3-cd)pyrene	< 0.100	0.100								
Naphthalene	< 0.100	0.100								
Phenanthrene	< 0.100	0.100								
Pyrene	< 0.100	0.100								
Surr: 2-Fluorobiphenyl	2.343	0.100	3.03	0	77.3	32 - 130				
Surr: 4-Terphenyl-d14	3.255	0.100	3.03	0	107	40 - 135				
Surr: Nitrobenzene-d5	2.612	0.100	3.03	0	86.2	45 - 142				

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: 183339 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
LCS		Sample ID: LCS-183339	Units: ug/L		Analysis Date: 13-Sep-2022 09:53				
Client ID:		Run ID: SV-6_417133		SeqNo: 6848925	PrepDate: 08-Sep-2022	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	3.907	0.100	3.03	0	129	40 - 140			
Acenaphthylene	2.428	0.100	3.03	0	80.1	40 - 140			
Anthracene	3.314	0.100	3.03	0	109	40 - 140			
Benz(a)anthracene	2.621	0.100	3.03	0	86.5	40 - 140			
Benzo(a)pyrene	2.582	0.100	3.03	0	85.2	40 - 140			
Benzo(b)fluoranthene	2.486	0.100	3.03	0	82.1	40 - 140			
Benzo(g,h,i)perylene	2.112	0.100	3.03	0	69.7	40 - 140			
Benzo(k)fluoranthene	2.064	0.100	3.03	0	68.1	40 - 140			
Chrysene	2.829	0.100	3.03	0	93.4	40 - 140			
Dibenz(a,h)anthracene	2.214	0.100	3.03	0	73.1	40 - 140			
Fluoranthene	3.773	0.100	3.03	0	125	40 - 140			
Fluorene	2.862	0.100	3.03	0	94.5	40 - 140			
Indeno(1,2,3-cd)pyrene	2.233	0.100	3.03	0	73.7	40 - 140			
Naphthalene	2.162	0.100	3.03	0	71.4	40 - 140			
Phenanthrene	3.322	0.100	3.03	0	110	40 - 140			
Pyrene	2.378	0.100	3.03	0	78.5	40 - 140			
Surr: 2-Fluorobiphenyl	2.072	0.100	3.03	0	68.4	32 - 130			
Surr: 4-Terphenyl-d14	3.682	0.100	3.03	0	122	40 - 135			
Surr: Nitrobenzene-d5	2.584	0.100	3.03	0	85.3	45 - 142			

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: 183339 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
MS		Sample ID: HS22090281-01MS		Units: ug/L		Analysis Date: 13-Sep-2022 11:35			
Client ID:		Run ID: SV-6_417133		SeqNo: 6848927		PrepDate: 08-Sep-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	18.05	0.104	3.136	0	576	40 - 140			SE
Acenaphthylene	5.787	0.104	3.136	1.702	130	40 - 140			
Anthracene	3.681	0.104	3.136	0.7694	92.8	40 - 140			
Benz(a)anthracene	2.278	0.104	3.136	0	72.6	40 - 140			
Benzo(a)pyrene	2.911	0.104	3.136	0	92.8	40 - 140			
Benzo(b)fluoranthene	2.234	0.104	3.136	0	71.2	40 - 140			
Benzo(g,h,i)perylene	2.62	0.104	3.136	0	83.5	40 - 140			
Benzo(k)fluoranthene	2.552	0.104	3.136	0	81.4	40 - 140			
Chrysene	2.567	0.104	3.136	0	81.8	40 - 140			
Dibenz(a,h)anthracene	2.44	0.104	3.136	0	77.8	40 - 140			
Fluoranthene	3.033	0.104	3.136	0	96.7	40 - 140			
Fluorene	12.64	0.104	3.136	7.964	149	40 - 140			SE
Indeno(1,2,3-cd)pyrene	2.251	0.104	3.136	0	71.8	40 - 140			
Naphthalene	3.967	0.104	3.136	1.63	74.5	40 - 140			
Phenanthrene	10.49	0.104	3.136	7.442	97.0	40 - 140			E
Pyrene	2.589	0.104	3.136	0	82.5	40 - 140			
Surr: 2-Fluorobiphenyl	3.272	0.104	3.136	0	104	32 - 130			
Surr: 4-Terphenyl-d14	3.898	0.104	3.136	0	124	40 - 135			
Surr: Nitrobenzene-d5	3.053	0.104	3.136	0	97.3	45 - 142			

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: 183339 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D						
MSD		Sample ID: HS22090281-01MSD		Units: ug/L		Analysis Date: 13-Sep-2022 11:55				
Client ID:		Run ID: SV-6_417133		SeqNo: 6848928		PrepDate: 08-Sep-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	20.22	0.106	3.198	0	632	40 - 140	18.05	11.3	25	SE
Acenaphthylene	6.439	0.106	3.198	1.702	148	40 - 140	5.787	10.7	25	S
Anthracene	5.097	0.106	3.198	0.7694	135	40 - 140	3.681	32.3	25	R
Benz(a)anthracene	2.772	0.106	3.198	0	86.7	40 - 140	2.278	19.6	25	
Benzo(a)pyrene	2.773	0.106	3.198	0	86.7	40 - 140	2.911	4.87	25	
Benzo(b)fluoranthene	2.373	0.106	3.198	0	74.2	40 - 140	2.234	6.02	25	
Benzo(g,h,i)perylene	2.785	0.106	3.198	0	87.1	40 - 140	2.62	6.11	25	
Benzo(k)fluoranthene	2.995	0.106	3.198	0	93.7	40 - 140	2.552	16	25	
Chrysene	3.387	0.106	3.198	0	106	40 - 140	2.567	27.5	25	R
Dibenz(a,h)anthracene	2.926	0.106	3.198	0	91.5	40 - 140	2.44	18.1	25	
Fluoranthene	3.923	0.106	3.198	0	123	40 - 140	3.033	25.6	25	R
Fluorene	14.41	0.106	3.198	7.964	202	40 - 140	12.64	13.1	25	SE
Indeno(1,2,3-cd)pyrene	2.536	0.106	3.198	0	79.3	40 - 140	2.251	11.9	25	
Naphthalene	4.353	0.106	3.198	1.63	85.1	40 - 140	3.967	9.27	25	
Phenanthrene	13.76	0.106	3.198	7.442	198	40 - 140	10.49	27	25	SRE
Pyrene	2.901	0.106	3.198	0	90.7	40 - 140	2.589	11.4	25	
Surr: 2-Fluorobiphenyl	3.482	0.106	3.198	0	109	32 - 130	3.272	6.21	25	
Surr: 4-Terphenyl-d14	3.238	0.106	3.198	0	101	40 - 135	3.898	18.5	25	
Surr: Nitrobenzene-d5	3.306	0.106	3.198	0	103	45 - 142	3.053	7.97	25	
The following samples were analyzed in this batch:										
HS22090277-11			HS22090277-12			HS22090277-13			HS22090277-14	

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: R416740 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220908	Units: ug/L		Analysis Date: 08-Sep-2022 09:50					
Client ID:	Run ID: VOA7_416740	SeqNo: 6839561		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	51.79	1.0	50	0	104	70 - 123			
Surr: 4-Bromofluorobenzene	49.82	1.0	50	0	99.6	77 - 113			
Surr: Dibromofluoromethane	51.21	1.0	50	0	102	73 - 126			
Surr: Toluene-d8	51.68	1.0	50	0	103	81 - 120			

LCS	Sample ID: VLCSW-220908	Units: ug/L		Analysis Date: 08-Sep-2022 09:11					
Client ID:	Run ID: VOA7_416740	SeqNo: 6839559		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.24	1.0	20	0	96.2	74 - 120			
Surr: 1,2-Dichloroethane-d4	52.61	1.0	50	0	105	70 - 123			
Surr: 4-Bromofluorobenzene	50.7	1.0	50	0	101	77 - 113			
Surr: Dibromofluoromethane	50.61	1.0	50	0	101	73 - 126			
Surr: Toluene-d8	51.79	1.0	50	0	104	81 - 120			

MS	Sample ID: HS22090277-01MS	Units: ug/L		Analysis Date: 08-Sep-2022 17:17					
Client ID: MW-3S	Run ID: VOA7_416740	SeqNo: 6840676		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.36	1.0	20	0	96.8	70 - 127			
Surr: 1,2-Dichloroethane-d4	52.86	1.0	50	0	106	70 - 126			
Surr: 4-Bromofluorobenzene	51.19	1.0	50	0	102	77 - 113			
Surr: Dibromofluoromethane	51.28	1.0	50	0	103	77 - 123			
Surr: Toluene-d8	51.74	1.0	50	0	103	82 - 127			

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: R416740 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C							
MSD		Sample ID: HS22090277-01MSD		Units: ug/L		Analysis Date: 08-Sep-2022 17:37					
Client ID: MW-3S		Run ID: VOA7_416740		SeqNo: 6840677		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	18.43	1.0	20	0	92.2	70 - 127	19.36	4.9	20		
Surr: 1,2-Dichloroethane-d4	52.37	1.0	50	0	105	70 - 126	52.86	0.93	20		
Surr: 4-Bromofluorobenzene	51.15	1.0	50	0	102	77 - 113	51.19	0.0816	20		
Surr: Dibromofluoromethane	50.76	1.0	50	0	102	77 - 123	51.28	1.03	20		
Surr: Toluene-d8	52.03	1.0	50	0	104	82 - 127	51.74	0.566	20		
The following samples were analyzed in this batch:		HS22090277-01 HS22090277-06		HS22090277-02 HS22090277-07		HS22090277-03		HS22090277-05			

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: R416857 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220909	Units: ug/L		Analysis Date: 09-Sep-2022 20:14					
Client ID:	Run ID: VOA7_416857	SeqNo: 6842633		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	51.41	1.0	50	0	103	70 - 123			
Surr: 4-Bromofluorobenzene	50.34	1.0	50	0	101	77 - 113			
Surr: Dibromofluoromethane	50.74	1.0	50	0	101	73 - 126			
Surr: Toluene-d8	51.93	1.0	50	0	104	81 - 120			

LCS	Sample ID: VLCSW-220909	Units: ug/L		Analysis Date: 09-Sep-2022 19:34					
Client ID:	Run ID: VOA7_416857	SeqNo: 6842632		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.23	1.0	20	0	91.2	74 - 120			
Surr: 1,2-Dichloroethane-d4	51.41	1.0	50	0	103	70 - 123			
Surr: 4-Bromofluorobenzene	51	1.0	50	0	102	77 - 113			
Surr: Dibromofluoromethane	50.66	1.0	50	0	101	73 - 126			
Surr: Toluene-d8	51.94	1.0	50	0	104	81 - 120			

MS	Sample ID: HS22090277-16MS	Units: ug/L		Analysis Date: 10-Sep-2022 03:32					
Client ID: MW-10	Run ID: VOA7_416857	SeqNo: 6842654		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	21.29	1.0	20	0	106	70 - 127			
Surr: 1,2-Dichloroethane-d4	52.38	1.0	50	0	105	70 - 126			
Surr: 4-Bromofluorobenzene	50.66	1.0	50	0	101	77 - 113			
Surr: Dibromofluoromethane	50.71	1.0	50	0	101	77 - 123			
Surr: Toluene-d8	51.53	1.0	50	0	103	82 - 127			

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

QC BATCH REPORT

Batch ID: R416857 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MSD		Sample ID: HS22090277-16MSD		Units: ug/L		Analysis Date: 10-Sep-2022 03:51			
Client ID: MW-10		Run ID: VOA7_416857		SeqNo: 6842655		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.25	1.0	20	0	101	70 - 127	21.29	5.01	20
Surr: 1,2-Dichloroethane-d4	52.29	1.0	50	0	105	70 - 126	52.38	0.187	20
Surr: 4-Bromofluorobenzene	50.98	1.0	50	0	102	77 - 113	50.66	0.626	20
Surr: Dibromofluoromethane	51.03	1.0	50	0	102	77 - 123	50.71	0.633	20
Surr: Toluene-d8	51.93	1.0	50	0	104	82 - 127	51.53	0.766	20
The following samples were analyzed in this batch:		HS22090277-04		HS22090277-08		HS22090277-09		HS22090277-10	
		HS22090277-11		HS22090277-13		HS22090277-14		HS22090277-15	
		HS22090277-16							

ALS Houston, US

Date: 14-Sep-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 3Q2022
WorkOrder: HS22090277

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US

Date: 14-Sep-22

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

ALS Houston, US

Date: 14-Sep-22

Sample Receipt Checklist

Work Order ID: HS22090277

Date/Time Received: 07-Sep-2022 09:20

Client Name: Arcadis-Baton Rouge

Received by: Corey Grandits

Completed By: /S/ Niles D. Ranchod

07-Sep-2022 12:44

Reviewed by: /S/ Dane J. Wacasey

14-Sep-2022 23:17

eSignature

Date/Time

eSignature

Date/Time

Matrices: WaterCarrier name: FedEx Priority Overnight

Shipping container/cooler in good condition?

Yes ☒No ☐Not Present ☐

Custody seals intact on shipping container/cooler?

Yes ☒No ☐Not Present ☐

Custody seals intact on sample bottles?

Yes ☐No ☐Not Present ☒

VOA/TX1005/TX1006 Solids in hermetically sealed vials?

Yes ☐No ☐Not Present ☒

Chain of custody present?

Yes ☒No ☐

2 Page(s)

Chain of custody signed when relinquished and received?

Yes ☒No ☐

COC IDs:276464/276465

Samplers name present on COC?

Yes ☒No ☐

Chain of custody agrees with sample labels?

Yes ☒No ☐

Samples in proper container/bottle?

Yes ☒No ☐

Sample containers intact?

Yes ☒No ☐

Sufficient sample volume for indicated test?

Yes ☒No ☐

All samples received within holding time?

Yes ☒No ☐

Container/Temp Blank temperature in compliance?

Yes ☒No ☐

Temperature(s)/Thermometer(s):

2.8C/2.6C UC/C

IR #31

Cooler(s)/Kit(s):

49510

Date/Time sample(s) sent to storage:

09/07/2022 13:00

Water - VOA vials have zero headspace?

Yes ☒No ☐No VOA vials submitted ☐

Water - pH acceptable upon receipt?

Yes ☐No ☐N/A ☒

pH adjusted?

Yes ☐No ☐N/A ☒

pH adjusted by:

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:

Cincinnati, OH
+1 513 733 5336Fort Collins, CO
+1 970 490 1511Everett, WA
+1 425 356 2600Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 276464

HS22090277

ARCADIS U.S., Inc.

30122717 Brickland Refinery 3Q2022



Customer Information		Project Information	
Purchase Order	30122717 Task 250	Project Name	30122717 Brickland Refinery 3Q2022
Work Order		Project Number	30122717 Task 250
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129
Phone	(225) 292-1004	Phone	(303) 471-3699
Fax		Fax	
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcadi

V04009
LVI-006

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	mw - 3S	9-6-22	0855	W	0	3	X										
2	mw - 3D	9-6-22	0930	W	0	3	X										
3	FD090622	9-6-22		W	0	3	X										
4	FBE090622	9-6-22	0935	W	0	3	X										
5	mw - 6S	9-6-22	1015	W	0	3	X										
6	mw - 6D	9-6-22	1050	W	0	3	X										
7	mw - 9S	9-6-22	1135	W	0	3	X										
8	LB090622	9-6-22	1140	W	0	3	X										
9																	
0																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)		Results Due Date:	
 Date: 9-6-22 Time: 1600 Received by: Date: 9-6-22 Time: 1600 Checked by (Laboratory): Date: 9-6-22 Time: 1600		FED EX		☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour			
Notes: [AGM Brickland NM]				QC Package: (Check One Box Below)			
Cooler ID		Cooler Temp.		☒ Level II Std CC ☐ Level III Std CC/Raw Data ☐ Level IV SW/846/CLP ☐ Other		☐ TRRP Checklist ☐ TRRP Level IV	
44516		2.8					
1831							

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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+1 425 356 2600Fort Collins, CO
+1 970 490 1511Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 276465

HS22090277

ARCADIS U.S., Inc.

30122717 Brickland Refinery 3Q2022



Customer Information		Project Information		ALS Project Manager:	
Purchase Order	30122717 Task 250	Project Name	30122717 Brickland Refinery 3Q2022	A	8260_LL_W (8260 Benzene ("Unpreserved")-7 day HT
Work Order		Project Number	30122717 Task 250	B	8270_PAH_LVI (8270 PAHs (LVI))
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
City/State/Zip	Baton Rouge, LA 70815	City/State/Zip	Highlands Ranch CO 80129	F	
Phone	(225) 292-1004	Phone	(303) 471-3699	G	
Fax		Fax		H	
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcad	I	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW - 17	9-6-22	1225	W	8	3	X										
2	MW - 5	9-6-22	1305	W	8	3	X										
3	MW - 8	9-6-22	1345	W	8	6	X	X									
4	FD 090622	9-6-22	—	W	8	3		X									
5	FB 090622	9-6-22	1350	W	8	6	X	X									
6	EB 090622	9-6-22	1355	W	8	6	X	X									
7	MW - 11	9-6-22	1440	W	8	3	X										
8	MW - 10	9-6-22	1525	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)		Results Due Date:	
Date: 9-6-22 Time: 1601 Received by: [Signature] Received by Laboratory: [Signature] Checked by (Laboratory): [Signature]		☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour		Notes: [AGM Brickland NM] Cooler ID: 94510 Cooler Temp: 2.8 QC Package: (Check One Box Below) ☒ Level II Std OC ☐ Level III Std OC/Raw Data ☐ Level IV SW846/CLP ☐ Other:		TRRP Checklist TRRP Level IV	
Reserve Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035							

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 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	CUSTODY SEAL Date: 9-6-22 Time: 1600 Name: ARCADIS Company: ARCADIS		Seal Broken By: SM Date: 09/07/22
	49510		
	49510		



49510

ORIGIN ID: SGRA (915) 603-1015
 DUG SOLON
 ARCADIS J.S., INC.
 401 E MAIN STREET
 SUITE 400
 EL PASO, TX 799011358
 UNITED STATES US

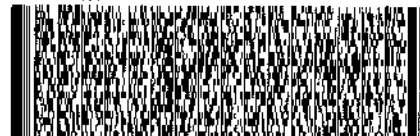
SHIP DATE: 30AUG22
 ACTWT: 1.00 LB MAX
 CAD: 0221347/DAFE3612
 DIMS: 25x.4x14 IN

TO SHIPPING DEPT
 ALS LABORATORY GROUP
 10450 STANCLIFF RD
 SUITE 210
 HOUSTON TX 77099

(281) 630-6668

REF: BRICKLANDREFINERYHUNTSMAN3022-87412-DW

RMA: III (III) III

FedEx
Express

FedEx
 5789 1997 4490

WED - 07 SEP AA
 PRIORITY OVERNIGHT

XA SGRA

77099
 TX-US
 IAH



58161155860000



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 16, 2022

Brooke Fontenot
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS22120483**

Laboratory Results for: **30122717 Brickland Refinery 4Q2022**

Dear Brooke Fontenot,

ALS Environmental received 16 sample(s) on Dec 08, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER

Dane J. Wacasey

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Work Order: HS22120483

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22120483-01	MW-3S	Water		06-Dec-2022 09:45	08-Dec-2022 09:10	☐
HS22120483-02	MW-3D	Water		06-Dec-2022 10:30	08-Dec-2022 09:10	☐
HS22120483-03	FB120622	Water		06-Dec-2022 10:35	08-Dec-2022 09:10	☐
HS22120483-04	FD120622	Water		06-Dec-2022 00:00	08-Dec-2022 09:10	☐
HS22120483-05	MW-6S	Water		06-Dec-2022 11:20	08-Dec-2022 09:10	☐
HS22120483-06	MW-6D	Water		06-Dec-2022 12:05	08-Dec-2022 09:10	☐
HS22120483-07	MW-9S	Water		06-Dec-2022 13:00	08-Dec-2022 09:10	☐
HS22120483-08	EB120622	Water		06-Dec-2022 13:05	08-Dec-2022 09:10	☐
HS22120483-09	MW-17	Water		07-Dec-2022 08:15	08-Dec-2022 09:10	☐
HS22120483-10	MW-11	Water		07-Dec-2022 09:10	08-Dec-2022 09:10	☐
HS22120483-11	MW-5	Water		07-Dec-2022 10:05	08-Dec-2022 09:10	☐
HS22120483-12	MW-8	Water		07-Dec-2022 10:50	08-Dec-2022 09:10	☐
HS22120483-13	FD120722	Water		07-Dec-2022 00:00	08-Dec-2022 09:10	☐
HS22120483-14	FB120722	Water		07-Dec-2022 10:55	08-Dec-2022 09:10	☐
HS22120483-15	EB120722	Water		07-Dec-2022 11:00	08-Dec-2022 09:10	☐
HS22120483-16	MW-10	Water		06-Dec-2022 11:55	08-Dec-2022 09:10	☐

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Work Order: HS22120483

CASE NARRATIVE

GCMS Semivolatiles by Method SW8270**Batch ID: 187240****Sample ID: LCSD-187240**

- LCSD RPD was above the upper control limit. The individual recoveries were in control. (Benzo(g,h,i)perylene)

GCMS Volatiles by Method SW8260**Batch ID: R423703****Sample ID: MW-11 (HS22120483-10)**

- Surrogate failed outside control limits high. This surrogate is not associated with the target compounds.

Sample ID: VBLKW-221211

- Surrogate failed outside control limits high. This surrogate is not associated with the target compounds.

Batch ID: R423609,R423670

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Sample ID: MW-3S
Collection Date: 06-Dec-2022 09:45

ANALYTICAL REPORT

WorkOrder:HS22120483
Lab ID:HS22120483-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 03:06
Surr: 1,2-Dichloroethane-d4	104		70-126	%REC	1	10-Dec-2022 03:06
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	10-Dec-2022 03:06
Surr: Dibromofluoromethane	99.6		77-123	%REC	1	10-Dec-2022 03:06
Surr: Toluene-d8	101		82-127	%REC	1	10-Dec-2022 03:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 4Q2022	WorkOrder:HS22120483
Sample ID:	MW-3D	Lab ID:HS22120483-02
Collection Date:	06-Dec-2022 10:30	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 03:28
Surr: 1,2-Dichloroethane-d4	106		70-126	%REC	1	10-Dec-2022 03:28
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	10-Dec-2022 03:28
Surr: Dibromofluoromethane	100		77-123	%REC	1	10-Dec-2022 03:28
Surr: Toluene-d8	102		82-127	%REC	1	10-Dec-2022 03:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Sample ID: FB120622
Collection Date: 06-Dec-2022 10:35

ANALYTICAL REPORT

WorkOrder:HS22120483
Lab ID:HS22120483-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 03:51
Surr: 1,2-Dichloroethane-d4	104		70-126	%REC	1	10-Dec-2022 03:51
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	10-Dec-2022 03:51
Surr: Dibromofluoromethane	103		77-123	%REC	1	10-Dec-2022 03:51
Surr: Toluene-d8	99.3		82-127	%REC	1	10-Dec-2022 03:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Sample ID: FD120622
Collection Date: 06-Dec-2022 00:00

ANALYTICAL REPORT

WorkOrder:HS22120483
Lab ID:HS22120483-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 04:13
Surr: 1,2-Dichloroethane-d4	109		70-126	%REC	1	10-Dec-2022 04:13
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	10-Dec-2022 04:13
Surr: Dibromofluoromethane	103		77-123	%REC	1	10-Dec-2022 04:13
Surr: Toluene-d8	102		82-127	%REC	1	10-Dec-2022 04:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 4Q2022	WorkOrder:HS22120483
Sample ID:	MW-6S	Lab ID:HS22120483-05
Collection Date:	06-Dec-2022 11:20	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	09-Dec-2022 18:51
Surr: 1,2-Dichloroethane-d4	107		70-126	%REC	1	09-Dec-2022 18:51
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	09-Dec-2022 18:51
Surr: Dibromofluoromethane	104		77-123	%REC	1	09-Dec-2022 18:51
Surr: Toluene-d8	102		82-127	%REC	1	09-Dec-2022 18:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Sample ID: MW-6D
Collection Date: 06-Dec-2022 12:05

ANALYTICAL REPORT

WorkOrder:HS22120483
Lab ID:HS22120483-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	09-Dec-2022 19:13
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	09-Dec-2022 19:13
Surr: 4-Bromofluorobenzene	99.9		77-113	%REC	1	09-Dec-2022 19:13
Surr: Dibromofluoromethane	98.8		77-123	%REC	1	09-Dec-2022 19:13
Surr: Toluene-d8	101		82-127	%REC	1	09-Dec-2022 19:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 4Q2022	WorkOrder:HS22120483
Sample ID:	MW-9S	Lab ID:HS22120483-07
Collection Date:	06-Dec-2022 13:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	09-Dec-2022 19:36
Surr: 1,2-Dichloroethane-d4	108		70-126	%REC	1	09-Dec-2022 19:36
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	09-Dec-2022 19:36
Surr: Dibromofluoromethane	104		77-123	%REC	1	09-Dec-2022 19:36
Surr: Toluene-d8	103		82-127	%REC	1	09-Dec-2022 19:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Sample ID: EB120622
Collection Date: 06-Dec-2022 13:05

ANALYTICAL REPORT

WorkOrder:HS22120483
Lab ID:HS22120483-08
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	09-Dec-2022 13:13
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	09-Dec-2022 13:13
Surr: 4-Bromofluorobenzene	104		77-113	%REC	1	09-Dec-2022 13:13
Surr: Dibromofluoromethane	103		77-123	%REC	1	09-Dec-2022 13:13
Surr: Toluene-d8	102		82-127	%REC	1	09-Dec-2022 13:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Sample ID: MW-17
Collection Date: 07-Dec-2022 08:15

ANALYTICAL REPORT

WorkOrder:HS22120483
Lab ID:HS22120483-09
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 04:36
Surr: 1,2-Dichloroethane-d4	104		70-126	%REC	1	10-Dec-2022 04:36
Surr: 4-Bromofluorobenzene	103		77-113	%REC	1	10-Dec-2022 04:36
Surr: Dibromofluoromethane	103		77-123	%REC	1	10-Dec-2022 04:36
Surr: Toluene-d8	101		82-127	%REC	1	10-Dec-2022 04:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
Sample ID: MW-11
Collection Date: 07-Dec-2022 09:10

ANALYTICAL REPORT

WorkOrder:HS22120483
Lab ID:HS22120483-10
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	11-Dec-2022 10:24
Surr: 1,2-Dichloroethane-d4	94.2		70-126	%REC	1	11-Dec-2022 10:24
Surr: 4-Bromofluorobenzene	116	S	77-113	%REC	1	11-Dec-2022 10:24
Surr: Dibromofluoromethane	85.5		77-123	%REC	1	11-Dec-2022 10:24
Surr: Toluene-d8	90.1		82-127	%REC	1	11-Dec-2022 10:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 4Q2022	WorkOrder:HS22120483
Sample ID:	MW-5	Lab ID:HS22120483-11
Collection Date:	07-Dec-2022 10:05	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	0.30		0.010	mg/L	10	11-Dec-2022 11:25
Surr: 1,2-Dichloroethane-d4	97.1		70-126	%REC	10	11-Dec-2022 11:25
Surr: 4-Bromofluorobenzene	108		77-113	%REC	10	11-Dec-2022 11:25
Surr: Dibromofluoromethane	89.6		77-123	%REC	10	11-Dec-2022 11:25
Surr: Toluene-d8	91.1		82-127	%REC	10	11-Dec-2022 11:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 4Q2022
 Sample ID: MW-8
 Collection Date: 07-Dec-2022 10:50

ANALYTICAL REPORT

WorkOrder:HS22120483
 Lab ID:HS22120483-12
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260				Analyst: FT
Benzene	0.0012		0.0010	mg/L	1	10-Dec-2022 05:43
Surr: 1,2-Dichloroethane-d4	104		70-126	%REC	1	10-Dec-2022 05:43
Surr: 4-Bromofluorobenzene	103		77-113	%REC	1	10-Dec-2022 05:43
Surr: Dibromofluoromethane	98.6		77-123	%REC	1	10-Dec-2022 05:43
Surr: Toluene-d8	102		82-127	%REC	1	10-Dec-2022 05:43
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 12-Dec-2022		Analyst: MBG
Acenaphthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Acenaphthylene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Anthracene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Benz(a)anthracene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Benzo(a)pyrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Benzo(b)fluoranthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Benzo(g,h,i)perylene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Benzo(k)fluoranthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Chrysene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Dibenz(a,h)anthracene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Fluoranthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Fluorene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Indeno(1,2,3-cd)pyrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Naphthalene	0.000509		0.000105	mg/L	1	12-Dec-2022 13:48
Phenanthrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Pyrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 13:48
Surr: 2-Fluorobiphenyl	111		32-130	%REC	1	12-Dec-2022 13:48
Surr: 4-Terphenyl-d14	97.3		40-135	%REC	1	12-Dec-2022 13:48
Surr: Nitrobenzene-d5	139		45-142	%REC	1	12-Dec-2022 13:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 4Q2022
 Sample ID: FD120722
 Collection Date: 07-Dec-2022 00:00

ANALYTICAL REPORT

WorkOrder:HS22120483
 Lab ID:HS22120483-13
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		Method:SW8270			Prep:SW3511 / 12-Dec-2022	Analyst: MBG
Acenaphthene	0.000170		0.000103	mg/L	1	12-Dec-2022 14:08
Acenaphthylene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Anthracene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Benz(a)anthracene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Benzo(a)pyrene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Benzo(b)fluoranthene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Benzo(g,h,i)perylene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Benzo(k)fluoranthene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Chrysene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Dibenz(a,h)anthracene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Fluoranthene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Fluorene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Indeno(1,2,3-cd)pyrene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Naphthalene	0.000406		0.000103	mg/L	1	12-Dec-2022 14:08
Phenanthrene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Pyrene	< 0.000103		0.000103	mg/L	1	12-Dec-2022 14:08
Surr: 2-Fluorobiphenyl	109		32-130	%REC	1	12-Dec-2022 14:08
Surr: 4-Terphenyl-d14	103		40-135	%REC	1	12-Dec-2022 14:08
Surr: Nitrobenzene-d5	137		45-142	%REC	1	12-Dec-2022 14:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 4Q2022
 Sample ID: FB120722
 Collection Date: 07-Dec-2022 10:55

ANALYTICAL REPORT

WorkOrder:HS22120483
 Lab ID:HS22120483-14
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260				Analyst: FT
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 00:06
Surr: 1,2-Dichloroethane-d4	101		70-126	%REC	1	10-Dec-2022 00:06
Surr: 4-Bromofluorobenzene	99.7		77-113	%REC	1	10-Dec-2022 00:06
Surr: Dibromofluoromethane	102		77-123	%REC	1	10-Dec-2022 00:06
Surr: Toluene-d8	98.1		82-127	%REC	1	10-Dec-2022 00:06
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 12-Dec-2022		Analyst: MBG
Acenaphthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Acenaphthylene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Anthracene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Benz(a)anthracene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Benzo(a)pyrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Benzo(b)fluoranthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Benzo(g,h,i)perylene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Benzo(k)fluoranthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Chrysene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Dibenz(a,h)anthracene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Fluoranthene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Fluorene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Indeno(1,2,3-cd)pyrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Naphthalene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Phenanthrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Pyrene	< 0.000105		0.000105	mg/L	1	12-Dec-2022 14:28
Surr: 2-Fluorobiphenyl	127		32-130	%REC	1	12-Dec-2022 14:28
Surr: 4-Terphenyl-d14	131		40-135	%REC	1	12-Dec-2022 14:28
Surr: Nitrobenzene-d5	141		45-142	%REC	1	12-Dec-2022 14:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
 Project: 30122717 Brickland Refinery 4Q2022
 Sample ID: EB120722
 Collection Date: 07-Dec-2022 11:00

ANALYTICAL REPORT

WorkOrder:HS22120483
 Lab ID:HS22120483-15
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260				Analyst: FT
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 00:28
Surr: 1,2-Dichloroethane-d4	100		70-126	%REC	1	10-Dec-2022 00:28
Surr: 4-Bromofluorobenzene	101		77-113	%REC	1	10-Dec-2022 00:28
Surr: Dibromofluoromethane	102		77-123	%REC	1	10-Dec-2022 00:28
Surr: Toluene-d8	99.8		82-127	%REC	1	10-Dec-2022 00:28
LOW-LEVEL PAHS - 8270D		Method:SW8270		Prep:SW3511 / 12-Dec-2022		Analyst: MBG
Acenaphthene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Acenaphthylene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Anthracene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Benz(a)anthracene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Benzo(a)pyrene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Benzo(b)fluoranthene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Benzo(g,h,i)perylene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Benzo(k)fluoranthene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Chrysene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Dibenz(a,h)anthracene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Fluoranthene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Fluorene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Indeno(1,2,3-cd)pyrene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Naphthalene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Phenanthrene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Pyrene	< 0.000107		0.000107	mg/L	1	12-Dec-2022 14:48
Surr: 2-Fluorobiphenyl	128		32-130	%REC	1	12-Dec-2022 14:48
Surr: 4-Terphenyl-d14	130		40-135	%REC	1	12-Dec-2022 14:48
Surr: Nitrobenzene-d5	127		45-142	%REC	1	12-Dec-2022 14:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 16-Dec-22

Client:	ARCADIS U.S., Inc.	ANALYTICAL REPORT
Project:	30122717 Brickland Refinery 4Q2022	WorkOrder:HS22120483
Sample ID:	MW-10	Lab ID:HS22120483-16
Collection Date:	06-Dec-2022 11:55	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	< 0.0010		0.0010	mg/L	1	10-Dec-2022 06:06
Surr: 1,2-Dichloroethane-d4	107		70-126	%REC	1	10-Dec-2022 06:06
Surr: 4-Bromofluorobenzene	102		77-113	%REC	1	10-Dec-2022 06:06
Surr: Dibromofluoromethane	102		77-123	%REC	1	10-Dec-2022 06:06
Surr: Toluene-d8	98.5		82-127	%REC	1	10-Dec-2022 06:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

Batch ID: 187240	Start Date: 12 Dec 2022 07:00	End Date: 12 Dec 2022 10:00
Method: SW3511	Prep Code: 3511_PAH	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22120483-12		31.37 (mL)	2 (mL)	0.06376	40 mL Amber
HS22120483-13		32.07 (mL)	2 (mL)	0.06236	40 mL Amber
HS22120483-14		31.29 (mL)	2 (mL)	0.06392	40 mL Amber
HS22120483-15		30.79 (mL)	2 (mL)	0.06496	40 mL Amber

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 187240 (0)		Test Name : LOW-LEVEL PAHS - 8270D			Matrix: Water	
HS22120483-12	MW-8	07 Dec 2022 10:50		12 Dec 2022 07:00	12 Dec 2022 13:48	1
HS22120483-13	FD120722	07 Dec 2022 00:00		12 Dec 2022 07:00	12 Dec 2022 14:08	1
HS22120483-14	FB120722	07 Dec 2022 10:55		12 Dec 2022 07:00	12 Dec 2022 14:28	1
HS22120483-15	EB120722	07 Dec 2022 11:00		12 Dec 2022 07:00	12 Dec 2022 14:48	1
Batch ID: R423609 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22120483-05	MW-6S	06 Dec 2022 11:20			09 Dec 2022 18:51	1
HS22120483-06	MW-6D	06 Dec 2022 12:05			09 Dec 2022 19:13	1
HS22120483-07	MW-9S	06 Dec 2022 13:00			09 Dec 2022 19:36	1
HS22120483-08	EB120622	06 Dec 2022 13:05			09 Dec 2022 13:13	1
Batch ID: R423670 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22120483-01	MW-3S	06 Dec 2022 09:45			10 Dec 2022 03:06	1
HS22120483-02	MW-3D	06 Dec 2022 10:30			10 Dec 2022 03:28	1
HS22120483-03	FB120622	06 Dec 2022 10:35			10 Dec 2022 03:51	1
HS22120483-04	FD120622	06 Dec 2022 00:00			10 Dec 2022 04:13	1
HS22120483-09	MW-17	07 Dec 2022 08:15			10 Dec 2022 04:36	1
HS22120483-12	MW-8	07 Dec 2022 10:50			10 Dec 2022 05:43	1
HS22120483-14	FB120722	07 Dec 2022 10:55			10 Dec 2022 00:06	1
HS22120483-15	EB120722	07 Dec 2022 11:00			10 Dec 2022 00:28	1
HS22120483-16	MW-10	06 Dec 2022 11:55			10 Dec 2022 06:06	1
Batch ID: R423703 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22120483-10	MW-11	07 Dec 2022 09:10			11 Dec 2022 10:24	1
HS22120483-11	MW-5	07 Dec 2022 10:05			11 Dec 2022 11:25	10

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: 187240 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
MBLK	Sample ID: MBLK-187240	Units: ug/L		Analysis Date: 12-Dec-2022 12:07					
Client ID:	Run ID: SV-6_424068	SeqNo: 7033959		PrepDate: 12-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	< 0.100	0.100							
Acenaphthylene	< 0.100	0.100							
Anthracene	< 0.100	0.100							
Benz(a)anthracene	< 0.100	0.100							
Benzo(a)pyrene	< 0.100	0.100							
Benzo(b)fluoranthene	< 0.100	0.100							
Benzo(g,h,i)perylene	< 0.100	0.100							
Benzo(k)fluoranthene	< 0.100	0.100							
Chrysene	< 0.100	0.100							
Dibenz(a,h)anthracene	< 0.100	0.100							
Fluoranthene	< 0.100	0.100							
Fluorene	< 0.100	0.100							
Indeno(1,2,3-cd)pyrene	< 0.100	0.100							
Naphthalene	< 0.100	0.100							
Phenanthrene	< 0.100	0.100							
Pyrene	< 0.100	0.100							
Surr: 2-Fluorobiphenyl	3.744	0.100	3.03	0	124	32 - 130			
Surr: 4-Terphenyl-d14	3.329	0.100	3.03	0	110	40 - 135			
Surr: Nitrobenzene-d5	3.782	0.100	3.03	0	125	45 - 142			

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: 187240 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
LCS		Sample ID: LCS-187240		Units: ug/L		Analysis Date: 12-Dec-2022 12:27			
Client ID:		Run ID: SV-6_424068		SeqNo: 7033960		PrepDate: 12-Dec-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	3.193	0.100	3.03	0	105	40 - 140			
Acenaphthylene	2.982	0.100	3.03	0	98.4	40 - 140			
Anthracene	3.797	0.100	3.03	0	125	40 - 140			
Benz(a)anthracene	2.183	0.100	3.03	0	72.1	40 - 140			
Benzo(a)pyrene	2.933	0.100	3.03	0	96.8	40 - 140			
Benzo(b)fluoranthene	2.422	0.100	3.03	0	79.9	40 - 140			
Benzo(g,h,i)perylene	2.96	0.100	3.03	0	97.7	40 - 140			
Benzo(k)fluoranthene	3.373	0.100	3.03	0	111	40 - 140			
Chrysene	3.488	0.100	3.03	0	115	40 - 140			
Dibenz(a,h)anthracene	2.485	0.100	3.03	0	82.0	40 - 140			
Fluoranthene	3.604	0.100	3.03	0	119	40 - 140			
Fluorene	3.285	0.100	3.03	0	108	40 - 140			
Indeno(1,2,3-cd)pyrene	2.47	0.100	3.03	0	81.5	40 - 140			
Naphthalene	3.483	0.100	3.03	0	115	40 - 140			
Phenanthrene	3.321	0.100	3.03	0	110	40 - 140			
Pyrene	3.849	0.100	3.03	0	127	40 - 140			
Surr: 2-Fluorobiphenyl	3.586	0.100	3.03	0	118	32 - 130			
Surr: 4-Terphenyl-d14	3.778	0.100	3.03	0	125	40 - 135			
Surr: Nitrobenzene-d5	3.46	0.100	3.03	0	114	45 - 142			

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: 187240 (0)		Instrument: SV-6		Method: LOW-LEVEL PAHS - 8270D					
LCSD		Sample ID: LCSD-187240		Units: ug/L		Analysis Date: 12-Dec-2022 12:47			
Client ID:		Run ID: SV-6_424068		SeqNo: 7033961		PrepDate: 12-Dec-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	3.249	0.100	3.03	0	107	40 - 140	3.193	1.74	25
Acenaphthylene	3.045	0.100	3.03	0	101	40 - 140	2.982	2.09	25
Anthracene	3.888	0.100	3.03	0	128	40 - 140	3.797	2.38	25
Benz(a)anthracene	2.184	0.100	3.03	0	72.1	40 - 140	2.183	0.0111	25
Benzo(a)pyrene	2.282	0.100	3.03	0	75.3	40 - 140	2.933	25	25
Benzo(b)fluoranthene	2.076	0.100	3.03	0	68.5	40 - 140	2.422	15.4	25
Benzo(g,h,i)perylene	2.296	0.100	3.03	0	75.8	40 - 140	2.96	25.2	25 R
Benzo(k)fluoranthene	2.717	0.100	3.03	0	89.7	40 - 140	3.373	21.5	25
Chrysene	4.014	0.100	3.03	0	132	40 - 140	3.488	14	25
Dibenz(a,h)anthracene	1.946	0.100	3.03	0	64.2	40 - 140	2.485	24.3	25
Fluoranthene	3.598	0.100	3.03	0	119	40 - 140	3.604	0.167	25
Fluorene	3.34	0.100	3.03	0	110	40 - 140	3.285	1.66	25
Indeno(1,2,3-cd)pyrene	2.082	0.100	3.03	0	68.7	40 - 140	2.47	17.1	25
Naphthalene	3.507	0.100	3.03	0	116	40 - 140	3.483	0.695	25
Phenanthrene	3.286	0.100	3.03	0	108	40 - 140	3.321	1.07	25
Pyrene	4.097	0.100	3.03	0	135	40 - 140	3.849	6.23	25
Surr: 2-Fluorobiphenyl	3.704	0.100	3.03	0	122	32 - 130	3.586	3.24	25
Surr: 4-Terphenyl-d14	3.81	0.100	3.03	0	126	40 - 135	3.778	0.845	25
Surr: Nitrobenzene-d5	3.747	0.100	3.03	0	124	45 - 142	3.46	7.98	25
The following samples were analyzed in this batch:									
HS22120483-12		HS22120483-13		HS22120483-14		HS22120483-15			

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: R423609 (0)		Instrument: VOA11		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-221209	Units: ug/L		Analysis Date: 09-Dec-2022 11:21					
Client ID:	Run ID: VOA11_423609	SeqNo: 7023460		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	51.83	1.0	50	0	104	70 - 123			
Surr: 4-Bromofluorobenzene	51.64	1.0	50	0	103	77 - 113			
Surr: Dibromofluoromethane	50.87	1.0	50	0	102	73 - 126			
Surr: Toluene-d8	50.59	1.0	50	0	101	81 - 120			

LCS	Sample ID: VLCSW-221209	Units: ug/L		Analysis Date: 09-Dec-2022 10:36					
Client ID:	Run ID: VOA11_423609	SeqNo: 7023459		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	23.09	1.0	20	0	115	74 - 120			
Surr: 1,2-Dichloroethane-d4	51.89	1.0	50	0	104	70 - 123			
Surr: 4-Bromofluorobenzene	51.35	1.0	50	0	103	77 - 113			
Surr: Dibromofluoromethane	50.16	1.0	50	0	100	73 - 126			
Surr: Toluene-d8	50.92	1.0	50	0	102	81 - 120			

MS	Sample ID: HS22120340-01MS	Units: ug/L		Analysis Date: 09-Dec-2022 12:28					
Client ID:	Run ID: VOA11_423609	SeqNo: 7023463		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	23.93	1.0	20	1.157	114	70 - 127			
Surr: 1,2-Dichloroethane-d4	51.91	1.0	50	0	104	70 - 126			
Surr: 4-Bromofluorobenzene	51.17	1.0	50	0	102	77 - 113			
Surr: Dibromofluoromethane	50.92	1.0	50	0	102	77 - 123			
Surr: Toluene-d8	50.47	1.0	50	0	101	82 - 127			

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: R423609 (0)		Instrument: VOA11		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD	Sample ID: HS22120340-01MSD	Units: ug/L		Analysis Date: 09-Dec-2022 12:51						
Client ID:	Run ID: VOA11_423609		SeqNo: 7023464		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	23.54	1.0	20	1.157	112	70 - 127	23.93	1.65	20	
Surr: 1,2-Dichloroethane-d4	51.89	1.0	50	0	104	70 - 126	51.91	0.0398	20	
Surr: 4-Bromofluorobenzene	50.94	1.0	50	0	102	77 - 113	51.17	0.448	20	
Surr: Dibromofluoromethane	51.71	1.0	50	0	103	77 - 123	50.92	1.52	20	
Surr: Toluene-d8	50.84	1.0	50	0	102	82 - 127	50.47	0.737	20	
The following samples were analyzed in this batch:										
HS22120483-05		HS22120483-06		HS22120483-07		HS22120483-08				

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: R423670 (0)		Instrument: VOA11		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-221209	Units: ug/L		Analysis Date: 09-Dec-2022 22:36					
Client ID:	Run ID: VOA11_423670	SeqNo: 7025103		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	53.3	1.0	50	0	107	70 - 123			
Surr: 4-Bromofluorobenzene	48.58	1.0	50	0	97.2	77 - 113			
Surr: Dibromofluoromethane	52.02	1.0	50	0	104	73 - 126			
Surr: Toluene-d8	50.16	1.0	50	0	100	81 - 120			

LCS	Sample ID: VLCSW-221209	Units: ug/L		Analysis Date: 09-Dec-2022 21:51					
Client ID:	Run ID: VOA11_423670	SeqNo: 7025102		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.54	1.0	20	0	97.7	74 - 120			
Surr: 1,2-Dichloroethane-d4	49.62	1.0	50	0	99.2	70 - 123			
Surr: 4-Bromofluorobenzene	49.11	1.0	50	0	98.2	77 - 113			
Surr: Dibromofluoromethane	49.45	1.0	50	0	98.9	73 - 126			
Surr: Toluene-d8	50.49	1.0	50	0	101	81 - 120			

MS	Sample ID: HS22120400-10MS	Units: ug/L		Analysis Date: 09-Dec-2022 23:21					
Client ID:	Run ID: VOA11_423670	SeqNo: 7025105		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.36	1.0	20	0	102	70 - 127			
Surr: 1,2-Dichloroethane-d4	51.44	1.0	50	0	103	70 - 126			
Surr: 4-Bromofluorobenzene	51.57	1.0	50	0	103	77 - 113			
Surr: Dibromofluoromethane	50.38	1.0	50	0	101	77 - 123			
Surr: Toluene-d8	51.16	1.0	50	0	102	82 - 127			

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: R423670 (0)		Instrument: VOA11		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD		Sample ID: HS22120400-10MSD		Units: ug/L		Analysis Date: 09-Dec-2022 23:43				
Client ID:		Run ID: VOA11_423670		SeqNo: 7025106		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.17	1.0	20	0	95.9	70 - 127	20.36	6.01	20	
Surr: 1,2-Dichloroethane-d4	50.92	1.0	50	0	102	70 - 126	51.44	1.01	20	
Surr: 4-Bromofluorobenzene	50.45	1.0	50	0	101	77 - 113	51.57	2.21	20	
Surr: Dibromofluoromethane	49.01	1.0	50	0	98.0	77 - 123	50.38	2.75	20	
Surr: Toluene-d8	50.77	1.0	50	0	102	82 - 127	51.16	0.757	20	
The following samples were analyzed in this batch:		HS22120483-01		HS22120483-02		HS22120483-03		HS22120483-04		
		HS22120483-09		HS22120483-12		HS22120483-14		HS22120483-15		
		HS22120483-16								

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: R423703 (0)		Instrument: VOA10		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-221211	Units: ug/L		Analysis Date: 11-Dec-2022 10:03					
Client ID:	Run ID: VOA10_423703	SeqNo: 7026056		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 1.0	1.0							
Surr: 1,2-Dichloroethane-d4	46.82	1.0	50	0	93.6	70 - 123			
Surr: 4-Bromofluorobenzene	72.73	1.0	50	0	145	77 - 113			S
Surr: Dibromofluoromethane	43.71	1.0	50	0	87.4	73 - 126			
Surr: Toluene-d8	52.29	1.0	50	0	105	81 - 120			

LCS	Sample ID: VLCSW-221211	Units: ug/L		Analysis Date: 11-Dec-2022 09:22					
Client ID:	Run ID: VOA10_423703	SeqNo: 7026055		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.5	1.0	20	0	97.5	74 - 120			
Surr: 1,2-Dichloroethane-d4	48.58	1.0	50	0	97.2	70 - 123			
Surr: 4-Bromofluorobenzene	52.6	1.0	50	0	105	77 - 113			
Surr: Dibromofluoromethane	43.63	1.0	50	0	87.3	73 - 126			
Surr: Toluene-d8	45.92	1.0	50	0	91.8	81 - 120			

MS	Sample ID: HS22120483-10MS	Units: ug/L		Analysis Date: 11-Dec-2022 10:44					
Client ID: MW-11	Run ID: VOA10_423703	SeqNo: 7026058		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.29	1.0	20	0	96.5	70 - 127			
Surr: 1,2-Dichloroethane-d4	45.93	1.0	50	0	91.9	70 - 126			
Surr: 4-Bromofluorobenzene	55.22	1.0	50	0	110	77 - 113			
Surr: Dibromofluoromethane	43.05	1.0	50	0	86.1	77 - 123			
Surr: Toluene-d8	46.83	1.0	50	0	93.7	82 - 127			

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

QC BATCH REPORT

Batch ID: R423703 (0)		Instrument: VOA10		Method: LOW LEVEL VOLATILES BY SW8260C					
MSD		Sample ID: HS22120483-10MSD		Units: ug/L		Analysis Date: 11-Dec-2022 11:05			
Client ID: MW-11		Run ID: VOA10_423703		SeqNo: 7026059		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.64	1.0	20	0	93.2	70 - 127	19.29	3.42	20
Surr: 1,2-Dichloroethane-d4	48.24	1.0	50	0	96.5	70 - 126	45.93	4.9	20
Surr: 4-Bromofluorobenzene	54.48	1.0	50	0	109	77 - 113	55.22	1.35	20
Surr: Dibromofluoromethane	43.43	1.0	50	0	86.9	77 - 123	43.05	0.89	20
Surr: Toluene-d8	45.32	1.0	50	0	90.6	82 - 127	46.83	3.28	20
The following samples were analyzed in this batch:									
HS22120483-10		HS22120483-11							

ALS Houston, US

Date: 16-Dec-22

Client: ARCADIS U.S., Inc.
Project: 30122717 Brickland Refinery 4Q2022
WorkOrder: HS22120483

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US

Date: 16-Dec-22

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

ALS Houston, US

Date: 16-Dec-22

Sample Receipt Checklist

Work Order ID: HS22120483

Date/Time Received: 08-Dec-2022 09:10

Client Name: Arcadis-Baton Rouge

Received by: Paresh M. Giga

Completed By: /S/ Corey Grandits	08-Dec-2022 15:38	Reviewed by: /S/ Ragen Giga	15-Dec-2022 15:01
eSignature	Date/Time	eSignature	Date/Time

Matrices: WCarrier name: FedEx

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	COC IDs:285144 , 285143
Samplers name present on COC?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	2.0UC/1.5C IR31		
Cooler(s)/Kit(s):	491212		
Date/Time sample(s) sent to storage:	12/8/2022		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☒
pH adjusted?	Yes ☐	No ☐	N/A ☒
pH adjusted by:			

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:

Cincinnati, OH
+1 513 733 5336Fort Collins, CO
+1 970 490 1511Everett, WA
+1 425 356 2600Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 285144

Houston, TX
+1 281 530 5656Spring City, PA
+1 610 948 4903Middletown, PA
+1 717 944 5541Salt Lake City, UT
+1 801 266 7700

Page 253 of 257

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information		Project Information		Parameter/Method Request for Analysis													
Purchase Order	30122717 Task 250	Project Name	30122717 Brickland Refinery 4Q2020	A	8260_LL_W (8260 Benzene ("Unpreserved") 7 day HT)												
Work Order		Project Number	30122717 Task 250	B	8270_PAH_LVI (8270 PAHs (LVI))												
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C													
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	D													
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E													
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	F													
Phone	(225) 292-1004	Phone	(303) 471-3699	G													
Fax		Fax		H													
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accounts Payable.administration@arcadis.us	I													

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-3S	12-6-22	0945	W	8	3	X										
2	MW-3D	12-6-22	1030	W	8	3	X										
3	FB120622	12-6-22	1035	W	8	3	X										
4	FD120622	12-6-22	-	W	8	3	X										
5	MW-6S	12-6-22	1120	W	8	3	X										
6	MW-6D	12-6-22	1205	W	8	3	X										
7	MW-9S	12-6-22	1300	W	8	3	X										
8	EB120622	12-6-22	1305	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign <i>Donna Solor</i>		Shipment Method FED EX		Required Turnaround Time: (Check Box) ☒ STD 10 Bsk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour				Results Due Date:	
Relinquished by: <i>Donna Solor</i>		Date: 12-07-22	Time: 1430	Received by: <i>[Signature]</i>		Notes: [AGM Brickland NM]			
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler ID 49121		Cooler Temp. 7.00	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		QC Package: (Check One Box Below)			
						☒ Level 1 SCL CC ☐ Level 1 SCL QSP Raw Data ☐ Level 1 SCL QSP LP ☐ Other		☐ If Not Checked ☐ If Not LP	
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035									

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+1 425 356 2600Fort Collins, CO
+1 970 490 1511Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 285143

Houston, TX
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+1 717 944 5541Spring City, PA
+1 610 948 4903Salt Lake City, UT
+1 801 266 7700South Charleston, WV
+1 304 356 3168York, PA
+1 717 505 5280

Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order	30122717 Task 250	Project Name	30122717 Brickland Refinery 4Q2020	A	8260 LL W (8260 Benzene (*Unpreserved*)-7 day HT)		
Work Order		Project Number	30122717 Task 250	B	8270 PAH LVI (8270 PAHs (LVI))		
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C			
Send Report To	Brooke Fontenot	Invoice Attn	Accounts Payable	D			
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive Suite 600	E			
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch CO 80129	F			
Phone	(225) 292-1004	Phone	(303) 471-3699	G			
Fax		Fax		H			
e-Mail Address	Brooke.Fontenot@arcadis-us.com	e-Mail Address	Accountspayable.administration@arcadi	I			

HS22120483

ARCADIS U.S., Inc.

30122717 Brickland Refinery 4Q2022

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	12-07-22	0815	W	8	3	X										
2	MW-11	12-07-22	0910	W	8	3	X										
3	MW-5	12-07-22	1005	W	8	3	X										
4	MW-8	12-07-22	1050	W	8	6	X	X									
5	FD120722	12-07-22	-	W	8	3		X									
6	FB120722	12-07-22	1055	W	8	6	X	X									
7	EB120722	12-07-22	1100	W	8	6	X	X									
8	MW-10	12-07-22	1155	W	8	3	X										
9																	
10																	

Sampler(s) Please Print & Sign <i>Doug S. Jones</i>		Shipment Method FEDEX		Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour				Results Due Date:			
Relinquished by: <i>D. Jones</i>		Date: 12-07-22	Time: 1431	Received by:		Notes: [AGM Brickland NM]					
Relinquished by:		Date:	Time:	Received by (Laboratory):		QC Package: (Check One Box Below)					
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		Cooler ID	Cooler Temp.	☒ Level II Std QC ☐ THERP Checklist			
						49121	2.50	☐ Level III Std QC/How Date ☐ THERP Level IV			
							4.51	☐ Level IV Std QC/CLIP			
							516.01	☐ Other			

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TODY SEAL		Seal Broken By: 
Time:	1435	
Date: 12/7/23		

	ALS	CUS Date: 12/7/23 Name: [Signature] Company: [Signature]
	10450 St. R. Rd., Suite 210	
	Houston, TX 77099	
	Tel: +1 281 488 1112 Fax: +1 281 488 1113	

FedEx
 TRK# 5789 2001 7562
 0821
XA SGRA

THU - 08 DEC 10:30A
 PRIORITY OVERNIGHT
 77099
 TX-US IAN

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Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 201300

CONDITIONS

Operator: Huntsman Advanced Materials LLC 10003 Woodloch Forest Drive The Woodlands, TX 77380	OGRID:	330766
	Action Number:	201300
	Action Type:	[UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2022 Annual Groundwater Monitoring Report for Former Brickland Refinery: Content Satisfactory 1. Continue to conduct LNAPL removal at MW-10 by bailing or pumping at quarterly intervals. 2. Continue to conduct groundwater monitoring of benzene at MW-3S, MW-3D, MW-5, MW-6S, MW-6D, MW-8, MW-9S, MW-10, MW-11, MW-17 3. Continue evaluations for river stages and seasonal fluctuations as prescribed. 4. May proceed with removal of PAH monitoring for MW-8 5. Submit the next groundwater monitoring report by April 1, 2024	11/14/2023