# GW - 040

# STAGE 2 ABATEMENT PLAN

# 2021

| | |
|---|---|
| **From:** | McDill, Teresa L, EMNRD |
| **To:** | Billings, Bradford, EMNRD |
| **Subject:** | Bloomfield Stage 2 Abatement Plan for your review |
| **Start:** | Friday, July 23, 2021 1:00:00 PM |
| **End:** | Friday, July 23, 2021 2:00:00 PM |
| **Location:** | Microsoft Teams Meeting |
| **Attachments:** | 202003__Stage 1 Abatement Plan.pdf<br>2019 to Oct 2020 Bloomfield Gen Correspondence.pdf<br>20210518 DP GW-40_GBR_Stage 2 Abatement Plan-Final-ALL.pdf |

Just so you have these attached docs; I believe this is most of what should apply. In the correspondence, on Oct 13, 2020, Carl refers to an "Abatement Plan Stage 2" but I'm not able to find a Stage 2 issued before Oct 2020. I'll keep digging if needed. At any rate, they have sent in a new Stage 2 Abatement Plan in May 2021 for our review. We can talk about it and then you can review—no need to feel pressure before our meeting!

Thank you,

Terry

PS Bloomfield does have a new GW Discharge Permit, in contract to Carl's email—he must have decided to proceed with the permit.

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Microsoft Teams meeting

Join on your computer or mobile app

Click here to join the meeting <https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZDA3NTIzYzUtNTFmOS00YTdkLWI4YTAtMmIyNzkxN2FiMzQz%40thread.v2/0?context=%7b%22Tid%22%3a%2204aa6bf4-d436-426f-bfa4-04b7a70e60ff%22%2c%22Oid%22%3a%222d66694d-7f59-479f-9e09-9f919c843321%22%7d>

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**From:** McDill, Teresa L, EMNRD
**To:** Billings, Bradford, EMNRD
**Subject:** as promised...
**Date:** Friday, June 18, 2021 3:44:00 PM
**Attachments:** 20190324 Amendment Stage 1 Abatement Plan Landfarms.pdf
20190903 Stage I Progress Report.pdf

---

Here is the background I promised in the first email…

I'm thinking I may set up a Tams for HFNR? Easier to drop doc into?

**Teresa L. McDill** ● Environmental Scientist
Environmental Bureau
EMNRD - Oil Conservation Division
1220 S St Francis Dr | Santa Fe, NM 87505
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**From:** Hyde, Stuart
**To:** McDill, Teresa L, EMNRD
**Cc:** Hencmann, Devin; Luka, Kateri A; McCartney, Gregory J.
**Subject:** [EXT] RE: GBR Stage 2 Abatement Plan
**Date:** Wednesday, May 19, 2021 12:30:33 PM
**Attachments:** image005.png
image006.jpg
image001.png
DP GW-40_GBR_Stage 2 Abatement Plan-Final-ALL.pdf

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Terry,

The abatement plan has been uploaded through the portal and is attached for your review. Thanks much and reach out anytime with questions.

**Stuart Hyde, L.G.**
Environmental Geologist
*T+ 1 970-385-1096*
*M+ 1 970-903-1607*

---

**From:** McDill, Teresa L, EMNRD <TeresaL.McDill@state.nm.us>
**Sent:** Tuesday, May 18, 2021 4:44 PM
**To:** Hyde, Stuart <Stuart.Hyde@wsp.com>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
**Cc:** Hencmann, Devin <Devin.Hencmann@wsp.com>
**Subject:** RE: GBR Stage 2 Abatement Plan

Hello again Stuart,

Could you also send me a copy by email? The portal is not yet notifying me of the uploads; I'll try to find out this week how that is working. I appreciate it.

Best Regards,
Terry

---

**From:** McDill, Teresa L, EMNRD
**Sent:** Tuesday, May 18, 2021 3:43 PM
**To:** Hyde, Stuart <Stuart.Hyde@wsp.com>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
**Cc:** Hencmann, Devin <Devin.Hencmann@wsp.com>
**Subject:** RE: GBR Stage 2 Abatement Plan

Hello Stuart,

Please upload it to the portal, and I will review. Nice to meet you, too, Stuart!

Thank you,
Terry

**From:** Hyde, Stuart <Stuart.Hyde@wsp.com>
**Sent:** Tuesday, May 18, 2021 2:59 PM
**To:** Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
**Cc:** Hencmann, Devin <Devin.Hencmann@wsp.com>; McDill, Teresa L, EMNRD <TeresaL.McDill@state.nm.us>
**Subject:** [EXT] RE: GBR Stage 2 Abatement Plan

Carl,

Thanks for all of your assistance on the GBR project and moving it forward.

Teresa,

Nice to meet you and please let me know how you would like us to submit the abatement plan for the former Giant Bloomfield Refinery site. Also feel free to reach out if you have any questions. Thanks much and talk to you soon.

**Stuart Hyde, L.G.**
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---

**From:** Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
**Sent:** Tuesday, May 18, 2021 2:11 PM
**To:** Hyde, Stuart <Stuart.Hyde@wsp.com>
**Cc:** Hencmann, Devin <Devin.Hencmann@wsp.com>; McDill, Teresa L, EMNRD <TeresaL.McDill@state.nm.us>
**Subject:** RE: GBR Stage 2 Abatement Plan

Stuart,

Hi. I have transferred into the Engineering Bureau, UIC Group.

Ms. Teresa McDill at 55-469-6769 is the new refinery contact for OCD.

You may contact her to see how she requests to receive it.

Thank you.

**Carl J. Chavez** ● UIC Group
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**From:** Hyde, Stuart <Stuart.Hyde@wsp.com>
**Sent:** Tuesday, May 18, 2021 11:39 AM
**To:** Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
**Cc:** Hencmann, Devin <Devin.Hencmann@wsp.com>
**Subject:** [EXT] GBR Stage 2 Abatement Plan

Carl,

We are ready to submit the GBR abatement plan and I was wondering how you would like us to submit. Should we email directly to you or someone else at the NMOCD, or submit to the portal online, or both? Thanks much.

**Stuart Hyde, L.G.**
Environmental Geologist
*Please note the new email address*.



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WESTERN REFINING SOUTHWEST, LLC

# STAGE 2 ABATEMENT PLAN

## FORMER GIANT BLOOMFIELD REFINERY

MAY 18, 2021



# STAGE 2 ABATEMENT PLAN

## FORMER GIANT BLOOMFIELD REFINERY

### WESTERN REFINING SOUTHWEST, LLC

PROJECT NO.: 31403103.000.295
DATE: MAY 18, 2021

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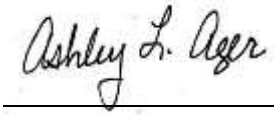
# SIGNATURES

PREPARED BY



Stuart Hyde, L.G.
Environmental Geologist

APPROVED[1] BY



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Senior Geologist

[1] Approval of this document is an administrative function indicating readiness for release and does not impart legal liability on to the Approver for any technical content contained herein. Technical accuracy and fit-for-purpose of this content is obtained through the review process. The Approver shall ensure the applicable review process has occurred prior to signing the document.

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# 1 INTRODUCTION

This *Stage 2 Abatement Plan* has been prepared by WSP USA Inc. (WSP) on behalf of Western Refining Southwest, LLC (Western). This plan is being prepared as part of the provisions included with Discharge Permit GW-40 for the former Giant Bloomfield Refinery (the Site) located in San Juan County, New Mexico (Figure 1). The purpose of this plan is to assess current groundwater conditions at the Site and provide abatement options that will result in the attainment of abatement standards, as set forth in this document. This document summarizes the Site history, investigation and remediation activities that have been completed to date, current groundwater conditions, an evaluation of Site-specific contaminants of concern, and abatement options to address residual groundwater contaminants remaining at the Site.

## 1.1 SITE DESCRIPTION

The Giant Bloomfield Refinery Site is a former refinery currently owned by Western. It is located on the northeast corner of United States Highway 64 and County Road 3500, approximately 5 miles west of Bloomfield, New Mexico, in the southwest quarter of Section 22 and the northwest quarter of Section 27, Township 29 North, Range 12 West in San Juan County, New Mexico (Figure 1). The former refinery, under ownership of Giant Industries (Giant), Arizona, produced leaded and unleaded gasoline, diesel, kerosene, and other refined petroleum products from 1974 to 1982 and has been inactive since closure in 1982.

### *1.1.1 LAND AND WATER USE*

The land in the vicinity of the Site is largely public land used as open rangeland for livestock and wildlife. Other uses of land in this area include: the Lee Acres Landfill Superfund site on public land north of the Site managed by the United States Bureau of Land Management (BLM) which is currently unoccupied; a residential neighborhood, Lee Acres Subdivision, to the south of the Site and across State Highway 64; and the San Juan County Fairgrounds located to the southwest of the Site (west of Lee Acres Subdivision). There are no schools, prisons, or hospitals within one mile of the site.

Surface water runoff in the vicinity of the Site drains to the unnamed arroyo located west-adjacent to the Site. This arroyo system ultimately flows to the San Juan River located approximately one mile south of the Site. Shallow groundwater at the Site is located within Quaternary alluvial sediments that have accumulated in a bedrock paleochannel underlying the arroyo. Currently, there are no known uses of the shallow groundwater in the area. The subdivision and Fairgrounds use municipal water.

## 1.2 SITE HISTORY

In April 1985, a breach in a lagoon dike on the former Lee Acres Landfill property (located north-adjacent to the Site and further discussed in Section 1.1.2), which had been retaining liquids in the lagoons, released liquid wastes into an arroyo west of the Site. The arroyo drains south toward the Lee Acres Subdivision (located south-adjacent to the Site), where the New Mexico Oil Conservation Division (NMOCD) and the New Mexico Environment Department (NMED) identified impacted groundwater in domestic water wells in 1986. In response, the NMOCD required Giant to investigate petroleum hydrocarbon impacts to groundwater downgradient of the refinery. NMED also conducted a separate investigation to identify potential impacts from the landfill. The investigations identified two separate plumes of impacted groundwater that commingled across the Site and flowed downgradient into the Lee Acres Subdivision. Groundwater contaminants detected in the refinery plume included phase-separated hydrocarbon (PSH) and dissolved-phase petroleum hydrocarbons (described below). Groundwater contaminants associated with the Lee Acres Landfill included total dissolved solids (TDS), chloride, sulfate, metals, and volatile organic compounds, as discussed in Section 1.1.2 below.

Geoscience Consultants, Ltd. (GCL), environmental consultants retained by Giant, concluded that releases had occurred at the Site related to refining operations and subsequent truck loading and unloading activities. Specifically, the investigations identified the following three source areas contributing to the groundwater plume at the Site (Figure 2):

- Northern Area (Diesel Spill Area): diesel fuel was released from a pipeline in 1985;
- Central Area (Truck Fueling Area): a separate diesel fuel release occurred from a pipeline in 1986; and
- Southern Area (Former Seep and Stormwater Catchment Area): Fire training area where water was used to extinguish flames.

Details of a subsurface investigation and initial remediation efforts conducted by Giant are summarized below and details are contained in a 1987 report prepared by GCL titled *Soil and Ground Water Investigations and Remedial Action Plan*.

### 1.2.1 SITE INVESTIGATION AND REMEDIATION ACTIVITIES

During the initial investigations at the Site, Giant performed several rounds of drilling and soil-sampling activities to delineate soil and groundwater impacts. Based on the results, Giant excavated all accessible petroleum-hydrocarbon contaminated soil at the Site in the spring of 1986. In total, approximately 4,500 cubic yards of soil were excavated from several areas at the Site as an immediate remedial measure. Once complete, confirmation-soil samples were collected from the open excavations to assess remaining soils. Impacted soils were removed from several areas at the Site, with soil results from the excavation floors and sidewalls complying with applicable closure standards. Results from the remedial excavations are presented in the 1987 GCL report. A portion of the Southern Area (shown on Figure 2) could not be excavated. The remaining soils were to be addressed by applying water to the impacted area (through an infiltration gallery), effectively flushing residual petroleum contaminants from the soil and into the shallow groundwater where they could be removed through the use of groundwater-recovery wells (further described below).

Beginning in 1988, Giant installed a groundwater recovery, treatment, and disposal system to restrict migration of contaminants and to remediate groundwater impacts caused by Giant's former operations. A total of 45 monitoring wells were initially installed and designated "GBR" monitoring wells (Figure 2). Of these 45 monitoring wells, 11 were converted to recovery wells and re-named with "GRW" designations. An additional 17 monitoring wells were installed downgradient in the Lee Acres Subdivision and designated as "SHS" monitoring and recovery wells. Four SHS wells initially operated as recovery wells. Giant pumped groundwater from the recovery wells into storage tanks, treated the groundwater with an air stripper and carbon filtration, and re-injected treated groundwater into the subsurface through an infiltration gallery. The initial discharge permit for the Site was approved by the NMOCD in 1988 and the Site was assigned Discharge Permit Number GW-40.

### 1.2.2 ADJACENT LEE ACRES LANDFILL SUPERFUND SITE

Concurrent with refinery operations, the former Lee Acres Landfill (located upgradient of the Site) operated as a San Juan County landfill from 1962 to 1986 (Figure 1). Landfill operations included solid waste disposal in trenches and liquid waste disposal in a series of lagoons. The NMOCD sampled the lagoons in 1985 and demonstrated that the liquids in the impoundments contained a variety of chlorinated solvents, petroleum hydrocarbon constituents, heavy metals, and salts. As stated above, a breach in the lagoon dike occurred in 1985 and released liquid wastes into an arroyo west of the Site, prompting an investigation by the NMED in conjunction with the BLM and United States Geological Survey (USGS).

Initial investigations conducted by the NMED, BLM, and USGS identified that contaminants originating from the landfill included TDS, chloride, sulfate, manganese, heavy metals, BTEX constituents (benzene, toluene, ethylbenzene, and xylenes), naphthalene, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, tetrachloroethene (PCE), 1,1,1-trichloroethane, trichloroethene (TCE), and vinyl chloride. Comprehensive investigation results for the Lee Acres Landfill site are summarized in the Remedial Investigation (RI) Report (BLM, 1992).

The Record of Decision (2004) for the landfill release, prepared by the United States Environmental Protection Agency (EPA) using data from NMED, BLM, and USGS investigations, presented human health and ecological risk assessments and remedial action objectives (RAOs) for soil and groundwater pathways of exposure. Based on the risk assessments, identified RAOs, and background concentrations established for the landfill release, the Record of Decision identified manganese, nickel, 1,2-dichloroethene, trans-1,2-dichloroethene, PCE, TCE, and vinyl chloride as the contaminants of concern (COCs) for the Lee Acres Landfill Superfund site. Other constituents associated with the landfill, including chloride, chromium, iron, sulfate, and TDS, were determined to be either within natural "background" concentrations or did not present a human health or ecological risk. Based on these results, the Record of Decision outlined the selected remedies to remediate and/or manage residual soil and groundwater contamination originating from the Lee Acres Landfill site and included landfill cover, surface water controls, monitored natural attenuation for groundwater contaminants, and institutional controls (withdrawing the landfill and surrounding BLM land from settlement, sale, location, or entry).

Currently, the BLM continues to monitor the landfill cover and surface water controls, as well as monitor groundwater conditions in several monitoring wells associated with the Superfund site. The BLM prepares reports every five years following the implementation of the *Record of Decision* (ROD) in 2004 and summarizes monitoring results and provides recommendations for any actions needed at the site. According to the most recent five-year review, manganese is the only remaining groundwater contaminant present at concentrations exceeding the groundwater-quality standard specified in the ROD. As such, the BLM is currently conducting additional groundwater monitoring at the Superfund site to further assess the presence of manganese in groundwater.

## 1.3 SITE GEOLOGY AND HYDROGEOLOGY

The Site is located on weathered outcrops of the Nacimiento Formation, which is comprised of shales, sandstones, and siltstones of Cretaceous-Tertiary age. The San Juan River is approximately 2,000 feet south of the Site. Immediately west is a large unnamed arroyo, which is underlain by 30 feet to 60 feet of Quaternary alluvial sediments. Older Quaternary terrace deposits of cobbles and boulders were observed on the interfluvial ridges adjacent to the arroyo. These terrace deposits may have been used as fill on the Site. The outcropping surfaces of the Nacimiento Formation have been eroded to form a paleochannel that appears to be similar in morphology to the existing surface arroyo located to the west of the Site. The bedrock is overlain by recent alluvial deposits (gravel, sand, silt, and clay), which thicken toward the south-southwest as illustrated on the cross sections on Figures 3 and 4.

The subsurface geology is a controlling feature for groundwater flow direction and potential contaminant migration. Shallow groundwater is generally unconfined. There are two aquifers of concern that are in direct hydraulic communication: a shallow aquifer composed of recent alluvial materials contained within the bedrock paleochannel, and a bedrock aquifer that exists in the underlying Nacimiento Formation (Figures 3 and 4, respectively). The alluvial aquifer generally has the higher permeability of the two aquifers, and recovery wells completed within this aquifer have higher yields than wells completed in the bedrock aquifer.

# 2 HISTORICAL GROUNDWATER REMEDIATION

## 2.1 HISTORICAL REMEDIATION SYSTEM AND MONITORING

Beginning in 1988, Giant had installed, operated, and maintained the groundwater remediation system at the Site. In June 2007, Western Refining Southwest, LLC (Western) acquired the Site from Giant and continued to operate a modified remediation system. As groundwater quality improved over time, adjustments to the remediation system were made to optimize areas of residual hydrocarbon impacts. The air stripper was eliminated in the 1980s once product accumulation declined. In 2008, Western conducted a supplemental evaluation of the remedial operations, which included shutting down the remediation system and sampling groundwater wells under static conditions to redefine the area of impact and assess effectiveness of the remediation system. Existing equipment was inspected and repaired to optimize performance. Results from the sampling event were included in the *2008 Annual Report* prepared by LT Environmental, Inc. (LTE, now WSP) and submitted to the NMOCD. Pumping and treating operations were resumed in February 2009.

With approval from the NMOCD, Western stopped recovering groundwater south of Highway 64 in 2009, as groundwater sampling results indicated no change to contaminant concentrations. Additionally, aboveground storage of groundwater was eliminated in 2014 based on reduced groundwater recovery volumes. By 2015, the system consisted of only 9 active groundwater recovery wells that pumped groundwater directly into the carbon filtration tanks, with the treated effluent discharged into the water infiltration trench.

### *2.1.1 REMEDIATION SYSTEM SHUTDOWN*

Prior to August 2015, the groundwater recovery system had been in operation for approximately 27 years and had significantly improved groundwater conditions over that time. During operation, treated groundwater was discharged through infiltration trenches located on the GBR property. During operation, water entering (influent) and exiting (effluent) the remediation system was sampled and analyzed for volatile organic compounds (VOCs) in order to assess the efficacy of the system and monitor compliance with the Site discharge permit. Following 13 years of regular sampling without the detection of VOCs, Western conducted another extensive assessment of site groundwater conditions in 2015. Western sampled and monitored select wells to characterize groundwater under active pumping conditions, then shut down the recovery system to allow groundwater to equilibrate. A second sampling and monitoring event was conducted on the same groundwater monitoring wells to compare active groundwater recovery to post-shutdown static conditions.

In August 2015, additional groundwater samples were collected from select monitoring wells to establish a reference for groundwater conditions when the remediation system was operational. Historical documentation was reviewed to determine which wells had the most potential to contain impacted groundwater or to exhibit a change in water quality before and after groundwater recovery and infiltration was inactivated. Monitoring wells GBR-8, GBR-11, GBR-20, GBR-21D, GBR-22, GBR-25, GBR-26, GBR-34, SHS-2, SHS-8, and SHS-9 were selected due to radius of influence of actively pumping recovery wells and/or historical documentation of PSH measured in the monitoring wells. Samples from these monitoring wells were collected and analyzed for chloride, BTEX, total petroleum hydrocarbon (TPH)-gasoline range organics (GRO) and TPH-diesel range organics (DRO). Follow-up samples were collected after the system was turned off and groundwater conditions were allowed to equilibrate.

Assessment results showed that the remediation system had successfully remediated the groundwater impact it was originally designed to address but was no longer an effective method for remediating residual impacts at the Site. The investigation additionally confirmed the residual impacts were stable and not migrating even with the recovery system inoperable. As such, Western did not turn the recovery system back on, focusing instead on monitoring existing site conditions to better characterize the residual impact. Results of the assessment were included in the *2015 Annual Report* prepared by LTE (dated March 2016). Sampling from these monitoring wells under equilibrium conditions continued in March, July, and October of 2016 and were documented in the *2016 Annual Report* (LTE, March 2017). Components of the former remediation system still on Site include two control buildings, two carbon

filtration tanks, an aboveground storage tank, infiltration trenches, groundwater monitoring wells, and groundwater recovery wells (locations shown on Figure 2).

### 2.1.2 SHS SYSTEM ABANDONMENT

At the request of the New Mexico Department of Transportation (NMDOT), Western submitted Well Plugging Plans of Operations to the New Mexico Office of State Engineer (NMOSE) to plug and abandon SHS-1, SHS-2, SHS-3, SHS-4, and SHS-5 on June 5, 2017, approved on June 7, 2017. These wells were in the right-of-way of the highway and in the way of pending construction. On June 14, 2017, each well was cemented to the surface and the well vault was removed per the NMOSE requirements. Sampling and Plugging and Abandonment (P&A) activities were documented in the *2017 Annual Report* (LTE, 2018a).

Western conducted semi-annual gauging and annual compliance sampling at the Site in 2018. Results from these activities were documented in the *2018 Annual Report* (LTE, 2018b). Based on historical groundwater conditions and sample results for wells in the SHS area (results below applicable New Mexico Water Quality Control Commission standards), additional sampling was conducted with the intent of plugging and abandoning the monitoring and recovery wells associated with the SHS recovery and monitoring system. Western submitted a *Partial Remediation System Closure Approval Request* (dated November 27, 2018) to NMOCD with the results of the additional sampling and the request to plug and abandon wells SHS-6, SHS-8, and SHS-14 through SHS-19 (wells SHS-9 and SHS-13 were left in place for future monitoring). NMOCD granted approval of the closure plan in an email dated May 9, 2019. Results of the P&A work are included in the 2019 Annual Report.

## 2.2 ONGOING GROUNDWATER MONITORING

Although no discharge has occurred on the Site since 2015, Western has continued to conduct annual compliance sampling in accordance with Discharge Permit GW-040. Specifically, groundwater is collected from wells GRW-3, GRW-6, GBR-17, GBR-24D, GBR-30, GBR-31, GBR-32, GBR-48, GBR-49, GBR-50, GBR-52, and SHS-9 and analyzed for one or more of the following: VOCs, polycyclic aromatic hydrocarbons (PAHs), general water chemistry parameters, anions/cations, and several metals. Western also has continued to collect depth to groundwater measurements semi-annually in 45 groundwater monitoring/recovery wells to monitor potential migration of PSH. Annual reports summarizing the sampling and gauging activities are submitted to NMOCD.

## 2.3 UPDATED DISCHARGE PERMIT

In May of 2020, Western submitted an updated *Discharge Permit Application* to the NMOCD for review and approval. The updated permit application was prepared in response to conversations with the NMOCD regarding the current conditions at the Site. The permit was approved by the NMOCD on January 6, 2021 with general provisions and conditions of approval. As part of the general provisions outlined in the permit, Western was required to prepare an updated Stage 2 Abatement Plan (this document) to assess current site-wide groundwater conditions and to modify the remediation strategy to focus on residual groundwater and potential vadose zone impacts at the Site.

## 2.4 HISTORICALLY DETECTED CONTAMINANTS

Data collected between 1986 and 2021 have been reviewed to assess what contaminants have been historically detected at the Site. Historical monitoring reports were reviewed for the Site, with results compiled for monitoring events every approximately five years. Results were compiled for all sampled wells from the following years (where available): 1986, 1988, 1995, 2000, 2005, 2010, 2015, 2019, and 2021. Based on a review of these results, the following have been historically and/or recently detected above laboratory practical quantitation limits (PQLs) at the Site and have been retained for further consideration (described in Section 4.0):

- **Phase Separated Hydrocarbons (PSH)**

- **Volatile Organic Compounds (VOCs)**: BTEX, 1,2,4-trimethylbenzene, 1,2-dichloroethane (EDC), 1,2-dibromoethane (EDB), 1-methylnaphthalene, 2-methylnaphthalene, acetone, bromodichloromethane, bromoform, 2-butanone, carbon disulfide, chlorobenzene, chloroform, cis-1,2-dichloroethene, cis-1,3-dichloropropene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloropropane, isopropylbenzene, methylene chloride, n-propylbenzene, sec-butylbenzene, tert-butylbenzene, tetrachloroethene (PCE), trans-1,2-dichloroethene, 1,1,1-trichloroethene, trichloroethene (TCE), and trichlorofluoromethane;
- **Polycyclic Aromatic Hydrocarbons (PAHs)**: 1-methylnaphthalene/2-methylnaphthalene/naphthalene as total naphthalenes, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, and benzo(g,h,i)perylene;
- **Metals**: Arsenic, barium, beryllium, cadmium, chromium, iron, lead, manganese, mercury, nickel, selenium, silver, and thallium;
- **General chemistry constituents**: chloride, fluoride, nitrate/nitrite, sulfate, and total dissolved solids.

# 3 2021 GROUNDWATER ASSESSMENT

## 3.1 SITE WIDE GROUNDWATER SAMPLING ACTIVITIES

To assess current groundwater conditions across the Site and determine contaminants of potential concern, WSP sampled all viable groundwater monitoring/recovery wells associated with the GBR Site in the spring of 2021. Well construction information for the following wells is presented in Table 1.

- GRW-1, GRW-2, GRW-3, GRW-4, GRW-5, GRW-6, GRW-9, GRW-10, GRW-11, GRW-12, GRW-13, GBR-5, GBR-7, GBR-8, GBR-9, GBR-10, GBR-11, GBR-13, GBR-15, GBR-17, GBR-18, GBR-20, GBR-21S, GBR-21D, GBR-22, GBR-23, GBR-24S, GBR-24D, GBR-25, GBR-26, GBR-30, GBR-31, GBR-32, GBR-33, GBR-34, GBR-35, GBR-39, GBR40, GBR-41, GBR-48, GBR-49, GBR-50, GBR-52, SHS-9, and SHS-13.

Of the Site wells listed above, the following wells were not sampled due to damage/obstructions or lack of water in the well (as indicated on Table 2):

- GBR-10, GBR-19, GBR-21S, GBR-23, GBR-24S, GBR-26, GBR-33, GBR-40, GBR-41, and GBR-49.

The following sections summarize the sampling procedures and results gathered during these 2021 sampling events.

### *3.1.1 GROUNDWATER LEVEL MEASUREMENTS*

Prior to collection of groundwater samples, depth to groundwater in each well was measured using a Keck oil/water interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement to prevent cross-contamination. Groundwater elevations measured in 2020 and 2021 detailed in Table 2.

A groundwater potentiometric surface map was prepared based on the depth-to-water information and is presented on Figure 5. The groundwater potentiometric surface elevations collected in 2021 were consistent with past sampling/gauging events. The inferred groundwater-flow direction is to the south following the path of the unnamed arroyo with an approximate hydraulic gradient of 0.017 feet/foot.

### *3.1.2 SITE GROUNDWATER SAMPLING*

Site wells were sampled in January, February, and March of 2021. Prior to sampling, groundwater was purged using a disposable bailer and/or submersible pump. Purging was accomplished by removing three well-casing volumes of groundwater from the monitoring wells prior to collecting a sample. If the well purged dry, groundwater was allowed to infiltrate back into the well prior to sampling. Field measurements of groundwater quality parameters, including temperature, pH, electrical conductivity, dissolved oxygen, and oxidation-reduction potential, were also collected and are presented in Table 3.

Following well purging, groundwater samples were collected and placed directly into laboratory-provided bottles and labeled with the date and time of collection, well designation, project name, sample collector's name, and parameters to be analyzed. Sample bottles were immediately sealed, packed on ice, and submitted to Hall Environmental Analysis Laboratory (Hall) for analysis. Analyzed constituents were based on historical results and the contaminants summarized in Section 2.4 above. All site wells were analyzed during this event for constituents listed in Table 4 and included VOCs, PAHs, total metals, and general chemistry constituents. Proper chain-of-custody procedures were followed documenting the date and time sampled, sample number, type of sample, sample collector's name, preservative used, analyses required, and sample collector's signature. Analytical laboratory reports from the 2021 sampling events are included as Appendix A.

### *3.1.3 SITE GROUNDWATER SAMPLING RESULTS*

Based on groundwater-quality parameters measured during sampling, groundwater located within and directly downgradient of the contaminant plumes is generally low in dissolved oxygen with negative oxidation-reduction

potential values ranging down to -343.0. These anoxic conditions are common in groundwater where microbial-degradation processes are occurring. Areas upgradient of and at the downgradient distal end of the contaminant plumes (e.g., GBR-18, GBR-52, etc.) generally have higher dissolved oxygen concentrations and positive oxidation-reduction potentials indicative of oxic groundwater conditions.

Analytical results for the 2021 sampling event are presented in Tables 5 through 8 and summarized for each contaminant suite below. For comparison purposes, Tables 5 through 8 include NMWQCC groundwater quality standards, EPA Regional Screening Levels (RSLs), and site-specific background concentrations (discussed in Section 3.2), as well as background concentrations and remedial goals established for the Lee Acres Landfill Superfund (in their ROD) site located upgradient of GBR.

- **PSH:** PSH was encountered in wells GBR-7 and GBR-22 with thicknesses of 0.11 and 0.10 feet, respectively. No other wells contained PSH during the 2021 sampling event.
- **VOCs:** Benzene was detected in wells GBR-11 and GBR-20 at concentrations exceeding NMWQCC standard of 5 micrograms per liter (µg/L). No other VOC constituents were detected above applicable NMWQCC and/or EPA standards during the 2021 sampling event. A summary of analytical results is presented in Table 5.
- **PAHs:** Naphthalene, 1-methylnaphthalene, and 2-methynaphthalene were detected at concentrations exceeding NMWQCC and EPA standards in well GBR-35. No other PAH constituents were detected above applicable NMWQCC and/or EPA standards during the 2021 sampling event. A summary of analytical results is presented in Table 6.
- **Total Metals:** Total concentrations of barium, chromium, iron, lead, manganese, and nickel were detected above NMWQCC standards in one or more wells analyzed during the 2021 sampling event. Concentrations of arsenic, beryllium, cadmium, mercury, selenium, silver, and thallium were either detected below NMWQCC standards or were below laboratory PQLs. A summary of analytical results is presented in Table 7.
- **General Chemistry:** Chloride, sulfate, and TDS were detected in several wells at concentrations exceeding NMWQCC standards. Fluoride concentrations were detected in several wells but below NMWQCC standards. Additionally, nitrate + nitrite (as nitrogen) were detected in several wells. Although there are standards for both nitrate and nitrite in 20.6.2.3103 NMAC, these constituents have historically been sampled as a combined fraction and not individually. A summary of analytical results is presented in Table 8.

## 3.2 UPGRADIENT BLM SPLIT SAMPLING AND RESULTS

In addition to the Site-wide sampling described above, WSP was present and collected split groundwater samples during a BLM investigation conducted in April 2021. Specifically, as part of their effort to assess residual manganese concentrations related to the Lee Acres Landfill Superfund site, the BLM conducted groundwater sampling from several GBR Site wells on April 6, 2021. WSP was present during sampling and collected split samples from the following wells: GBR-17, GBR-32, GBR-48, and GBR-50. Samples were collected using low-flow purging and sampling methods. Specifically, groundwater was purged using a stainless-steel, impellor-driven submersible pump connected to a low-flow controller. Groundwater was routed through a flow-through cell and geochemical parameters were monitored and recorded using a multiparameter probe. Groundwater samples were collected into laboratory-provided containers once parameters had stabilized. Samples were submitted to Hall for analysis of total and dissolved metals and general chemistry constituents (chloride, fluoride, nitrate + nitrite, sulfate, TDS, and dissolved organic carbon), with results presented on Table 9 and laboratory reports attached as Appendix B.

### *3.2.1 EVALUATION OF SAMPLING TECHNIQUES*

Based on the historical nature of the Site, an analysis of the methods utilized for monitoring requirements in the discharge permit were evaluated for applicability, specifically for the purpose of this *Stage 2 Abatement Plan*. The original methods were initiated 32 years ago. Not only have methods improved since that time, the purpose of the Site work has changed from extensive remediation to polishing of residual impacts and confirmation sampling of groundwater.

Historically, groundwater at the Site has been collected using a bailer and purged by removing three well-casing volumes of water prior to sampling. This method of sampling can bias sampling results high for inorganic and strongly hydrophobic constituents due to "increased turbidity that occurs during the deployment of the bailer" (EPA, 2002). Additionally, based on the original and subsequent discharge permits obtained for the Site, total metals have historically been analyzed during annual sampling. Generally, total metals concentrations will be similar or greater than dissolved metals concentrations analyzed from the same sample. Because of these factors, WSP collected split samples during the BLM sampling event to assess potential concentration differences of inorganic constituents between bailer and low-flow sampling methods, as well as resultant concentration differences between total and dissolved metals analyzed from the same samples.

To assess differences between sampling methods, data from the January/February 2021 sampling event (using a bailer) were compared to data collected using low-flow methods (April 2021 sampling event). Depth-to-groundwater measurements were consistent between sampling events indicating that spring runoff and/or storm events likely did not affect the detected constituent concentrations. The relative percent difference (RPD) was calculated for each analyzed metal detected during the different sampling events using the following formula:

$$RPD\ (\%) = \frac{[low\ flow] - [bailer]}{\frac{[low\ flow] + [bailer]}{2}} x\ 100$$

Negative RPD values indicate a decrease in concentration from bailer to low-flow sampling methods, with positive value indicating an increase in concentration. In general, total metals concentrations decreased when sampled using low-flow methods, with an average RPD of -66 percent (%) (RPD values are presented on Table 9).

To assess concentration differences between total and dissolved metals, results from the April 2021 sampling event were compared by calculating the RPD using the following formula:

$$RPD\ (\%) = \frac{[dissolved\ metal] - [total\ metal]}{\frac{[dissolved\ metal] + [total\ metal]}{2}} x\ 100$$

Overall, dissolved metals concentrations were lower than total metals concentrations, with an average RPD of -112%.

# 4 PROPOSED CONTAMINANTS OF CONCERN

## 4.1 UPGRADIENT/BACKGROUND CONSTITUENTS

Background is defined in 20.6.2.7(B) NMAC as "the amount of ground water contaminants naturally occurring from undisturbed geologic sources or water contaminants which the responsible person establishes are occurring from a source other than the responsible person's facility." As stated in Section 1.2.2 above, several constituents detected at the Lee Acres Landfill Superfund site were determined to be within natural "background" concentrations and were eliminated as COCs for the Lee Acres Landfill Superfund site as addressed in the ROD (EPA, 2004). Specifically stated in the RI (BLM, 1992) and ROD, chloride, chromium, iron, sulfate, and TDS have been present within and downgradient of the Lee Acres Landfill at concentrations above NMWQCC standards since investigations were initiated in the 1980s. However, these constituents were eliminated as COCs for the Lee Acres site based on their assessment of background conditions and/or through the extensive risk analysis that was conducted as part of the RI (BLM, 1992). Although eliminated as COCs from the Lee Acres Landfill Superfund site, these constituents are still present in the groundwater at concentrations exceeding NMWQCC standards and can be attributed to natural background concentrations or sources other than the former GBR facility. In addition to these constituents, manganese is present in groundwater at concentrations above NMWQCC standards, as well as the background concentration established for the Lee Acres Landfill Superfund site. Because of this, manganese was retained as a COC for the Lee Acres site and is currently present in areas downgradient of the landfill and upgradient of the release areas at the GBR Site.

Altogether, chloride, chromium, iron, manganese sulfate, and TDS have long been detected at the GBR Site in wells located hydrogeologically upgradient of the source areas at the Site (GBR-32, GBR-48, GBR-49, and GBR-50 identified on Figure 2) and downgradient of the Lee Acres Landfill site. These constituents appear to be influenced by background and/or upgradient conditions at the Site as supported by the extensive investigations conducted for the Lee Acres Landfill Superfund site and GBR Site.

To better analyze background concentrations, WSP has performed a statistical analysis using EPA ProUCL software to develop background threshold values (or background concentrations) for the following inorganic constituents that are potentially migrating onto or naturally occurring at the Site: chloride, chromium, iron, manganese, sulfate, and TDS. As such, Table 10 presents the results of the statistical analysis and groundwater analytical results for these constituents detected between 2010 and 2021. Appendix C presents the assumptions and inputs used for the statistical analysis.

Dataset distributions and background threshold values (BTVs) were determined for the six constituents using ProUCL, version 5.1 based on data collected between 2010 and 2021 from 5 monitoring wells: GBR-18, GBR-32, GBR-48, GBR-49, and GBR-50. Non-detects were only observed in two analytes, chromium and iron, adding to less than 5% in each case. Non-detects for chromium and iron were replaced with PQLs prior to evaluating distributions and BTVs. BTVs calculated using non-detect estimation methods are also provided for comparison purposes.

ProUCL was used to determine if datasets were parametric (if they fit a normal, lognormal or gamma distribution) or non-parametric if the dataset did not follow a discernible distribution. Chloride and sulfate were found to be non-parametric, TDS followed a normal parametric distribution, while chromium, iron, and manganese followed both lognormal and gamma parametric distributions.

A 95% upper tolerance limit with 95% coverage (UTL95-95) was chosen as the appropriate statistic to determine BTVs as it is designed to provide coverage for 95% of all potential observations from the background population with a coverage of 0.95. As stated above, chloride and sulfate did not follow a discernable distribution, therefore the BTVs were set to the maximum values observed: 560 and 2,800 milligrams per liter (mg/L), respectively. The BTV for TDS was set to 4,599 mg/L, which is the normal UTL-95-95. Chromium, iron, and manganese were found to follow both lognormal and gamma distributions, therefore the BTVs were set to the lesser (more conservative) values based on gamma distributions: 1.29, 97.8, and 5.28 mg/L, respectively.

A summary of BTVs for each constituent is outlined below. In accordance with 20.6.2.3101(A)(2), the resultant BTVs for chloride, chromium, iron, manganese, sulfate, and TDS are proposed as background concentrations to further evaluate potential Site COCs.

- Chloride: 560 mg/L
- Chromium: 1.29 mg/L
- Iron: 97.8 mg/L
- Manganese: 5.28 mg/L
- Sulfate: 2,800 mg/L
- TDS: 4,599 mg/L

## 4.2 UPDATED CONTAMINANTS OF CONCERN

Contaminants of potential concern (COPCs) are defined by the EPA as constituents that are potentially present due to site-related activities and where data are sufficient quality for use in the quantitative risk assessment. To be considered a COPC, the contaminant in question must be from past activities related to the site and detected at concentrations above laboratory PQL. Based on the historically detected contaminants listed in Section 2.4, the following contaminants are considered Site COPCs because of their historical presence above laboratory PQLs and potential association with the on-Site petroleum hydrocarbon releases.

- **PSH**
- **VOCs**: benzene, toluene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,2-dichloroethane (EDC), 1,2-dibromoethane (EDB), 1-methylnaphthalene, 2-methylnaphthalene, bromodichloromethane, bromoform, 2-butanone, carbon disulfide, isopropylbenzene, n-propylbenzene, sec-butylbenzene, tert-butylbenzene;
- **PAHs**: 1-methylnaphthalene/2-methylnaphthalene/naphthalene as total naphthalenes, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, and benzo(g,h,i)perylene;
- **Metals**: barium, chromium, iron, lead, manganese, and selenium;
- **General chemistry constituents**: chloride, fluoride, nitrate/nitrite, sulfate, and TDS.

Contaminants of concern (COCs) proposed for the Site are a subset of the established COPCs. COCs include site-related contaminants that have been identified as potentially posing a risk to human health and environment because they exceed NMWQCC standards. Where NMWQCC standards have not been established, detected contaminant concentrations have been compared to the most stringent EPA Regional Screening Levels (RSLs) for tap water using a hazard quotient of 1.0 (for non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (for carcinogens). In addition to the NMWQCC standards and EPA RSLs, several inorganic constituents were compared to background concentrations established for the Site and discussed in Section 3.2. If site-related constituents exceed established standards or screening levels, they are then compared to background concentrations. If a constituent exceeds standards and background, it is considered a COC for the Site. Constituents must also be evaluated based on the source of the release. The sources of the releases associated with this *Stage 2 Abatement Plan* are diesel fuel, gasoline, and crude oil.

WSP evaluated contaminant concentrations in historical results using the same dates/range of data as described in Section 2.4, specifically data collected in years 1986, 1988, 1995, 2000, 2005, 2010, 2015, 2019, and 2021. Of the list of COPCs listed above, the following contaminants were detected in historical samples collected at the Site above applicable standards, RSLs, and/or background concentrations:

- **PSH**
- **VOCs**: BTEX and EDC;
- **PAHs**: 1-methylnaphthalene/2-methylnaphthalene/naphthalene as total naphthalenes;
- **Metals**: barium, chromium, iron, lead, manganese, and selenium;
- **General chemistry constituents**: chloride, fluoride, sulfate, and TDS.

Several of these constituents have historically been, but are no longer detected above applicable standards or RSLs based on results from recent sampling events and can be excluded as COCs:

- Toluene, ethylbenzene, and xylenes, EDC, fluoride (have not been detected above NMWQCC standards since the mid-1990s)
- Selenium (has not been detected above NMWQCC standards since 2015, and then only in upgradient well GBR-48)

The following additional constituents do not exceed background concentrations established in Section 3.2 above and can be excluded as COCs:

- Chromium, chloride, iron, and sulfate
- One concentration of TDS was detected above established background concentrations in upgradient well GBR-18 during the 2021 sampling event. Since this well is located upgradient of the Site, it is not attributable to the on-Site releases. Because of this, TDS can also be excluded as a COPC.

Barium was detected at a concentration of 2.7 mg/L, just above the NMWQCC standard (2.0 mg/L), in one well location during the 2021 sampling event. Barium has not been detected above the NMWQCC standard in any other wells at the Site during this or previous sampling events and is not a typical contaminant of concern associated with petroleum hydrocarbon releases. Due to the isolated incidence of detection and the constituent being unrelated to the Site releases, barium has been excluded as a COC.

The results of the evaluation above conclude the following COCs proposed for the Site:

- **PSH**
- **VOCs**: benzene;
- **PAHs**: 1-methylnaphthalene/2-methylnaphthalene/naphthalene as total naphthalenes;
- **Metals**: lead and manganese;

Several wells contain PSH at measurable levels. Section 20.6.2.3103(A)(3) NMAC states “non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can reasonably be measured.” Based on this language, presence of detectable PSH must be eliminated at the Site. Based on our understanding of the historical releases, benzene and total naphthalenes are common constituents of petroleum hydrocarbons and often drive risk assessments at petroleum sites. Lastly, lead and manganese have been detected at the Site above applicable standards and/or established background concentrations. Although these constituents are not directly related to the diesel fuel releases, they can be brought into solution through changes in groundwater chemistry (i.e., low oxygen and reducing conditions) from natural biodegradation of the petroleum hydrocarbons.

## 4.3 PROPOSED CLOSURE STANDARDS FOR ESTABLISHED CONTAMINANTS OF CONCERN

Based on applicable groundwater standards and the background analysis described above, WSP proposes the following closure standards for the COCs:

- **PSH:** no measurable accumulation (NMWQCC standard)
- **VOCs**:
  - Benzene: 5 µg/L (NMWQCC standard)
- **PAHs**:
  - 1-methylnaphthalene/2-methylnaphthalene/naphthalene as total naphthalenes: 30 µg/L (NMWQCC standard)
- **Metals**:
  - Lead: 0.015 mg/L (NMWQCC standard)
  - Manganese: 5.28 mg/L (background concentration)

## 4.4 NATURE AND EXTENT OF IMPACTS

As described in Section 1.2 above, three historical releases of petroleum hydrocarbons originated from on the GBR Property in the areas shown on Figure 2. PSH and residual concentrations of benzene and total naphthalenes are likely attributable to the original Site releases. The presence of PSH generally indicates the presence of residual saturation of vadose zone soils in the vicinity of the affected wells. Based on the 1987 GCL report titled *Soil and Ground Water Investigations and Remedial Action Plan* (GCL, 1987), most impacted soils were removed by excavation in the 1980s following the initial Site investigations. However, impacted soil was not removed in one area located between GBR-7 and GBR-41. Based on the current presence of PSH and dissolved-phase petroleum constituents (i.e., benzene) in wells located in this area, soil impacts likely remain and are contributing to groundwater impacts within these wells. The PSH present within well GBR-22 also indicates that free-phase petroleum hydrocarbons remain in the soil near this well. However, nearby and downgradient wells do not contain PSH or elevated concentrations of petroleum constituents, suggesting that soil impacts may be limited and localized to the area around GBR-22.

Lead and manganese are not components of the Site fuel releases; however, these inorganic constituents can be brought into solution through changes in groundwater chemistry (i.e., low oxygen and reducing conditions) from natural biodegradation of the petroleum hydrocarbon. Based on the recently collected groundwater analytical data and the nature of these constituents, lead and manganese concentrations may be attributed to biodegradation in the saturated zone.

Areas of remaining impacted groundwater for each COC have been indicated on Figures 6 through 10. At this time, all COCs have been delineated in the groundwater.

# 5 GROUNDWATER ABATEMENT PLAN

## 5.1 GROUNDWATER ASSESSMENT CONCLUSIONS

Based on the original soil investigations conducted at the Site, releases associated with the GBR facility have been successfully delineated. Additionally, a majority of impacted soil related to the releases was removed during the initial remedial activities in the 1980s and 1990s. Furthermore, it is apparent that the groundwater remediation system has successfully remediated petroleum hydrocarbon impacts, as originally designed. Following the reduction in petroleum hydrocarbon concentrations, the remediation system's primary purpose was to provide hydraulic control and restrict migration of potential contaminants off Site. By shutting down the system to re-establish equilibrium conditions in 2015, Western demonstrated that the remediation system has no effect on existing petroleum hydrocarbon groundwater impacts or the migration of impacts to off-Site locations. Residual impacts at the Site consist of PSH accumulations. Based on measured thicknesses and locations consistent with original source areas, PSH is likely to be adsorbed by soil in the three original source areas. Based on historical data and with no active source, the residual petroleum contaminants have not and are not likely in the future to migrate off-Site.

Based on the above conclusions, the original system effectively remediated a majority of the impacted area of the Site. However, updated groundwater information collected at the Site indicates that there are limited areas of residual petroleum-hydrocarbon and inorganic impacts remaining as indicated in Section 4.2.

## 5.2 RECOMMENDATIONS

Based on the data presented in this document, WSP recommends the following actions to address residual impacts at the Site to be performed within 120 days of NMOCD approval of this *Stage 2 Abatement Plan*:

- **Plug and Abandon (P&A) Nested/Clustered/Dry/Damaged wells:**
  - P&A dry or damaged wells at the Site to include wells GBR-21S (dry), GBR-23 (dry), GBR-33 (dry or obstructed, historical results below NMWQCC standards), and GBR-40 (dry and historical results below NMWQCC standards)
  - P&A the following wells that are redundant and not necessary for future monitoring/sampling: GBR-9 (close proximity to GBR-8 and GBR-11), GBR-10 (close proximity to GBR-8 and GBR-11, also obstructed from sampling), GBR-15 (close proximity to GBR-39) GBR-24S (also obstructed during sampling), and GBR-26 (no recovery)
  - Replace well GBR-41 and P&A the existing well. GBR-41 has historically collected PSH. Currently, the well is constructed with 10 feet of screen mostly within the sand unit and 3 feet of PVC blank below the screen and within the sandstone unit. The new well should be installed with 15 feet of screen at least 10 feet into the sandstone unit with no PVC blank below the screen. This well will be used to assess current groundwater conditions at this location and capture PSH if still present in the area.
- **PSH Recovery:**
  - Removal of PSH will be conducted, but accumulation and recoverability of PSH in wells is poorly understood. Western will conduct a product baildown test on wells that currently contain PSH to assess potential remediation options for the residual PSH. Specifically, the baildown test will be used to calculate transmissivity values and recovery volume estimates for the PSH using the American Society for Testing and Materials (ASTM) E2856-13 *Standard Guide for Estimation of LNAPL Transmissivity* and American Petroleum Institute (API) *LNAPL Transmissivity Workbook Calculator*. The results of these tests will guide decisions on whether automated product recovery systems (i.e., solar sipper) would be viable at the Site.
  - Western will continue monthly manual recovery unless a more efficient system is deemed appropriate.

- **Continued Monitoring:**
  - Based on the results of the April 2021 sampling event with the BLM (Section 3.1.4), WSP recommends that future groundwater samples be collected using low-flow purging and sampling methods to obtain higher quality samples with low turbidity.
  - WSP recommends that quarterly samples be collected at all viable wells for Site COCs proposed in the preceding section: benzene, total naphthalenes, and dissolved concentrations of lead and manganese.
  - Once Western has a year of quarterly data, the COCs will be evaluated to understand remaining source areas, ensure full lateral delineation, and consider additional remediation as appropriate.
- **Delineation of Residual Soil Impacts:**
  - Due to the continued presence of PSH is several Site wells, WSP recommends that vadose-zone soil in the areas near GBR-7, GBR-22, and GBR-41 be assessed for residual concentrations of total petroleum hydrocarbons (TPH) that may be contributing to PSH in the associated wells. Based on the results, WSP will propose a remediation strategy to remove the residual TPH concentrations.
- **Reporting:**
  - As outlined in Discharge Permit GW-40 issued on January 6, 2021, annual reports will be prepared and submitted to the NMOCD for review on or before June 15$^{th}$ of each year. Reports will include the information specified in Section 2.E. of Discharge Permit GW-40.

# 6 REFERENCES


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# FIGURES

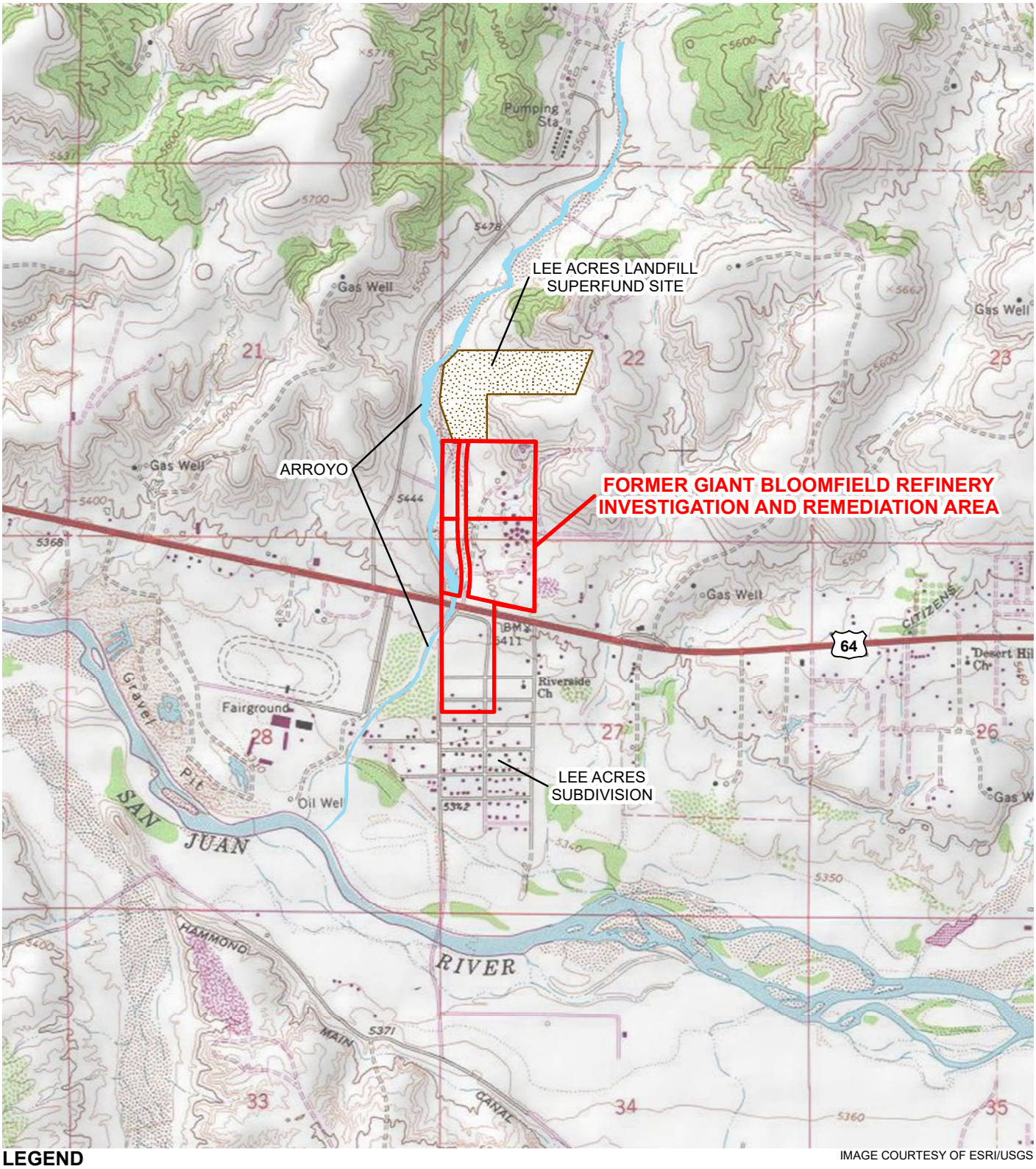



IMAGE COURTESY OF ESRI/USGS

**LEGEND**

- FORMER GIANT BLOOMFIELD REFINERY PROPERTY BOUNDARY
- ARROYO
- FORMER LEE ACRES LANDFILL

NEW MEXICO

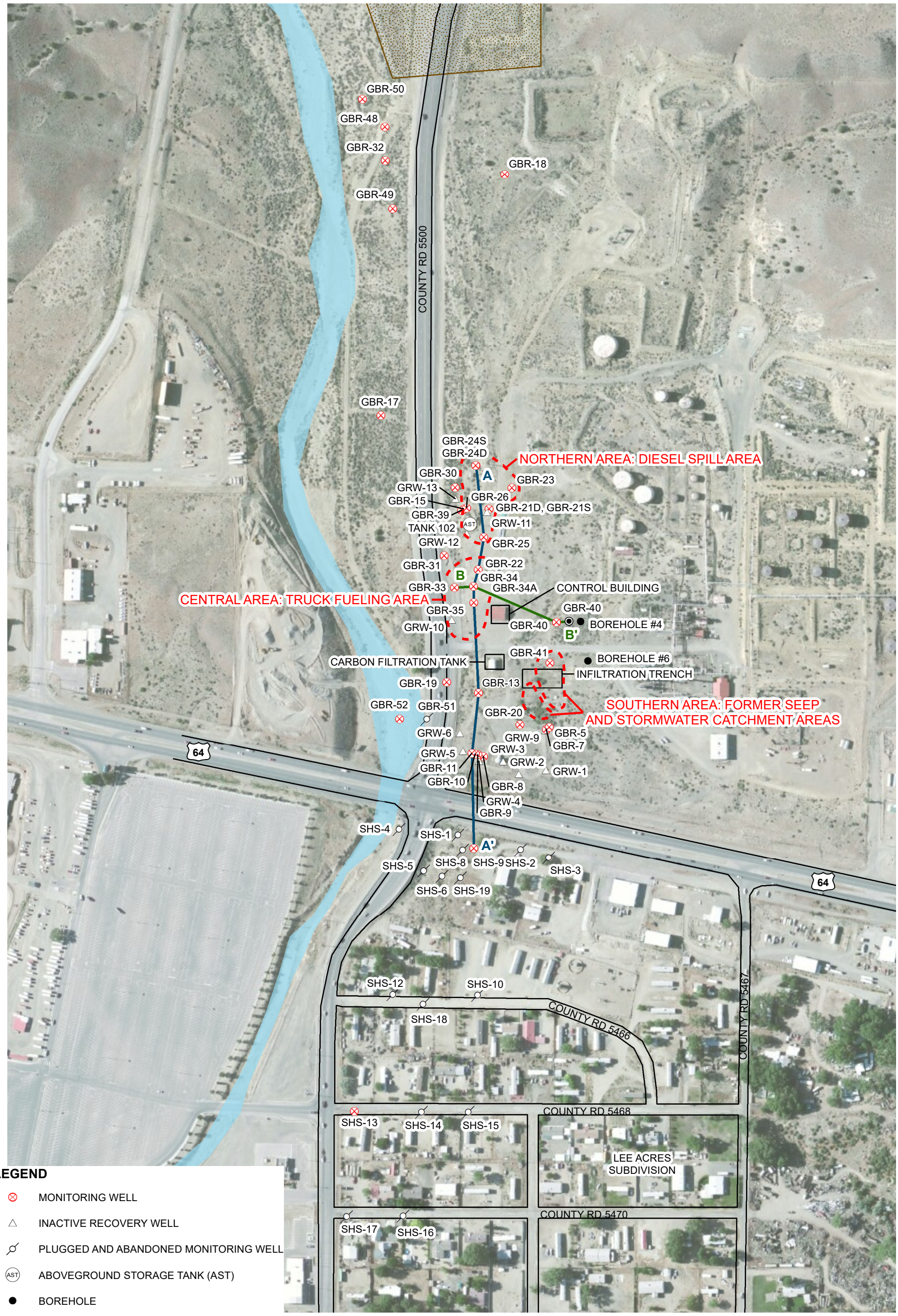
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FIGURE 1
SITE LOCATION MAP
FORMER GIANT BLOOMFIELD REFINERY
SW SEC 22 & NW SEC 27 T29N R12W
SAN JUAN COUNTY, NEW MEXICO
**WESTERN REFINING SOUTHWEST, LLC**

wsp

P:\Western Refining\GIS\MXD\31403103.000.0295_GBR_2021\31403103.000.0295_GBR_FIG01_SL_2021.mxd




**LEGEND**

- MONITORING WELL
- INACTIVE RECOVERY WELL
- PLUGGED AND ABANDONED MONITORING WELL
- ABOVEGROUND STORAGE TANK (AST)
- BOREHOLE
- DRY BORING GBR-40
- CROSS SECTION A-A'
- CROSS SECTION B-B'
- ARROYO
- FORMER LEE ACRES LANDFILL
- SOURCE AREA

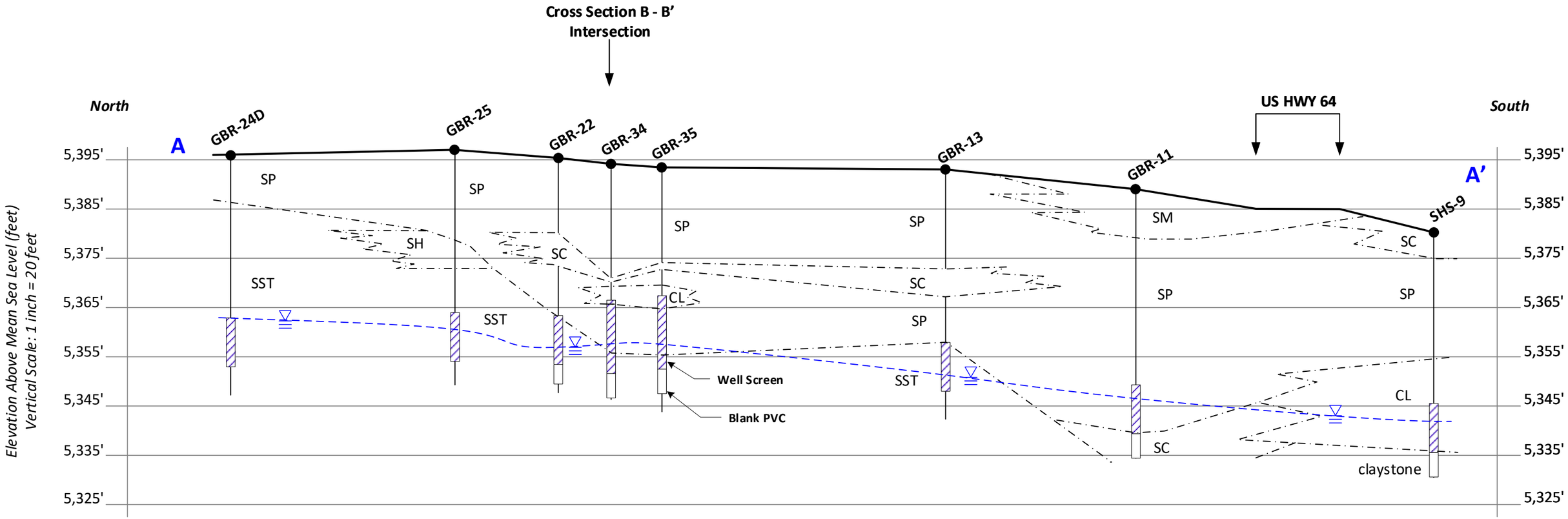
0 300 600
Feet

N

FIGURE 2
SITE MAP
FORMER GIANT BLOOMFIELD REFINERY
SW SEC 22 & NW SEC 27 T29N R12W
SAN JUAN COUNTY, NEW MEXICO
**WESTERN REFINING SOUTHWEST, LLC**

wsp

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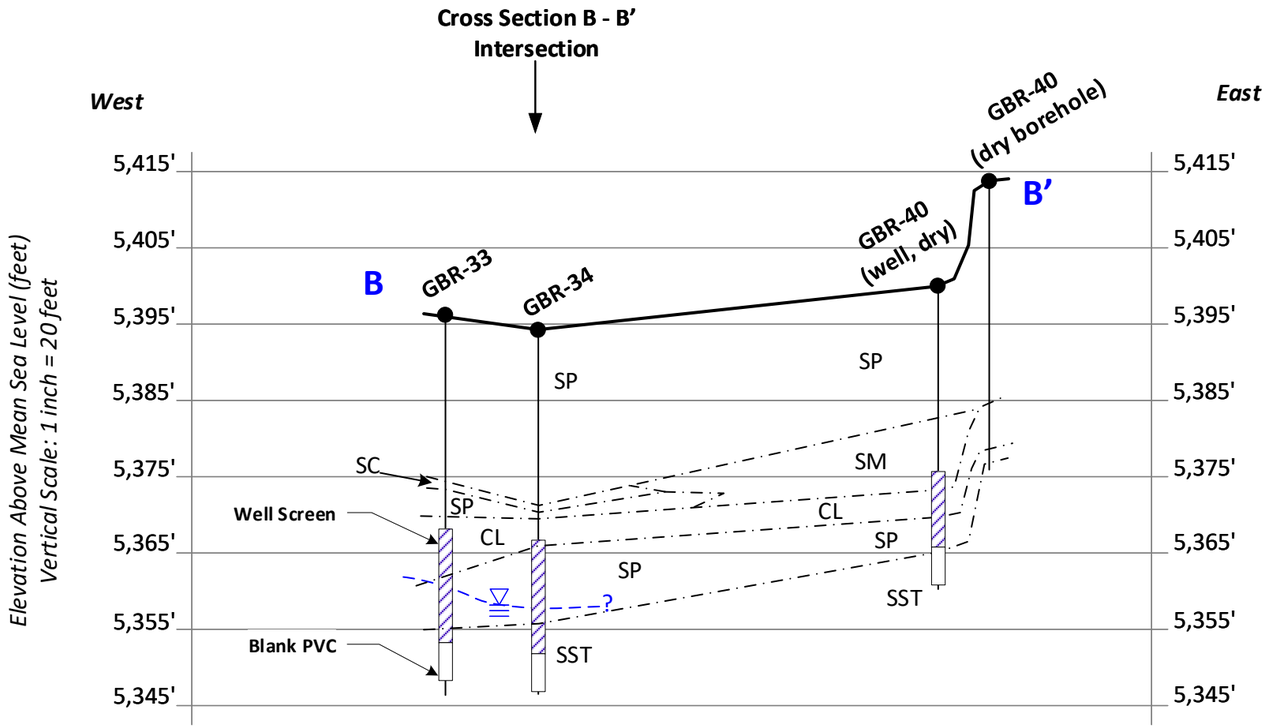



## LEGEND

| | |
|---|---|
| ▽ | GROUNDWATER ELEVATION (BASED ON JANUARY 2021 MEASUREMENTS) |
| CL | LEAN CLAY |
| SC | CLAYEY SAND |
| SH | SHALE |
| SM | SILTY SAND |
| SP | SAND, WELL SORTED |
| SST | SANDSTONE |

0 ft. 60 ft. 100 ft. 200 ft.

FIGURE 3
CROSS SECTION A TO A'
FORMER GIANT BLOOMFIELD REFINERY
BLOOMFIELD, NEW MEXICO
**WESTERN REFINING SOUTHWEST, LLC**

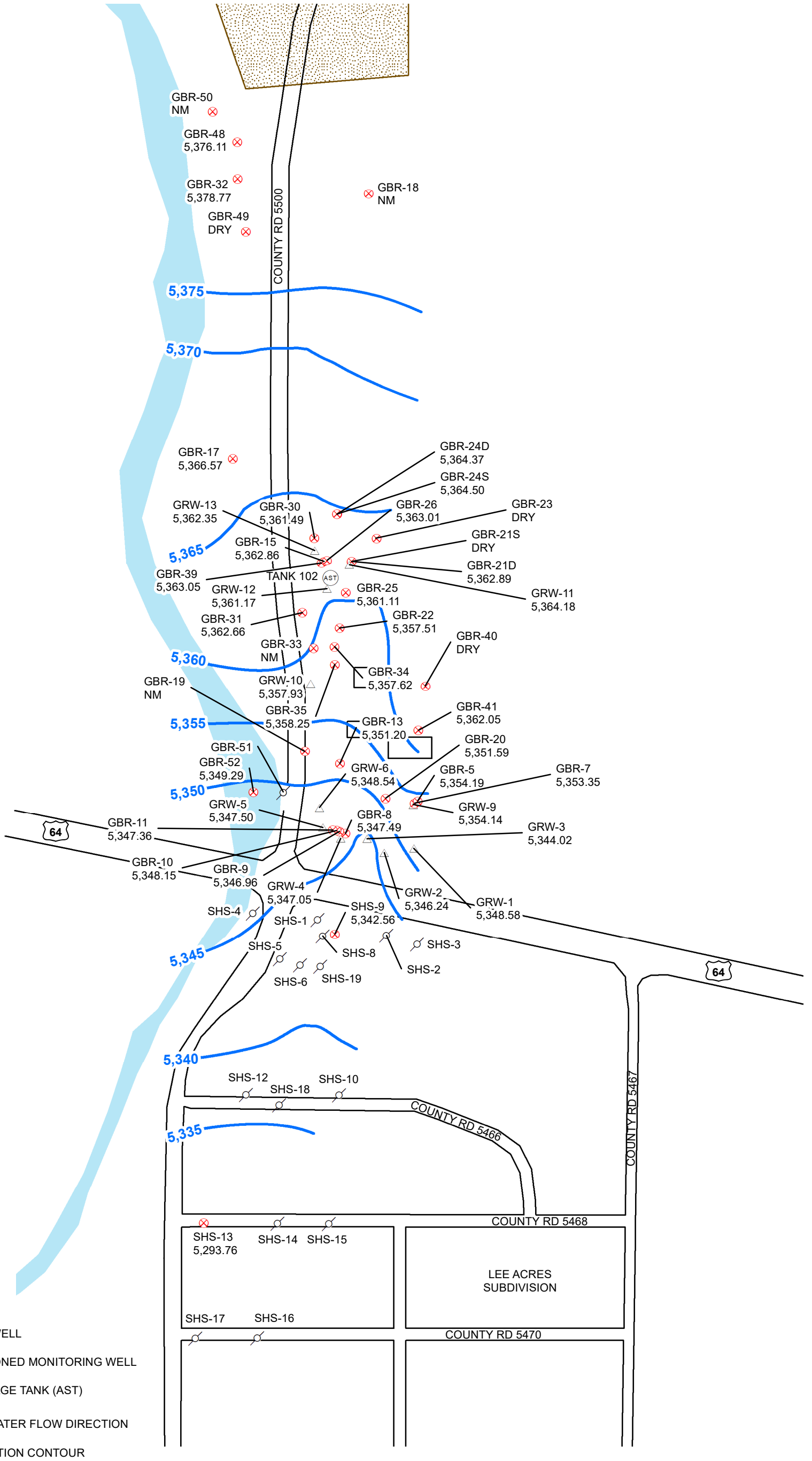



## LEGEND

| | |
|---|---|
| | GROUNDWATER ELEVATION (BASED ON JANUARY 2021 MEASUREMENTS) |
| CL | LEAN CLAY |
| SC | CLAYEY SAND |
| SM | SILTY SAND |
| SP | SAND, WELL SORTED |
| SST | SANDSTONE |

0 ft. 60 ft. 100 ft. 200 ft.

FIGURE 4
CROSS SECTION B TO B'
FORMER GIANT BLOOMFIELD REFINERY
BLOOMFIELD, NEW MEXICO
**WESTERN REFINING SOUTHWEST, LLC**




## LEGEND

- MONITORING WELL
- INACTIVE RECOVERY WELL
- PLUGGED AND ABANDONED MONITORING WELL
- ABOVEGROUND STORAGE TANK (AST)
- ESTIMATED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 5 FEET
  GRADIENT = 0.017 FEET/FOOT
  GROUNDWATER ELEVATION MEASURED IN FEET
  ABOVE MEAN SEA LEVEL IN JANUARY, 2021
- ARROYO
- FORMER LEE ACRES LANDFILL
- NM: NOT MEASURED

FIGURE 5
GROUNDWATER POTENTIOMETRIC SURFACE MAP (JANUARY 2021)
FORMER GIANT BLOOMFIELD REFINERY
SW SEC 22 & NW SEC 27 T29N R12W
SAN JUAN COUNTY, NEW MEXICO
**WESTERN REFINING SOUTHWEST, LLC**

wsp

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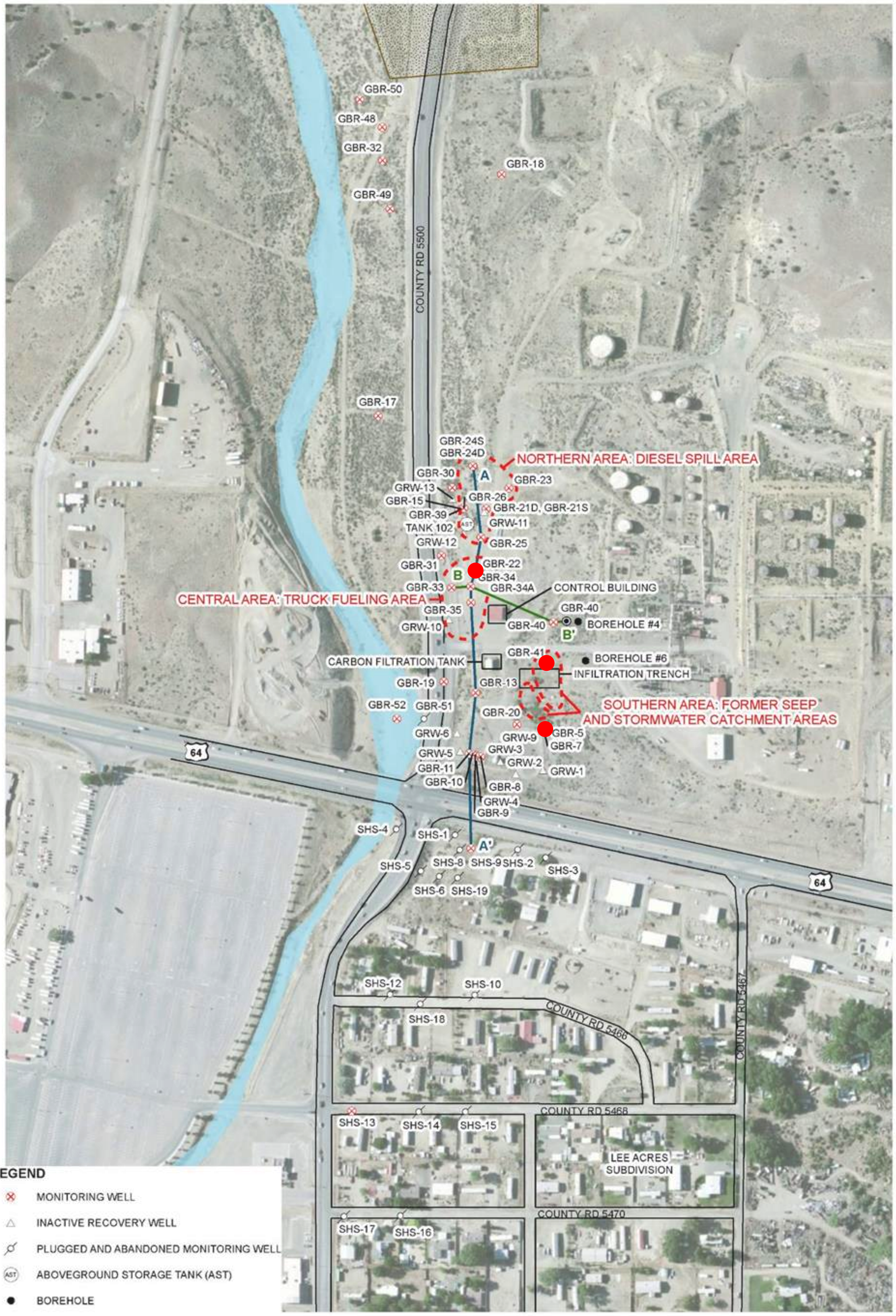
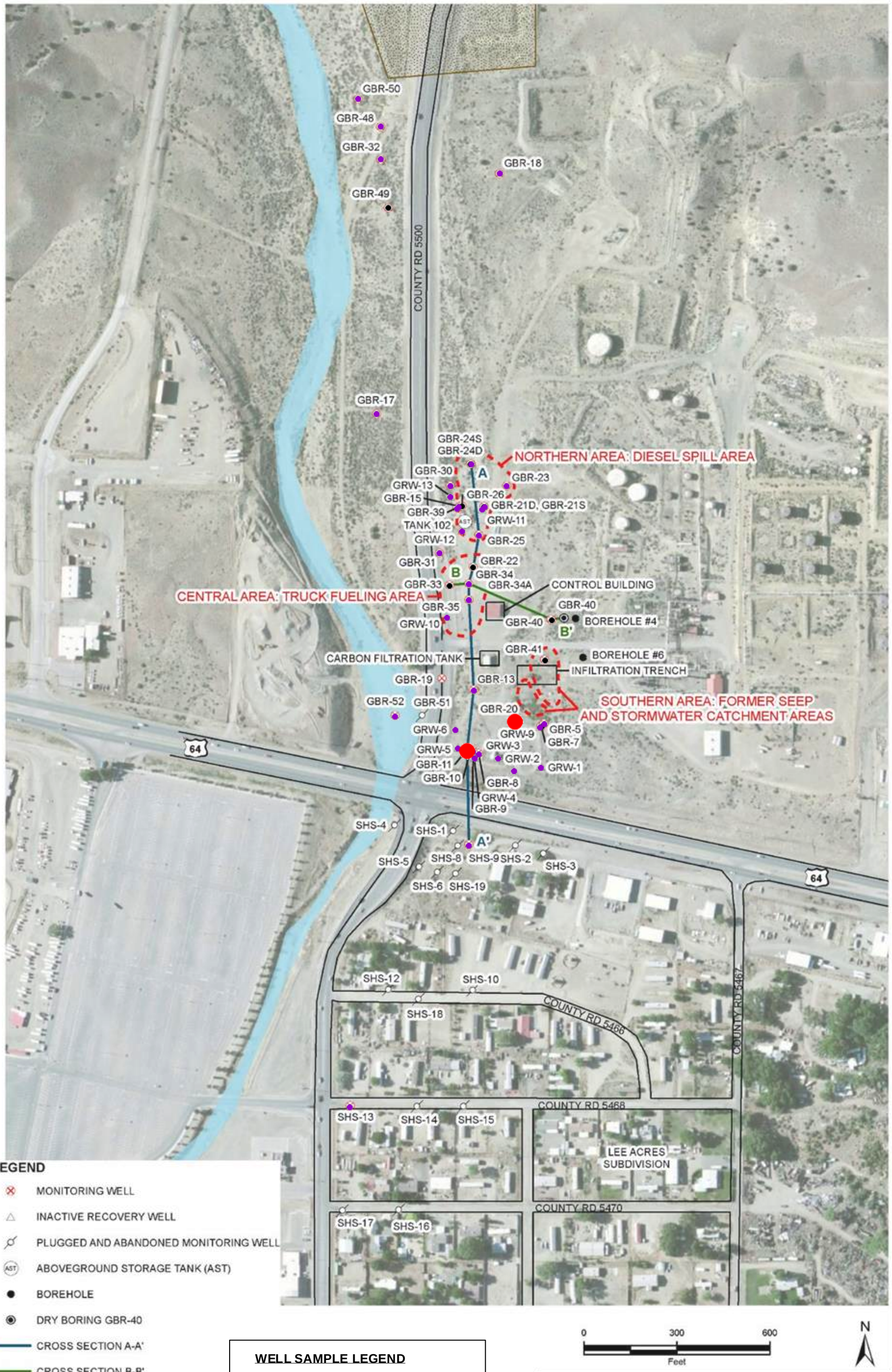



FIGURE 6
PRESENCE OF PHASE SEPARATED HYDROCARBONS
FORMER GIANT BLOOFMEILD REFINERY
BLOOMFIELD, NEW MEXICO
**HILCORP ENERGY COMPANY**




**LEGEND**

- MONITORING WELL
- INACTIVE RECOVERY WELL
- PLUGGED AND ABANDONED MONITORING WELL
- ABOVEGROUND STORAGE TANK (AST)
- BOREHOLE
- DRY BORING GBR-40
- CROSS SECTION A-A'
- CROSS SECTION B-B'
- ARROYO
- FORMER LEE ACRES LANDFILL
- SOURCE AREA

**WELL SAMPLE LEGEND**

- SAMPLE NOT ANALYZED
- BENZENE NOT DETECTED
- BENZENE DETECTED BELOW 5 µg/L
- BENZENE DETECTED ABOVE 5 µg/L

FIGURE 6
BENZENE CONCENTRATIONS IN GROUNDWATER
FORMER GIANT BLOOFMEILD REFINERY
BLOOMFIELD, NEW MEXICO
**HILCORP ENERGY COMPANY**

wsp

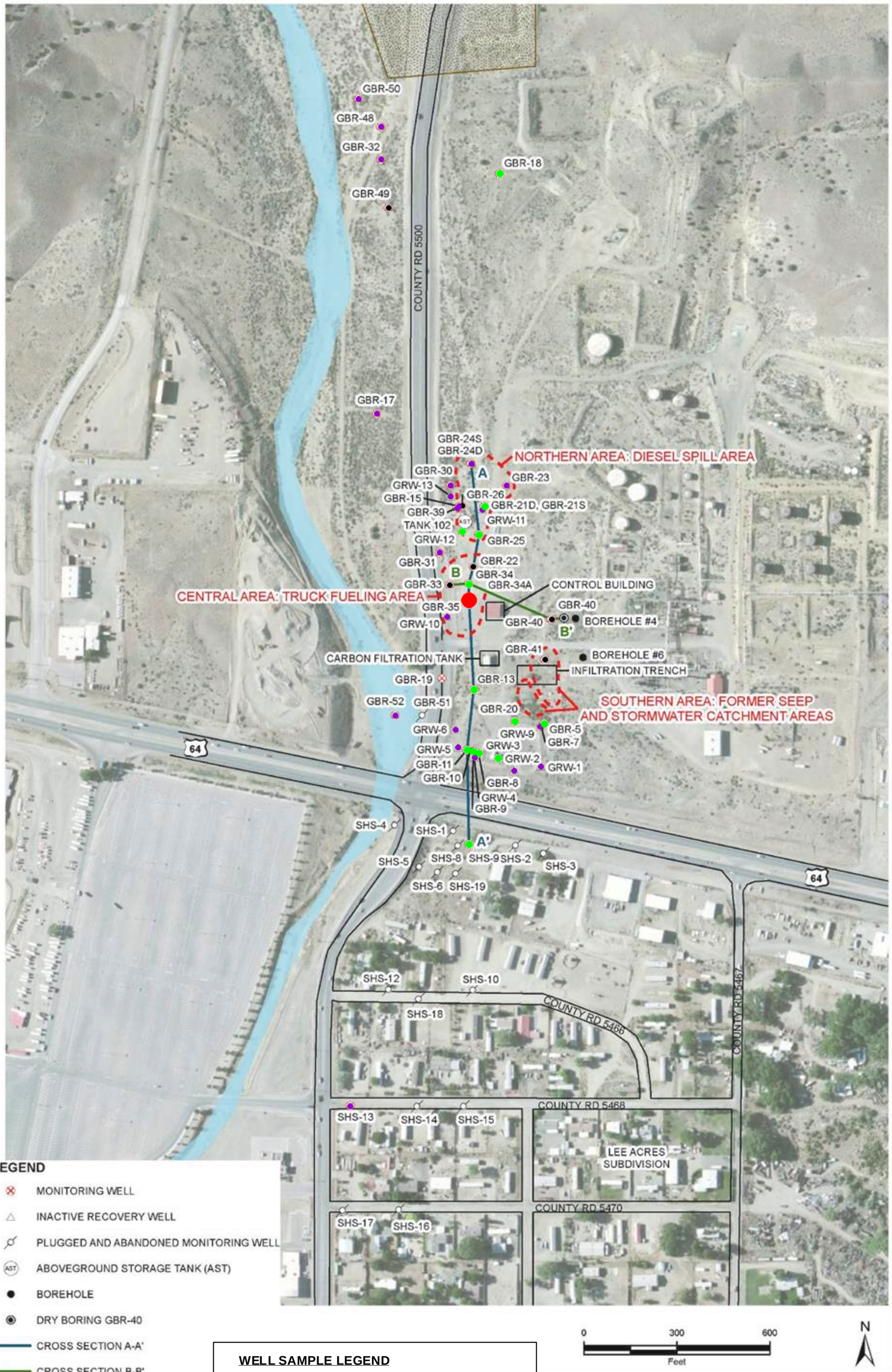



FIGURE 8
TOTAL NAPHTHALENES
CONCENTRATIONS IN GROUNDWATER
FORMER GIANT BLOOFMEILD REFINERY
BLOOMFIELD, NEW MEXICO
**HILCORP ENERGY COMPANY**

wsp

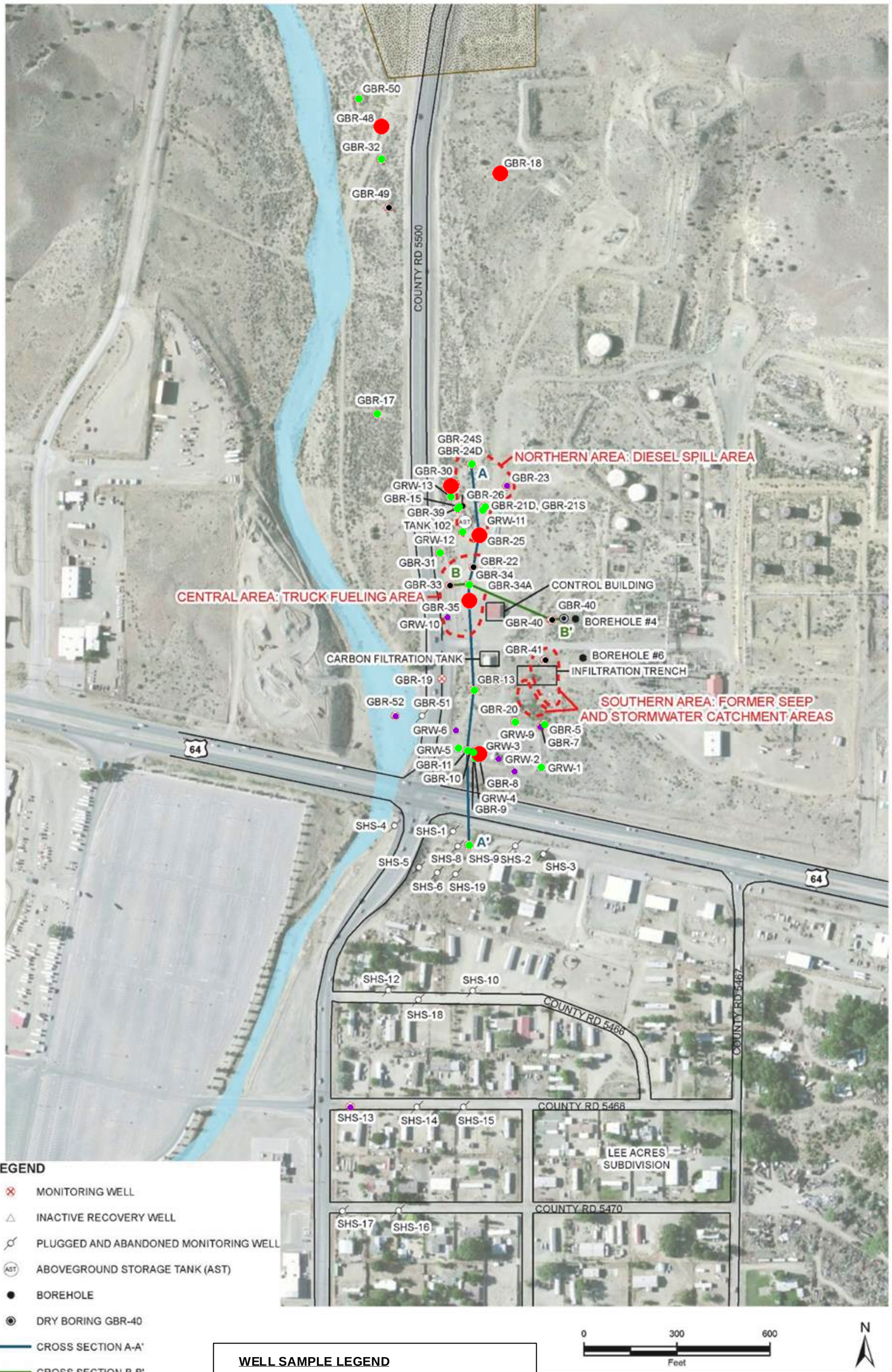



FIGURE 9
TOTAL LEAD CONCENTRATIONS IN GROUNDWATER
FORMER GIANT BLOOFMEILD REFINERY
BLOOMFIELD, NEW MEXICO
**HILCORP ENERGY COMPANY**

wsp

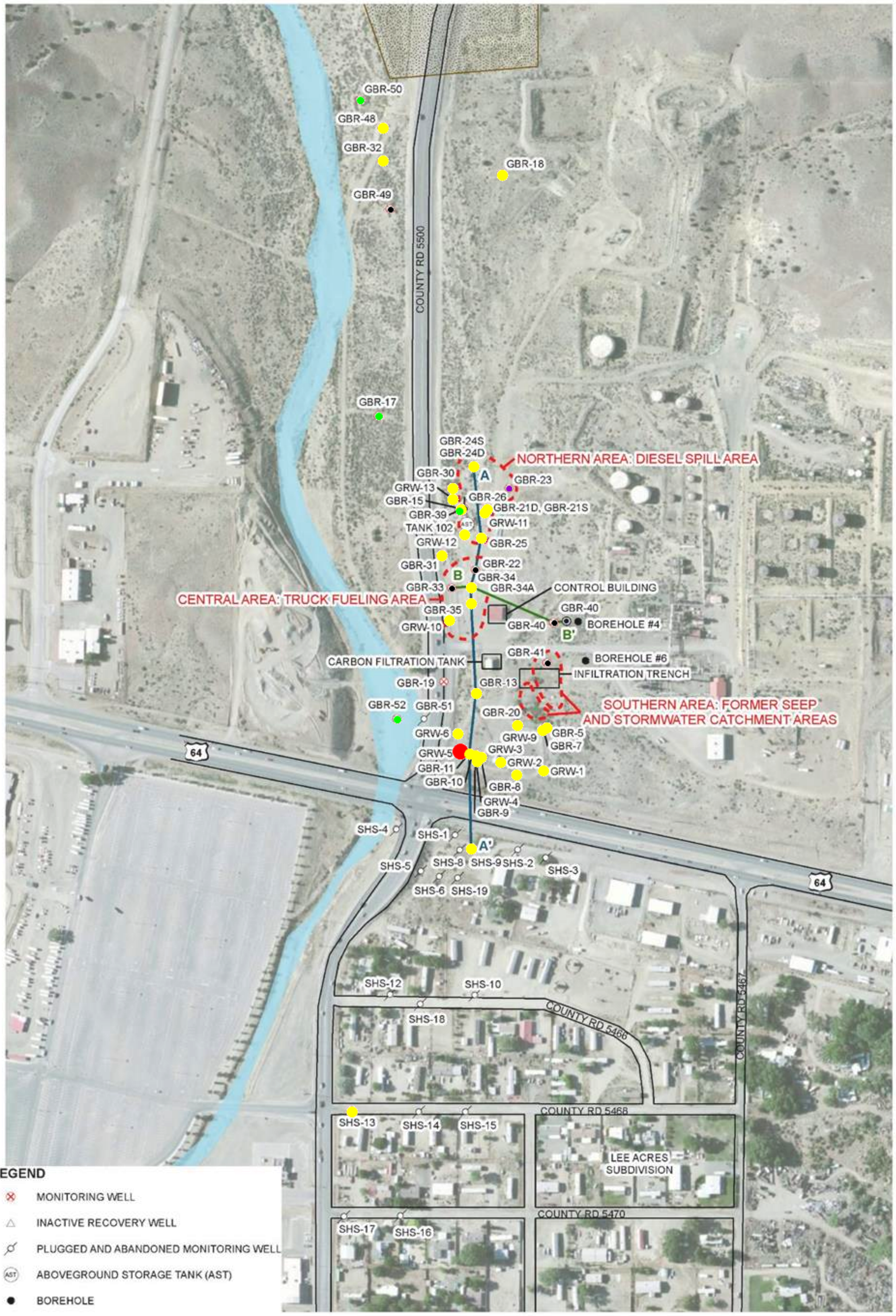



FIGURE 10
TOTAL MANGANESE CONCENTRATIONS IN GROUNDWATER
FORMER GIANT BLOOFMEILD REFINERY
BLOOMFIELD, NEW MEXICO
**HILCORP ENERGY COMPANY**

wsp

# TABLES

**TABLE 1**
**WELL CONSTRUCTION INFORMATION**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well Number | Wellhead Elevation (feet) | Total Depth (feet) | Screened Interval (feet BTOC) | Screen Placement (lithology) | Well Diameter (inches) |
|---|---|---|---|---|---|
| **GRW-1 / GBR-38** | 5,394.30 | 72.59 | 27 - 67 | sand/sandstone | 6 |
| **GRW-2 / GBR-42** | 5,391.28 | 66.11 | 37 - 52 | sand | 6 |
| **GRW-3 / GBR-29** | 5,388.77 | 60.90 | 25 - 65 | sand/sandstone | 6 |
| **GRW-4 / GBR-43** | 5,390.02 | 66.30 | 35 - 50 | sand | 6 |
| **GRW-5 / GBR-37** | 5,390.56 | 75.44 | 26 - 66 | sand/sandstone | 6 |
| **GRW-6 / GBR-44** | 5,390.81 | 63.11 | 33 - 48 | sand | 6 |
| **GRW-9 / GBR-6** | 5,395.70 | 54.90 | 20 - 60 | sand/sandstone | 6 |
| **GRW-10 / GBR-36** | 5,395.02 | 66.02 | 25 - 65 | sand/clay/gravel | 6 |
| **GRW-11 / GBR-27** | 5,397.85 | 55.60 | 22 - 62 | sand/shale/sandstone | 5 |
| **GRW-12 / GBR-28** | 5,397.24 | 51.76 | 24 - 64 | sand/clay/sandstone | 6 |
| **GRW-13 / GBR-14** | 5,396.90 | 70.86 | 20 - 60 | sand/gravel | 6 |
| **GBR-5*** | 5,395.07 | 46.88 | 32 - 52 | sandstone | 2 |
| **GBR-7** | 5,395.85 | 50.56 | 32 - 42 | sand | 2 |
| **GBR-8** | 5,390.50 | 49.26 | 38 - 53 | sand | 2 |
| **GBR-9** | 5,389.92 | 67.28 | 50 - 60 | silt/shale | 2 |
| **GBR-10** | 5,390.57 | 47.50 | 29 - 39 | sand | 2 |
| **GBR-11** | 5,389.43 | 51.20 | 40 - 50 | sand | 2 |
| **GBR-13*** | 5,393.04 | 45.40 | 32 - 42 | sandstone | 2 |
| **GBR-15** | 5,397.99 | 58.33 | 45 - 55 | clay | 2 |
| **GBR-17** | 5,402.69 | 50.25 | 31 - 51 | sand | 2 |
| **GBR-18*** | 5,421.68 | 47.87 | 35 - 45 | siltstone/sandstone | 2 |
| **GBR-20*** | 5,393.47 | 44.60 | 27 - 37 | sandstone | 2 |
| **GBR-21D*** | 5,400.19 | 48.64 | 33 - 38 | shale | 2 |
| **GBR-21S*** | 5,400.65 | 34.85 | 17 - 32 | shale | 2 |
| **GBR-22*** | 5,395.91 | 45.85 | 32 - 42 | sandstone | 2 |
| **GBR-23 (1)*** | 5,403.72 | 41.75 | 24 - 34 | sandstone | 2 |
| **GBR-24D*** | 5,396.77 | 51.44 | 33 - 43 | sandstone | 2 |
| **GBR-24S*** | 5,396.08 | 33.50 | 23 - 33 | sandstone | 2 |
| **GBR-25*** | 5,397.03 | 50.27 | 33 - 43 | sandstone | 2 |
| **GBR-26** | 5,396.72 | 42.54 | 25 - 35 | sand | 2 |
| **GBR-30** | 5,395.59 | 41.44 | 25 - 40 | sand/clay | 2 |
| **GBR-31** | 5,396.58 | 43.50 | 25 - 40 | clay/gravel | 2 |
| **GBR-32*** | 5,414.86 | 47.90 | 25 - 40 | sandstone | 2 |
| **GBR-33** | 5,396.28 | 45.77 | 27 - 43 | clay/sand | 2 |
| **GBR-34** | 5,394.00 | 46.70 | 27 - 43 | sand/sandstone | 2 |
| **GBR-35** | 5,393.66 | 41.62 | 25 - 41 | sand/sandstone | 2 |
| **GBR-39** | 5,397.55 | 41.39 | 25 - 35 | sand | 2 |
| **GBR-40** | 5,400.76 | 39.40 | 26 - 36 | sand | 2 |
| **GBR-41** | 5,396.35 | 34.34 | 22 - 32 | sand | 2 |
| **GBR-48** | 5,413.90 | 43.76 | 28 - 38 | sand/gravel | 2 |
| **GBR-49** | (2) | 40.26 | 26 - 36 | sand | 2 |
| **GBR-50** | (2) | 40.63 | 27 - 37 | sand | 2 |
| **GBR-52 / GRW-8** | 5,387.74 | 54.59 | 30 - 45 | sand | 6 |
| **SHS-9** | 5,380.79 | 46.27 | 35 - 45 | clay | 4 |
| **SHS-13** | 5,367.81 | 47.51 | 27 - 42 | sand | 4 |
| **Wells Plugged and Abandoned or Damaged** | | | | | |
| **GBR-19 (3)** | 5,393.83 | 46.23 | - | - | - |
| **GBR-51 / GRW -7** | 5,389.68 | 57.07 | - | - | - |
| **SHS-1** | 5,383.54 | 50.40 | - | - | - |
| **SHS-2** | 5,381.66 | 44.56 | - | - | - |
| **SHS-3** | 5,383.33 | - | - | - | - |
| **SHS-4** | 5,383.62 | 52.16 | - | - | - |
| **SHS-5** | 5,378.36 | 47.85 | - | - | - |
| **SHS-6** | 5,378.17 | 52.78 | - | - | - |
| **SHS-8** | 5,380.25 | 50.92 | - | - | - |
| **SHS-10** | 5,373.80 | 45.80 | - | - | - |
| **SHS-12** | 5,373.94 | 52.41 | - | - | - |
| **SHS-14** | 5,367.07 | 52.71 | - | - | - |
| **SHS-15** | 5,366.21 | 47.78 | - | - | - |
| **SHS-16** | 5,362.58 | 42.20 | - | - | - |
| **SHS-17** | 5,364.35 | 46.21 | - | - | - |
| **SHS-18** | 5,373.64 | 47.36 | - | - | - |
| **SHS-19** | 5,378.89 | 52.40 | - | - | - |

**Notes:**

(1) Well hit by a vehicle May 2014

(2) Top-of-casing elevation is unknown

(3) Well was paved over in June 2010

* - asterisk indicates that the well is screened withing the bedrock aquifer, no asterisk indicates that a well is screened in the alluvial aquifer

BTOC - below top of casing

D - designates that the well screen is deep

P&A - plugged and abandoned

S - designates that the well screen is shallow

GBR-1, GBR-2, GBR-3, GBR-4, GBR-12, GBR-16, GBR-45, GBR-46, and GBR-47 not completed as wells

**TABLE 2**
**GROUNDWATER ELEVATIONS AND THICKNESS OF PHASE-SEPARATED HYDROCARBONS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well Number | Wellhead Elevation (feet) | Total Depth (feet) | February 2020 | | | | April 2020 | | | | July 2020 | | | | December 2020 | | | | January 2021 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Depth to Water (feet BTOC) | Depth to Product (feet) | PSH Thickness (feet) | Adjusted GWEL (feet amsl) | Depth to Water (feet BTOC) | Depth to Product (feet) | PSH Thickness (feet) | Adjusted GWEL (feet amsl) | Depth to Water (feet BTOC) | Depth to Product (feet) | PSH Thickness (feet) | Adjusted GWEL (feet amsl) | Depth to Water (feet BTOC) | Depth to Product (feet) | PSH Thickness (feet) | Adjusted GWEL (feet amsl) | Depth to Water (feet BTOC) | Depth to Product (feet) | PSH Thickness (feet) | Adjusted GWEL (feet amsl) |
| **GRW-1 / GBR-38** | 5,394.30 | 72.59 | 44.28 | - | - | 5,350.02 | 43.71 | - | - | 5,350.59 | 44.62 | - | - | 5,349.68 | 45.72 | - | - | 5,348.58 | 45.43 | - | - | 5,348.87 |
| **GRW-2 / GBR-42** | 5,391.28 | 66.11 | 44.32 | - | - | 5,346.96 | 44.27 | - | - | 5,347.01 | 44.38 | - | - | 5,346.90 | 45.09 | - | - | 5,346.19 | 45.04 | - | - | 5,346.24 |
| **GRW-3 / GBR-29** | 5,388.77 | 60.90 | 44.14 | - | - | 5,344.63 | 43.96 | - | - | 5,344.81 | 44.30 | - | - | 5,344.47 | 45.01 | - | - | 5,343.76 | 44.75 | - | - | 5,344.02 |
| **GRW-4 / GBR-43** | 5,390.02 | 66.30 | 42.40 | - | - | 5,347.62 | 42.37 | - | - | 5,347.65 | 42.54 | - | - | 5,347.48 | 43.01 | - | - | 5,347.01 | 42.97 | - | - | 5,347.05 |
| **GRW-5 / GBR-37** | 5,390.56 | 75.44 | 42.52 | - | - | 5,348.04 | 42.51 | - | - | 5,348.05 | 42.69 | - | - | 5,347.87 | 43.13 | - | - | 5,347.43 | 43.06 | - | - | 5,347.50 |
| **GRW-6 / GBR-44** | 5,390.81 | 63.11 | 41.67 | - | - | 5,349.14 | 41.68 | - | - | 5,349.13 | 41.85 | - | - | 5,348.96 | 42.30 | - | - | 5,348.51 | 42.27 | - | - | 5,348.54 |
| **GRW-9 / GBR-6** | 5,395.70 | 54.90 | 41.65 | - | - | 5,354.05 | 41.35 | - | - | 5,354.35 | 41.44 | - | - | 5,354.26 | 41.38 | - | - | 5,354.32 | 41.56 | - | - | 5,354.14 |
| **GRW-10 / GBR-36** | 5,395.02 | 66.02 | 36.62 | - | - | 5,358.40 | 36.60 | | | 5,358.42 | 36.59 | - | - | 5,358.43 | NM | - | - | - | 37.09 | - | - | 5,357.93 |
| **GRW-11 / GBR-27** | 5,397.85 | 55.60 | 34.13 | - | - | 5,363.72 | 33.40 | - | - | 5,364.45 | NM | - | - | - | 33.95 | - | - | 5,363.90 | 33.67 | - | - | 5,364.18 |
| **GRW-12 / GBR-28** | 5,397.24 | 51.76 | 34.98 | - | - | 5,362.26 | 35.53 | - | - | 5,361.71 | 36.10 | - | - | 5,361.14 | 36.19 | - | - | 5,361.05 | 36.07 | - | - | 5,361.17 |
| **GRW-13 / GBR-14** | 5,396.90 | 70.86 | 33.94 | - | - | 5,362.96 | 33.95 | - | - | 5,362.95 | 34.18 | - | - | 5,362.72 | 34.55 | - | - | 5,362.35 | 34.55 | - | - | 5,362.35 |
| **GBR-5** | 5,395.07 | 46.88 | 41.65 | - | - | 5,353.42 | 40.63 | - | - | 5,354.44 | 40.75 | - | - | 5,354.32 | 41.18 | - | - | 5,353.89 | 40.88 | - | - | 5,354.19 |
| **GBR-7** | 5,395.85 | 50.56 | 42.29 | 42.12 | 0.17 | 5,353.70 | 42.24 | 42.06 | 0.18 | 5,353.75 | 42.35 | 42.29 | 0.06 | 5,353.55 | 42.87 | 42.75 | 0.12 | 5,352.98 | 42.59 | 42.48 | 0.11 | 5,353.26 |
| **GBR-8** | 5,390.50 | 49.26 | 42.45 | | | 5,348.05 | 42.41 | | | 5,348.09 | 42.55 | - | - | 5,347.95 | 43.00 | - | - | 5,347.50 | 43.01 | | | 5,347.49 |
| **GBR-9** | 5,389.92 | 67.28 | 42.38 | - | - | 5,347.54 | 42.37 | - | - | 5,347.55 | 42.52 | - | - | 5,347.40 | 42.98 | - | - | 5,346.94 | 42.96 | - | - | 5,346.96 |
| **GBR-10** | 5,390.57 | 47.50 | 42.38 | - | - | 5,348.19 | 42.40 | - | - | 5,348.17 | 42.38 | - | - | 5,348.19 | 42.41 | - | - | 5,348.16 | 42.42 | - | - | 5,348.15 |
| **GBR-11** | 5,389.43 | 51.20 | 41.49 | - | - | 5,347.94 | 41.47 | - | - | 5,347.96 | 41.64 | - | - | 5,347.79 | 42.05 | - | - | 5,347.38 | 42.07 | - | - | 5,347.36 |
| **GBR-13** | 5,393.04 | 45.40 | 41.24 | - | - | 5,351.80 | 41.21 | - | - | 5,351.83 | 41.40 | - | - | 5,351.64 | 41.85 | - | - | 5,351.19 | 41.84 | - | - | 5,351.20 |
| **GBR-15** | 5,397.99 | 58.33 | 34.63 | - | - | 5,363.36 | 34.56 | - | - | 5,363.43 | 34.72 | - | - | 5,363.27 | 35.13 | - | - | 5,362.86 | 34.86 | - | - | 5,363.13 |
| **GBR-17** | 5,402.69 | 50.25 | 35.38 | - | - | 5,367.31 | 35.38 | - | - | 5,367.31 | 35.69 | - | - | 5,367.00 | 36.11 | - | - | 5,366.58 | 36.12 | - | - | 5,366.57 |
| **GBR-18** | 5,421.68 | 47.87 | NM | - | - | - | 37.26 | - | - | 5,384.42 | 37.59 | - | - | 5,384.09 | 38.06 | - | - | 5,383.62 | 37.71 | - | - | 5,383.97 |
| **GBR-20** | 5,393.47 | 44.60 | 41.61 | - | - | 5,351.86 | 41.53 | - | - | 5,351.94 | 41.64 | - | - | 5,351.83 | Dry | | | | 41.88 | - | - | 5,351.59 |
| **GBR-21D** | 5,400.19 | 48.64 | 36.66 | - | - | 5,363.53 | 36.73 | - | - | 5,363.46 | 36.88 | - | - | 5,363.31 | 37.08 | - | - | 5,363.11 | 37.30 | - | - | 5,362.89 |
| **GBR-21S** | 5,400.65 | 34.85 | Dry | | | | Dry | | | | Dry | | | | Dry | | | | Dry | | | |
| **GBR-22** | 5,395.91 | 45.85 | 38.08 | - | - | 5,357.83 | 36.69 | 36.45 | 0.24 | 5,359.41 | 38.40 | 38.11 | 7.74 | 5,363.70 | 37.23 | 37.04 | 0.19 | 5,358.68 | 38.40 | 38.30 | 0.10 | 5,357.51 |
| **GBR-23** | 5,403.72 | 41.75 | 38.92 | - | - | 5,364.80 | 36.02 | - | - | 5,367.70 | 39.40 | - | - | 5,364.32 | Dry | | | | Dry | | | |
| **GBR-24D** | 5,396.77 | 51.44 | 31.99 | - | - | 5,364.78 | 31.85 | - | - | 5,364.92 | 32.02 | - | - | 5,364.75 | 32.39 | - | - | 5,364.38 | 32.40 | - | - | 5,364.37 |
| **GBR-24S** | 5,396.08 | 33.50 | Dry | | | | 31.22 | | | | 31.58 | - | - | 5,364.50 | Dry | | | | 31.40 | - | - | 5,364.68 |
| **GBR-25** | 5,397.03 | 50.27 | 35.66 | - | - | 5,361.37 | 35.64 | - | - | 5,361.39 | 35.81 | - | - | 5,361.22 | 36.11 | - | - | 5,360.92 | 35.92 | - | - | 5,361.11 |
| **GBR-26** | 5,396.72 | 42.54 | 33.73 | - | - | 5,362.99 | 32.77 | - | - | 5,363.95 | 33.74 | - | - | 5,362.98 | 32.65 | - | - | 5,364.07 | 33.71 | - | - | 5,363.01 |
| **GBR-30** | 5,395.59 | 41.44 | 33.48 | - | - | 5,362.11 | 33.50 | - | - | 5,362.09 | 33.70 | - | - | 5,361.89 | 34.10 | - | - | 5,361.49 | 34.10 | - | - | 5,361.49 |
| **GBR-31** | 5,396.58 | 43.50 | 31.60 | | | 5,364.98 | 33.35 | - | - | 5,363.23 | 33.54 | - | - | 5,363.04 | 36.19 | - | - | 5,360.39 | 33.92 | | | 5,362.66 |
| **GBR-32** | 5,414.86 | 47.90 | 35.33 | - | - | 5,379.53 | 35.34 | - | - | 5,379.52 | 35.59 | - | - | 5,379.27 | NM | - | - | - | 36.09 | - | - | 5,378.77 |
| **GBR-33** | 5,396.28 | 45.77 | 34.88 | - | - | 5,361.40 | NM | - | - | - | 35.81 | - | - | 5,360.47 | NM | - | - | - | Dry | | | |
| **GBR-34** | 5,394.00 | 46.70 | 36.03 | - | - | 5,357.97 | 31.60 | - | - | 5,362.40 | 36.16 | - | - | 5,357.84 | 36.62 | - | - | 5,357.38 | 36.38 | - | - | 5,357.62 |
| **GBR-35** | 5,393.66 | 41.62 | 35.14 | - | - | 5,358.52 | 34.95 | - | - | 5,358.71 | 35.18 | - | - | 5,358.48 | 35.50 | - | - | 5,358.16 | 35.41 | - | - | 5,358.25 |
| **GBR-39** | 5,397.55 | 41.39 | 34.22 | - | - | 5,363.33 | 34.17 | - | - | 5,363.38 | 34.34 | - | - | 5,363.21 | 34.67 | - | - | 5,362.88 | 34.50 | - | - | 5,363.05 |
| **GBR-40** | 5,400.76 | 39.40 | Dry | | | | Dry | | | | Dry | | | | Dry | | | | Dry | | | |
| **GBR-41** | 5,396.35 | 34.34 | 34.27 | - | - | 5,362.08 | Dry | | | | 34.27 | - | - | 5,362.08 | 34.27 | - | - | 5,362.08 | Dry | | | |
| **GBR-48** | 5,413.90 | 43.76 | 36.98 | - | - | 5,376.92 | 36.99 | - | - | 5,376.91 | 37.26 | - | - | 5,376.64 | NM | - | - | - | 37.79 | - | - | 5,376.11 |
| **GBR-49** | (1) | 40.26 | 33.41 | - | - | - | 33.47 | - | - | - | 33.71 | - | - | - | Obstructed | | | | Obstructed | | | |
| **GBR-50** | (1) | 40.63 | 32.70 | - | - | - | 22.72 | - | - | - | 32.98 | - | - | - | NM | - | - | - | 33.50 | - | - | - |
| **GBR-52 / GRW-8** | 5,387.74 | 54.59 | 37.82 | - | - | 5,349.92 | 37.80 | - | - | 5,349.94 | 38.02 | - | - | 5,349.72 | 38.12 | - | - | 5,349.62 | 38.45 | - | - | 5,349.29 |
| **SHS-9** | 5,380.79 | 46.27 | 37.74 | | | 5,343.05 | 37.76 | - | - | 5,343.03 | 38.9 | - | - | 5,341.89 | 38.95 | - | - | 5,341.84 | 38.23 | | | 5,342.56 |
| **SHS-13** | 5,367.81 | 47.51 | 35.88 | - | - | 5,331.93 | 35.8 | - | - | 5,332.01 | 36.13 | - | - | 5,331.68 | 38.25 | - | - | 5,293.76 | 36.33 | - | - | 5,331.48 |

**Notes:**

amsl - above mean sea level
BTOC - below top of casing
D - designates that the well screen is deep
GWEL - groundwater elevation
PSH - phase-separated hydrocarbon
S - designates that the well screen is shallow
(1) Top-of-casing elevation is unknown
-: indicates no GWEL or PSH measured
When PSH is detected, the GWEL is corrected using an estimated density correction factor of 0.8

**TABLE 3**
**GROUNDWATER QUALITY PARAMETERS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well Number | April 2021 | | | | |
|---|---|---|---|---|---|
| | pH | Electrical Conductivity (mS/cm) | Temperature (°C) | Oxidation-Reduction Potential | Dissolved Oxygen (mg/L) |
| **GRW-1 / GBR-38** | 8.10 | 4.704 | 17.20 | -211.0 | 1.64 |
| **GRW-2 / GBR-42** | 7.74 | 5.003 | 17.23 | -196.0 | 1.20 |
| **GRW-3 / GBR-29** | 7.18 | 3.136 | 17.45 | -122.0 | 1.24 |
| **GRW-4 / GBR-43** | 7.32 | 4.166 | 17.21 | -343.0 | 0.83 |
| **GRW-5 / GBR-37** | 7.47 | 4.090 | 16.98 | -160.0 | 1.21 |
| **GRW-6 / GBR-44** | 7.25 | 4.194 | 16.96 | -98.1 | 1.76 |
| **GRW-9 / GBR-6** | 8.05 | 4.494 | 17.81 | -324.0 | 1.18 |
| **GRW-10 / GBR-36** | - | - | - | - | - |
| **GRW-11 / GBR-27** | 7.62 | 4.916 | 16.84 | -222.4 | 1.38 |
| **GRW-12 / GBR-28** | 7.70 | 3.187 | 16.80 | -189.4 | 1.60 |
| **GRW-13 / GBR-14** | 7.54 | 4.785 | 16.24 | -121.0 | 1.43 |
| **GBR-5** | 7.89 | 3.926 | 18.11 | -302.0 | 1.26 |
| **GBR-7** | - | - | - | - | - |
| **GBR-8** | 7.48 | 3.903 | 17.66 | -226.0 | 1.64 |
| **GBR-9** | 7.40 | 3.826 | 17.30 | -187.0 | 1.27 |
| **GBR-10** | - | - | - | - | - |
| **GBR-11** | 7.56 | 2.986 | 17.50 | -225.0 | 1.17 |
| **GBR-13** | 7.17 | 3.711 | 17.62 | -117.0 | 1.27 |
| **GBR-15** | 7.86 | 4.733 | 16.68 | -147.8 | 2.04 |
| **GBR-17** | 8.07 | 3.115 | 15.77 | 100.3 | 2.08 |
| **GBR-18** | 7.14 | 3.004 | 16.33 | 84.2 | 1.98 |
| **GBR-20** | 8.20 | 3.106 | 18.54 | -335.0 | 2.00 |
| **GBR-21D** | 7.63 | 3.948 | 17.01 | -278.0 | 1.04 |
| **GBR-21S** | - | - | - | - | - |
| **GBR-22** | 7.48 | 4.487 | 17.73 | -343.0 | 0.54 |
| **GBR-23** | - | - | - | - | - |
| **GBR-24D** | 7.67 | 4.718 | 15.85 | -223.0 | 2.07 |
| **GBR-24S** | - | - | - | - | - |
| **GBR-25** | 7.12 | 4.895 | 17.34 | -298.0 | 1.03 |
| **GBR-26** | - | - | - | - | - |
| **GBR-30** | 7.66 | 4.307 | 16.38 | -64.7 | 1.48 |
| **GBR-31** | 4.47 | 3.897 | 16.73 | -63.2 | 1.36 |
| **GBR-32** | 7.19 | 4.451 | 16.20 | -66.2 | 1.66 |
| **GBR-33** | - | - | - | - | - |
| **GBR-34** | 7.36 | 2.908 | 17.47 | -237.9 | 1.36 |
| **GBR-35** | 7.48 | 2.766 | 17.35 | -245.0 | 1.37 |
| **GBR-39** | 7.64 | 3.777 | 16.74 | -198.4 | 1.44 |
| **GBR-40** | - | - | - | - | - |
| **GBR-41** | - | - | - | - | - |
| **GBR-48** | 7.43 | 0.033 | 15.63 | 19.2 | 11.01 |
| **GBR-49** | 7.33 | 4.996 | 16.24 | 18.6 | 4.12 |
| **GBR-50** | 7.31 | 4.117 | 16.25 | -72.3 | 1.91 |
| **GBR-52 / GRW-8** | 7.75 | 3.604 | 15.78 | 141.9 | 1.83 |
| **SHS-9** | 7.21 | 2.183 | 17.34 | 109.1 | 2.03 |
| **SHS-13** | 7.18 | 2.077 | 17.36 | 111.6 | 2.10 |

**Notes:**

BTOC - below top of casing

°C - degrees Celsius

D - designates that the well screen is deep

mg/L - milligrams per liter

mS/cm - millisiemens per centimeter

S - designates that the well screen is shallow

-: indicates no sample collected

# TABLE 4
# 2021 ANALYZED CONSTITUENTS

## FORMER GIANT BLOOMFIELD REFINERY
## WESTERN REFINING SOUTHWEST, LLC
## SAN JUAN COUNTY, NEW MEXICO

| VOCs Method 8260B |
|---|
| benzene |
| toluene |
| ethylbenzene |
| xylenes, total |
| methyl tert-butyl ether (MTBE) |
| 1,2,4-trimethylbenzene |
| 1,3,5-trimethylbenzene |
| 1,2-dichloroethane (EDC) |
| 1,2-dibromoethane (EDB) |
| naphthalene |
| 1-methylnaphthalene |
| 2-methylnaphthalene |
| acetone |
| bromobenzene |
| bromodichloromethane |
| bromoform |
| bromomethane |
| 2-butanone |
| carbon disulfide |
| carbon tetrachloride |
| chlorobenzene |
| chloroethane |
| chloroform |
| chloromethane |
| 2-chlorotoluene |
| 4-chlorotoluene |
| cis-1,2-dichloroethene (cis-1,2-DCE) |
| cis-1,3-dichloropropene |
| 1,2-dibromo-3-chloropropane |
| dibromochloromethane |
| dibromomethane |
| 1,2-dichlorobenzene |
| 1,3-dichlorobenzene |
| 1,4-dichlorobenzene |
| dichlorodifluoromethane |
| 1,1-dichloroethane |
| 1,1-dichloroethene (1,1-DCE) |
| 1,2-dichloropropane |

**TABLE 4**
**2021 ANALYZED CONSTITUENTS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| |
|---|
| 1,3-dichloropropane |
| 2,2-dichloropropane |
| 1,1-dichloropropene |
| hexachlorobutadiene |
| 2-hexanone |
| isopropylbenzene |
| 4-isopropytoluene |
| 4-methyl-2-pentanone |
| methylene chloride |
| n-butylbenzene |
| n-propylbenzene |
| sec-butylbenzene |
| styrene |
| tert-butylbenzene |
| 1,1,1,2-tetrachloroethane |
| 1,1,2,2-tetrachloroethane |
| tetrachloroethene (PCE) |
| trans-1,2-dichloroethene (trans-1,2-DCE) |
| trans-1,3-dichloropropene |
| 1,2,3-trichlorobenzene |
| 1,2,4-trichlorobenzene |
| 1,1,1-trichloroethane |
| 1,1,2-trichloroethane |
| trichloroethene (TCE) |
| trichlorofluoromethane |
| 1,2,3-trichloropropane |
| vinyl chloride |
| **PAHs Method 8270** |
| naphthalene |
| 1-methylnaphthalene |
| 2-methylnaphthalene |
| acenaphthylene |
| acenaphthene |
| fluorene |
| phenanthrene |
| anthracene |
| fluoranthene |
| pyrene |
| benz(a)anthracene |

**TABLE 4**
**2021 ANALYZED CONSTITUENTS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| **PAHs Method 8270 (continued)** |
|---|
| chrysene |
| benzo(b)fluoranthene |
| benzo(k)fluoranthene |
| benzo(a)pyrene |
| dibenz(a,h)anthracene |
| benzo(g,h,i)perylene |
| indeno(1,2,3-cd)pyrene |
| **Metals** |
| arsenic* |
| barium* |
| beryllium |
| cadmium* |
| chromium* |
| iron |
| lead* |
| manganese |
| mercury* |
| nickel |
| selenium* |
| silver* |
| thallium |
| **General Chemistry** |
| chloride |
| fluoride |
| nitrate + nitrite as N |
| sulfate |
| total dissolved solids |

**Notes:**
* - asterisks denotes RCRA 8 Metal

**TABLE 5**
**GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Volatile Organic Compounds (VOCs) | benzene | toluene | ethylbenzene | xylenes, total | methyl tert-butyl ether (MTBE) | 1,2,4-trimethylbenzene | 1,3,5-trimethylbenzene | 1,2-dichloroethane (EDC) | 1,2-dibromoethane (EDB) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthene | acenaphthylene | anthracene | benzo(a)anthracene | benzo(a)pyrene | benzo(b)fluoranthene | benzo(g,h,i)perylene | benzo(k)fluoranthene | chrysene | dibenz(a,h)anthracene | fluoranthene | fluorene | indeno(1,2,3-cd)pyrene | phenanthrene | pyrene | bromobenzene | bromochloromethane | bromodichloromethane | bromoform | bromomethane | n-butylbenzene | sec-butylbenzene | tert-butylbenzene | carbon disulfide | carbon tetrachloride | chlorobenzene | chloroethane | chloroform | chloromethane | 2-chlorotoluene | 4-chlorotoluene | cis-1,2-dichloroethene (cis-1,2-DCE) | cis-1,2-dichloropropene | 1,2-dibromo-3-chloropropane | dibromochloromethane | dibromomethane | 1,2-dichlorobenzene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | 5 | 1,000 | 700 | 620 | 100 | NE | NE | 5 | 0.05 | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5 | NE | NE | 100 | NE | NE | NE | 70 | NE | NE | NE | NE | 600 |
| EPA Regional Screening Level (1) | | | 4.55 | 1,100 | 15 | 193 | 143 | 55.7 | 60.3 | 1.71 | 0.0747 | 1.17 | 11.4 | 35.9 | 14,100 | 62.2 | 1.34 | 32.9 | 7.55 | 5,570 | 811 | 4.55 | 77.7 | NE | 2.21 | 188 | 237 | 250 | 36.1 | 4.71 | 0.00334 | 8.71 | 8.34 | 304 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GRW-1/GBR-38 | Jun-88 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Mar-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-2/GBR-42 | Sep-89 | | 0.26 | nd | 1.6 | 0.23 | --- | --- | --- | 0.36 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-3/GBR-29 | Jun-86 | | **3,818** | **3,338** | nd | **5,210** | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jun-88 | | **3,500** | 320 | **800** | **1,880** | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-00 | | **16** | nd | 45 | 0.60 | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | 0.50 | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-05 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | 10 | 10 | <1.0 | <1.0 | <2.0 | <1.0 | | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-4/GBR-43 | Sep-89 | | **950** | nd | 200 | 200 | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <7.5 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <20 | <20 | <50 | <5.0 | <5.0 | <5.0 | <15 | <50 | <50 | <5.0 | <5.0 | <10 | <5.0 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | | | | | | | | | | | | | | | | |
| GRW-5/ GBR-37 | Jun-88 | | **68** | 2.0 | 61 | 43 | --- | --- | --- | 4.0 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **7.0** | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | 23 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-6/GBR-44 | Jun-88 | | **10** | 0.70 | nd | nd | --- | --- | --- | 2.4 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **20** | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-00 | | nd | nd | nd | nd | nd | --- | --- | 0.50 | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-05 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-9/GBR-6 | Nov-86 | | **70** | nd | nd | **1,240** | --- | --- | --- | 3.0 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Dec-88 | | **740** | nd | **25,000** | **31,000** | --- | --- | --- | 1.7 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-10/GBR-36 | Jun-88 | | **15** | nd | nd | 13 | --- | --- | --- | 3.5 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **80** | nd | | | | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-11/GBR-27 | Jun-86 | | **410** | 120 | nd | 506 | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | | nd | | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GRW-12/GBR-28 | May-86 | | **319** | 143 | nd | 224 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | | | | | | | | | | | | | | |
| | Jun-88 | | **1,060** | nd | nd | 270 | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | 1.2 | | | | | | | | | | | | | | | | |
| GRW-13/GBR-14 | Nov-86 | | nd | nd | nd | nd | --- | --- | --- | 2.5 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Dec-88 | | nd | nd | nd | nd | --- | --- | --- | 3.4 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | **5.4** | 0.70 | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-00 | | nd | nd | nd | nd | nd | --- | --- | 3.0 | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GBR-5* | Jun-86 | | **530** | 200 | **1,000** | **4,600** | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <7.5 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <20 | <20 | <50 | <5.0 | <5.0 | <5.0 | <15 | <50 | <50 | <5.0 | <5.0 | <10 | <5.0 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | | | | | | | | | | | | | | | | |
| GRW-7 | Nov-86 | | **21** | nd | nd | 29 | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | | | | | | | | | | | | | | |
| GRW-8 | Oct-86 | | **2,670** | **1,460** | **1,890** | **6,980** | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | | | | | | | | | | | | | | |
| | Dec-88 | | **570** | 470 | **1,800** | **9,000** | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Aug-15 | | <5.0 | <5.0 | <5.0 | <7.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | 39 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GBR-9 | Nov-86 | | **49** | nd | nd | 2.0 | --- | --- | --- | **6.0** | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Aug-88 | | nd | nd | nd | nd | --- | --- | --- | **5.1** | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <2.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |
| GBR-10 | Nov-86 | | **9,500** | **1,100** | 670 | **3,130** | --- | --- | --- | **150** | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | | | | | | | | | | | | | | |
| GBR-11 | Jun-86 | | **4,600** | **3,100** | **960** | **1,780** | --- | --- | --- | **140** | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Aug-15 | | 1.7 | <1.0 | 1.1 | <1.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | | | | | | | | | | | | | | |
| | Feb-21 | | **11** | <5.0 | 8.5 | 15 | <5.0 | 6.8 | <5.0 | <5.0 | <5.0 | <10 | <20 | <20 | <50 | <5.0 | <5.0 | <5.0 | <15 | <50 | <50 | <5.0 | <5.0 | <10 | <5.0 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | | | | | | | | | | | | | | | | |
| GBR-13* | Jun-86 | | **1,300** | 12 | 130 | **731** | --- | --- | --- | **58** | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Dec-88 | | **390** | 78 | 330 | **1,530** | --- | --- | --- | **9.0** | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd | | | | | | | | | | | | | | | | |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | | | | | | | | | | | | | | | | |

TABLE 5
GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS

FORMER GIANT BLOOMFIELD REFINERY
WESTERN REFINING SOUTHWEST, LLC
SAN JUAN COUNTY, NEW MEXICO

| Well ID | Sample Date | Volatile Organic Compounds (VOCs) | 1,3-dichlorobenzene | 1,4-dichlorobenzene | dichlorodifluoromethane | 1,1-dichloroethane | 1,1-dichloroethene (1,1-DCE) | 1,2-dichloropropane | 1,3-dichloropropane | 2,2-dichloropropane | 1,1-dichloropropene | hexachlorobutadiene | 2-hexanone | isopropylbenzene | 4-isopropyltoluene | 4-methyl-2-pentanone | methylene chloride | n-butylbenzene | n-propylbenzene | sec-butylbenzene | styrene | tert-butylbenzene | 1,1,1,2-tetrachloroethane | 1,1,2,2-tetrachloroethane | tetrachloroethene (PCE) | trans-1,2-dichloroethene (trans-1,2-DCE) | trans-1,3-dichloropropene | 1,2,3-trichlorobenzene | 1,2,4-trichlorobenzene | 1,1,1-trichloroethane | 1,1,2-trichloroethane | trichloroethene (TCE) | trichlorofluoromethane | 1,2,3-trichloropropane | vinyl chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | NE | 75 | NE | 25 | 7 | 5 | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5 | NE | NE | NE | 100 | NE | NE | 10 | 5 | 100 | NE | NE | 70 | 200 | 5 | 5 | NE | NE | 2 |
| EPA Regional Screening Level (1) | | | NE | 4.82 | 197 | 27.5 | 285 | 8.25 | 369 | NE | NE | 1.39 | 38.0 | 451 | NE | 6,260 | 107 | 1,000 | 656 | 2,010 | 1,210 | 691 | 5.74 | 0.757 | 40.6 | 67.8 | 369 | 7.04 | 3.99 | 8,010 | 0.415 | 2.83 | 5,160 | 0.00749 | 0.188 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5.0 | 100 | NE | NE | NE | NE | NE | 5.0 | NE | NE | 1.0 |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GRW-1/GBR-38 | Jun-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Mar-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 1.8 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-2/GBR-42 | Sep-89 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | --- | nd | --- | --- | nd | nd | nd | **1.4** | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 1.6 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-3/GBR-29 | Jun-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jun-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | 3.8 | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 2.7 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 1.8 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-4/GBR-43 | Sep-89 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | --- | nd | --- | --- | **71** | nd | nd | **1.4** | --- | nd |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <50 | <5.0 | <5.0 | <50 | <15 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 |
| GRW-5/ GBR-37 | Jun-88 | | nd | nd | nd | **2.5** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | | | | | | | nd | **2.3** | nd | nd | | | **1.5** | nd | **2.4** | nd | | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-6/GBR-44 | Jun-88 | | nd | nd | nd | **5.5** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **6.7** | nd | nd | --- | --- | **5.5** | nd | **3.6** | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-9/GBR-6 | Nov-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Dec-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **0.60** | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 2.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-10/GBR-36 | Jun-88 | | nd | nd | nd | **9.6** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **17** | nd | nd | --- | --- | **10** | nd | **10** | nd | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 2.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-11/GBR-27 | Jun-86 | | nd | nd | nd | nd | nd | nd | | | | | | | | | nd | | | | | | | nd | nd | nd | nd | | | nd | nd | nd | nd | | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-12/GBR-28 | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 1.7 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GRW-13/GBR-14 | Nov-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Dec-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | 2.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-5* | Jun-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <50 | <5.0 | <5.0 | <50 | <15 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 |
| GBR-7 | Nov-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-8 | Oct-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-9 | Nov-86 | | nd | nd | nd | **4.0** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Aug-88 | | nd | nd | nd | **3.3** | **0.60** | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **0.90** | --- | nd | --- | --- | **1.3** | nd | **2.5** | nd | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-10 | Nov-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-11 | Jun-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <50 | <5.0 | <5.0 | <50 | <15 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 |
| GBR-13* | Jun-86 | | nd | nd | nd | 25 | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | 1.6 | --- | --- | --- | --- | --- | --- | nd | nd | **10** | nd | --- | --- | **23** | nd | nd | nd | --- | nd |
| | Dec-88 | | nd | nd | nd | **5.2** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | 1.6 | --- | --- | --- | --- | --- | --- | nd | nd | **14** | nd | --- | --- | **1.8** | nd | **4.8** | **0.60** | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |

**TABLE 5**
**GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Volatile Organic Compounds (VOCs) | benzene | toluene | ethylbenzene | xylenes, total | methyl tert-butyl ether (MTBE) | 1,2,4-trimethylbenzene | 1,3,5-trimethylbenzene | 1,2-dichloroethane (EDC) | 1,2-dibromoethane (EDB) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acetone | bromobenzene | bromodichloromethane | bromoform | bromomethane | 2-butanone | carbon disulfide | carbon tetrachloride | chlorobenzene | chloroethane | chloroform | chloromethane | 2-chlorotoluene | 4-chlorotoluene | cis-1,2-dichloroethene (cis-1,2-DCE) | cis-1,3-dichloropropene | 1,2-dibromo-3-chloropropane | dibromochloromethane | dibromomethane | 1,2-dichlorobenzene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | 5 | 1,000 | 700 | 620 | 100 | NE | NE | 5 | 0.05 | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | 5 | NE | NE | 100 | NE | NE | NE | 70 | NE | NE | NE | NE | 600 |
| EPA Regional Screening Level (1) | | | 4.55 | 1,100 | 15 | 193 | 143 | 55.7 | 60.3 | 1.71 | 0.0747 | 1.17 | 11.4 | 35.9 | 14,100 | 62.2 | 1.34 | 32.9 | 7.55 | 5,570 | 811 | 4.55 | 77.7 | NE | 2.21 | 188 | 237 | 250 | 36.1 | 4.71 | 0.00334 | 8.71 | 8.34 | 304 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 70 | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR-15 | Oct-86 | | **334** | 52 | 209 | **772** | --- | --- | --- | **78** | --- | --- | --- | --- | --- | --- | nd | nd | --- | --- | --- | nd | | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | --- |
| | Dec-88 | | nd | nd | 1.30 | 2.5 | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | 1.2 | --- | --- | --- | **9.8** | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | **0.70** |
| | Jan-00 | | nd | nd | 0.70 | nd | nd | --- | --- | 3.10 | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | **1.0** |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| GBR-17 | Jun-86 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Dec-88 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Dec-00 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Dec-05 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-18* | Jun-86 | | **50** | 11 | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jul-94 | | <0.5 | <0.5 | <0.5 | <0.5 | <2.5 | --- | --- | <0.5 | <0.2 | --- | --- | --- | --- | --- | <0.2 | <0.5 | <1.0 | --- | --- | <0.2 | <0.5 | <0.5 | <0.5 | <1.0 | --- | --- | <0.2 | --- | --- | --- | --- | <0.5 |
| | Mar-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-20* | Jun-86 | | **4.0** | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | | | nd | nd | | nd | | nd |
| | Aug-15 | | <2.0 | <2.0 | <2.0 | <3.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | **14** | <5.0 | 120 | <7.5 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <20 | <20 | <50 | <5.0 | <5.0 | <5.0 | <15 | <50 | <50 | <5.0 | <5.0 | <10 | <5.0 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 |
| GBR-21S* | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-21D* | May-88 | | nd | 22 | 2.0 | 234 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <2.0 | <2.0 | <2.0 | <3.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-22* | May-86 | | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | 1.7 | <2.0 | 16 | 6.3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-23* | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24S* | Nov-86 | | **580** | 200 | 300 | 495 | --- | --- | --- | **60** | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24D* | Nov-86 | | **230** | 5.0 | 180 | nd | --- | --- | --- | **69** | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd |
| | Jun-88 | | **63** | 11 | 73 | 40 | --- | --- | --- | **55** | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-95 | | 0.60 | nd | 2.3 | 0.80 | --- | --- | --- | **11** | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-00 | | **6.6** | nd | nd | nd | nd | --- | --- | **19** | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-05 | | 0.60 | nd | 0.90 | nd | nd | --- | --- | **18** | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | --- | nd | --- | nd | --- | **0.80** |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | 3.5 | <1.0 | <1.0 | <1.0 | <2.0 | 8.0 | 7.4 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | 1.6 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | 1.3 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-25* | May-86 | | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <5.0 | <5.0 | 15 | <7.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <7.5 | <5.0 | 6.7 | <5.0 | <5.0 | <5.0 | <10 | <20 | <20 | <50 | <5.0 | <5.0 | <5.0 | <15 | <50 | <50 | <5.0 | <5.0 | <10 | <5.0 | <15 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 |
| GBR-26 | Oct-86 | | **5,280** | 119 | 54 | **1,140** | --- | --- | --- | **66** | --- | --- | --- | --- | --- | --- | nd | nd | --- | --- | --- | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Aug-15 | | <2.0 | <2.0 | <2.0 | <3.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (No Recovery) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-30 | Dec-86 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jun-88 | | nd | nd | nd | **20** | --- | --- | --- | 0.98 | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-00 | | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **0.60** | nd | --- | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-31 | Nov-86 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | **10** | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **23** | nd | --- | nd | --- | nd |
| | Jun-88 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **0.70** | nd | --- | nd | --- | nd |
| | Jan-00 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **2.1** | nd | --- | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |

TABLE 5
GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS

FORMER GIANT BLOOMFIELD REFINERY
WESTERN REFINING SOUTHWEST, LLC
SAN JUAN COUNTY, NEW MEXICO

| Well ID | Sample Date | Volatile Organic Compounds (VOCs) | 1,3-dichlorobenzene | 1,4-dichlorobenzene | dichlorodifluoromethane | 1,1-dichloroethane | 1,1-dichloroethene (1,1-DCE) | 1,2-dichloropropane | 1,3-dichloropropane | 2,2-dichloropropane | 1,1-dichloropropene | hexachlorobutadiene | 2-hexanone | isopropylbenzene | 4-isopropyltoluene | 4-methyl-2-pentanone | methylene chloride | n-butylbenzene | n-propylbenzene | sec-butylbenzene | styrene | tert-butylbenzene | 1,1,1,2-tetrachloroethane | 1,1,2,2-tetrachloroethane | tetrachloroethene (PCE) | trans-1,2-dichloroethene (trans-1,2-DCE) | trans-1,3-dichloropropene | 1,2,3-trichlorobenzene | 1,2,4-trichlorobenzene | 1,1,1-trichloroethane | 1,1,2-trichloroethane | trichloroethene (TCE) | trichlorofluoromethane | 1,2,3-trichloropropane | vinyl chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | NE | 75 | NE | 25 | 7 | 5 | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5 | NE | NE | NE | 100 | NE | NE | 10 | 5 | 100 | NE | NE | 70 | 200 | 5 | 5 | NE | NE | 2 |
| EPA Regional Screening Level (1) | | | NE | 4.82 | 197 | 27.5 | 285 | 8.25 | 369 | NE | NE | 1.39 | 38.0 | 451 | NE | 6,260 | 107 | 1,000 | 656 | 2,010 | 1,210 | 691 | 5.74 | 0.757 | 40.6 | 67.8 | 369 | 7.04 | 3.99 | 8,010 | 0.415 | 2.83 | 5,160 | 0.00749 | 0.188 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5.0 | 100 | NE | NE | NE | NE | NE | 5.0 | NE | NE | 1.0 |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR-15 | Oct-86 | | --- | --- | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | nd | --- | --- | nd |
| | Dec-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-17 | Jun-86 | | nd | nd | nd | 20 | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | 1.0 | nd | nd | --- | --- | --- | 14 | nd | 1.0 | nd | --- | nd |
| | Dec-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | 3.1 | nd | nd | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Dec-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Dec-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-18* | Jun-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jul-94 | | <0.5 | <0.5 | | <0.2 | <0.2 | <0.2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | <2.0 | --- | --- | --- | --- | --- | --- | <0.2 | <0.5 | <1.0 | --- | --- | --- | --- | <1.0 | <0.2 | <0.2 | <0.2 | --- | <0.5 |
| | Mar-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-20* | Jun-86 | | nd | nd | nd | nd | nd | nd | | | | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd | |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <50 | 24 | <5.0 | <50 | <15 | <15 | 19 | 6.4 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | |
| GBR-21S* | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-21D* | May-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | 1.3 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | 1.6 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | |
| GBR-22* | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-23* | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24S* | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24D* | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | 1.3 | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | 0.69 | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-05 | | nd | nd | --- | 0.50 | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-25* | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <50 | 6.8 | <5.0 | <50 | <15 | <15 | 8.5 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <10 | <5.0 | |
| GBR-26 | Oct-86 | | --- | --- | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | --- | --- | nd | |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (No Recovery) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-30 | Dec-86 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jun-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | 0.61 | 1.0 | nd | --- | --- | --- | nd | nd | 0.52 | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-31 | Nov-86 | | nd | nd | nd | 22 | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | 16 | nd | nd | --- | --- | --- | 12 | nd | 12 | nd | --- | nd |
| | Jun-88 | | nd | nd | nd | 4.6 | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | 5.0 | 53 | nd | --- | --- | --- | 1.8 | nd | 7.6 | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | 1.4 | nd | nd | --- | --- | --- | nd | nd | 0.60 | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |

**TABLE 5**
**GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Volatile Organic Compounds (VOCs) | benzene | toluene | ethylbenzene | xylenes, total | methyl tert-butyl ether (MTBE) | 1,2,4-trimethylbenzene | 1,3,5-trimethylbenzene | 1,2-dichloroethane (EDC) | 1,2-dibromoethane (EDB) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthene | acenaphthylene | anthracene | benzo(a)anthracene | benzo(a)pyrene | benzo(b)fluoranthene | benzo(g,h,i)perylene | benzo(k)fluoranthene | bromobenzene | bromochloromethane | bromodichloromethane | bromoform | bromomethane | n-butylbenzene | sec-butylbenzene | tert-butylbenzene | carbon disulfide | carbon tetrachloride | chlorobenzene | chloroethane | chloroform | chloromethane | 2-chlorotoluene | 4-chlorotoluene | cis-1,2-dichloroethene (cis-1,2-DCE) | cis-1,3-dichloropropene | 1,2-dibromo-3-chloropropane | dibromochloromethane | dibromomethane | 1,2-dichlorobenzene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | 5 | 1,000 | 700 | 620 | 100 | NE | NE | 5 | 0.05 | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | 5 | NE | NE | 100 | NE | NE | NE | 70 | NE | NE | NE | NE | 600 |
| EPA Regional Screening Level (1) | | | 4.55 | 1,100 | 15 | 193 | 143 | 55.7 | 60.3 | 1.71 | 0.0747 | 1.17 | 11.4 | 35.9 | 14,100 | 62.2 | 1.34 | 32.9 | 7.55 | 5,570 | 811 | 4.55 | 77.7 | NE | 2.21 | 188 | 237 | 250 | 36.1 | 4.71 | 0.00334 | 8.71 | 8.34 | 304 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR-32* | Aug-88 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | 3.9 | nd | --- | --- | **97** | nd | --- | nd | --- | nd |
| | Jan-95 | | 0.80 | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | **1.4** | nd | --- | --- | **120** | nd | --- | nd | --- | nd |
| | Dec-00 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | **1.6** | nd | --- | --- | **10** | **0.30** | --- | nd | --- | nd |
| | Dec-05 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan 2010 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-33 | Sep-89 | | nd | nd | 7.9 | 17 | --- | --- | --- | 0.97 | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-34 | Aug-15 | | **5.2** | <5.0 | 51 | 49 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <1.0 | <1.0 | 1.7 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | 27 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-35 | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-39 | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | 1.2 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-40 | Jun-88 | | nd | nd | 1.8 | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-41 | Jun-88 | | **25** | 16 | 474 | 224 | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-48 | Nov-88 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | 180 | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | **1.4** | nd | --- | --- | **54** | nd | --- | nd | --- | nd |
| | Dec-00 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | **3.2** | nd | --- | --- | **15** | nd | --- | nd | --- | nd |
| | Dec-05 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <2.0 | <2.0 | <2.0 | <3.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <4.0 | <8.0 | <8.0 | <20 | <2.0 | <2.0 | <2.0 | <2.0 | <6.0 | <20 | <20 | <2.0 | <2.0 | <4.0 | <2.0 | <6.0 | <2.0 | <2.0 | <2.0 | <2.0 | <4.0 | <2.0 | <2.0 | <2.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-49 | Nov-88 | | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | **6.9** | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | **1.2** | nd | --- | --- | **79** | nd | --- | nd | --- | nd |
| | Dec-00 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | **1.2** | nd | --- | --- | **13** | **0.40** | --- | nd | --- | nd |
| | Dec-05 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-50 | Nov-88 | | 0.80 | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | 0.20 | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **2.3** | nd | --- | nd | --- | nd |
| | Dec-00 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | **0.20** | nd | --- | nd | --- | nd |
| | Dec-05 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | 11 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | 10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| GBR-52/GRW-8 | Nov-88 | | 0.80 | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | 0.70 | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-95 | | nd | nd | nd | nd | --- | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-00 | | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | nd | nd | --- | nd | --- | nd |
| | Jan-05 | | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | --- | --- | nd | nd | nd | nd | nd | --- | --- | --- | nd | --- | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | --- | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <2.0 | <2.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| SHS-9 | Aug-15 | | <5.0 | <5.0 | 21 | <7.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <1.0 | <1.0 | 5.1 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |
| SHS-13 | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <4.0 | <4.0 | <10 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <10 | <10 | <1.0 | <1.0 | <2.0 | <1.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 |

**Notes:**
(1) - EPA Regional Screening Level for tap water using hazard quotient of 1.0 (non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (carcinogens)
(2) - "Background" Concentration Proposed in Lee Acres DRAFT Remedial Investigation Report Prepared for the US Bureau of Land Management (dated February 1992)
(3) - Regional Background Concentrations Established in Document Titled *Hydroqeoloay and Water Resources of San Juan Basin, New Mexico* , Stone et al., dated 1983
(4) - Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT Remedial Investigation Report and Record of Decision (dated May 2004).
(5) - Background Threshold Value Established for the Former Giant Bloomfield Refinery
* - asterisk indicates that the well is screened withing the bedrock aquifer, no asterisk indicates that a well is screened in the alluvial aquifer
--- - not tested
µg/L - micrograms per liter
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
PSH - phase separated hydrocarbons
USEPA - United States Environmental Protection Agency
**BOLD** - bold and highlighted cells indicates concentration exceeds the NMWQCC standard, where NMWQCC are not established, concentrations compared to EPA regional screening levels

TABLE 5
GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS

FORMER GIANT BLOOMFIELD REFINERY
WESTERN REFINING SOUTHWEST, LLC
SAN JUAN COUNTY, NEW MEXICO

| Well ID | Sample Date | Volatile Organic Compounds (VOCs) | 1,3-dichlorobenzene | 1,4-dichlorobenzene | dichlorodifluoromethane | 1,1-dichloroethane | 1,1-dichloroethene (1,1-DCE) | 1,2-dichloropropane | 1,3-dichloropropane | 2,2-dichloropropane | 1,1-dichloropropene | hexachlorobutadiene | 2-hexanone | isopropylbenzene | 4-isopropyltoluene | 4-methyl-2-pentanone | methylene chloride | n-butylbenzene | n-propylbenzene | sec-butylbenzene | styrene | tert-butylbenzene | 1,1,1,2-tetrachloroethane | 1,1,2,2-tetrachloroethane | tetrachloroethene (PCE) | trans-1,2-dichloroethene (trans-1,2-DCE) | trans-1,3-dichloropropene | 1,2,3-trichlorobenzene | 1,2,4-trichlorobenzene | 1,1,1-trichloroethane | 1,1,2-trichloroethane | trichloroethene (TCE) | trichlorofluoromethane | 1,2,3-trichloropropane | vinyl chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | NE | 75 | NE | 25 | 7 | 5 | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5 | NE | NE | NE | 100 | NE | NE | 10 | 5 | 100 | NE | NE | 70 | 200 | 5 | 5 | NE | NE | 2 |
| EPA Regional Screening Level (1) | | | NE | 4.82 | 197 | 27.5 | 285 | 8.25 | 369 | NE | NE | 1.39 | 38.0 | 451 | NE | 6,260 | 107 | 1,000 | 656 | 2,010 | 1,210 | 691 | 5.74 | 0.757 | 40.6 | 67.8 | 369 | 7.04 | 3.99 | 8,010 | 0.415 | 2.83 | 5,160 | 0.00749 | 0.188 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5.0 | 100 | NE | NE | NE | NE | NE | 5.0 | NE | NE | 1.0 |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR-32* | Aug-88 | | nd | nd | nd | **3.6** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **24** | nd | nd | --- | --- | 4.5 | nd | **16** | 0.80 | --- | nd |
| | Jan-95 | | nd | nd | --- | **1.8** | | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **11** | nd | nd | --- | --- | nd | nd | **6.4** | nd | --- | nd |
| | Dec-00 | | nd | nd | --- | **1.1** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **2.9** | nd | nd | --- | --- | nd | nd | **2.1** | nd | --- | nd |
| | Dec-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan 2010 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | **1.0** | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | **1.2** | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-33 | Sep-89 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-34 | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-35 | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-39 | Feb-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-40 | Jun-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-41 | Jun-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-48 | Nov-88 | | nd | nd | nd | **31** | nd | **25** | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | **0.30** | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **601** | nd | nd | --- | --- | nd | nd | **3.6** | nd | --- | nd |
| | Dec-00 | | nd | nd | --- | **0.50** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **3.3** | nd | nd | --- | --- | nd | nd | **2.6** | **0.40** | --- | nd |
| | Dec-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **2.3** | nd | nd | --- | --- | nd | nd | **0.90** | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | **1.3** | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <4.0 | <2.0 | <2.0 | <20 | <2.0 | <2.0 | <20 | <6.0 | <6.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <4.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <4.0 | <2.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-49 | Nov-88 | | nd | nd | nd | **6.8** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **15** | **88** | nd | --- | --- | **6.6** | nd | **11** | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | **0.40** | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | **4.2** | nd | --- | nd |
| | Dec-00 | | nd | nd | --- | **1.0** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **4.0** | nd | nd | --- | --- | nd | nd | **2.3** | nd | --- | nd |
| | Dec-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | **0.60** | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | **1.6** | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-50 | Nov-88 | | nd | nd | nd | **0.70** | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | **0.30** | --- | --- | --- | --- | --- | --- | nd | **0.70** | **0.30** | nd | --- | --- | **0.60** | nd | **0.20** | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Dec-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Dec-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| GBR-52/GRW-8 | Nov-88 | | nd | nd | nd | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-95 | | nd | nd | --- | nd | --- | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-00 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-05 | | nd | nd | --- | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- | --- | --- | --- | nd | nd | nd | nd | --- | --- | nd | nd | nd | nd | --- | nd |
| | Jan-10 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Aug-15 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Nov-19 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <10 | <1.0 | <1.0 | <10 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| SHS-9 | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | **2.3** | <1.0 | <1.0 | <3.0 | <3.0 | **2.5** | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |
| SHS-13 | Jan-21 | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <3.0 | <3.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <2.0 | <1.0 |

**Notes:**
(1) - EPA Regional Screening Level for tap water using hazard quotient of 1.0 (non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (carcinogens)
(2) - "Background" Concentration Proposed in Lee Acres DRAFT Remedial Investigation Report Prepared for the US Bureau of Land Management (dated February 1992)
(3) - Regional Background Concentrations Established in Document Titled *Hydroqeology and Water Resources of San Juan Basin, New Mexico* , Stone et al., dated 1983
(4) - Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT Remedial Investigation Report and Record of Decision (dated May 2004).
(5) - Background Threshold Value Established for the Former Giant Bloomfield Refinery
* - asterisk indicates that the well is screened withing the bedrock aquifer, no asterisk indicates that a well is screened in the alluvial aquifer
--- - not tested
µg/L - micrograms per liter
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
PSH - phase separated hydrocarbons
USEPA - United States Environmental Protection Agency
**BOLD** - bold and highlighted cells indicates concentration exceeds the NMWQCC standard, where NMWQCC are not established, concentrations compared to EPA regional screening levels

**TABLE 6**
**GROUNDWATER ANALYTICAL RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Polycylic Aromatic Hydrocarbons (PAHs) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthylene | acenaphthene | fluorene | phenanthrene | anthracene | fluoranthene | pyrene | benz(a)anthracene | chrysene | benzo(b)fluoranthene | benzo(k)fluoranthene | benzo(e)pyrene | dibenz(a,h)anthracene | benzo(g,h,i)perylene | indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 0.2 | NE | NE | NE |
| EPA Regional Screening Level (1) | | | 1.17 | 11.4 | 35.9 | NE | 535 | 294 | NE | 1,770 | 802 | 121 | 0.298 | 251 | 2.51 | 25.10 | 0.251 | 0.251 | NE | 2.51 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GRW-1/GBR-38 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Mar-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-2/GBR-42 | Sep-89 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-3/GBR-29 | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-05 | | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 0.66 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Nov-19 | | <0.50 | <0.50 | <0.50 | <0.50 | 0.98 | 4.3 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Feb-21 | | 0.12 | <0.10 | <0.10 | <0.10 | 0.36 | 1.5 | <0.10 | 0.34 | 0.32 | 0.24 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-4/GBR-43 | Sep-89 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.50 | <0.50 | <0.50 | <0.50 | 3.3 | 9.0 | <0.50 | 1.5 | <1.0 | 1.1 | <0.50 | <0.50 | <1.0 | <1.0 | <0.35 | <0.50 | <0.50 | <1.5 |
| GRW-5/ GBR-37 | Jun-88 | | | | | | | | | | | | | | | | | | | |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | 0.22 | <0.10 | <0.10 | 0.38 | <0.20 | 0.28 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-6/GBR-44 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-05 | | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Nov-19 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 0.64 | 0.38 | 0.42 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-9/GBR-6 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | 0.18 | 0.38 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-10/GBR-36 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | 0.22 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-11/GBR-27 | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GRW-12/GBR-28 | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.24 | 0.18 | <0.10 | <0.10 | 3.0 | 1.3 | <0.10 | 0.46 | 0.34 | 0.30 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |

**TABLE 6**
**GROUNDWATER ANALYTICAL RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Polycylic Aromatic Hydrocarbons (PAHs) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthylene | acenaphthene | fluorene | phenanthrene | anthracene | fluoranthene | pyrene | benz(a)anthracene | chrysene | benzo(b)fluoranthene | benzo(k)fluoranthene | benzo(a)pyrene | dibenz(a,h)anthracene | benzo(g,h,i)perylene | indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 0.2 | NE | NE | NE |
| EPA Regional Screening Level (1) | | | 1.17 | 11.4 | 35.9 | NE | 535 | 294 | NE | 1,770 | 802 | 121 | 0.298 | 251 | 2.51 | 25.10 | 0.251 | 0.251 | NE | 2.51 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GRW-13/GBR-14 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| | Jan-00 | | nd | nd | nd | | | | | | | | | | | | nd | | | |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.20 | <0.20 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-5* | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.44 | <0.10 | <0.10 | <0.10 | 0.54 | 1.7 | <0.10 | <0.10 | <0.20 | 0.24 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | 0.22 | <0.30 |
| GBR-7 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-8 | Oct-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | 0.20 | 0.20 | <0.10 | 0.96 | 1.9 | <0.10 | 0.46 | 0.38 | 0.36 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-9 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | 0.16 | 0.18 | <0.10 | <0.10 | 0.24 | <0.10 | 0.28 | <0.20 | 0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-10 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-11 | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.36 | 0.34 | 0.24 | <0.10 | 0.36 | 1.4 | <0.10 | 0.28 | 0.36 | 0.22 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-13* | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | 0.16 | 0.20 | <0.10 | 0.24 | 0.34 | <0.10 | 0.32 | 0.36 | 0.36 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-15 | Oct-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 0.26 | <0.10 | 0.30 | <0.20 | 0.22 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |

**TABLE 6**
**GROUNDWATER ANALYTICAL RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Polycylic Aromatic Hydrocarbons (PAHs) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthylene | acenaphthene | fluorene | phenanthrene | anthracene | fluoranthene | pyrene | benz(a)anthracene | chrysene | benzo(b)fluoranthene | benzo(k)fluoranthene | benzo(e)pyrene | dibenz(a,h)anthracene | benzo(g,h,i)perylene | indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 0.2 | NE | NE | NE |
| EPA Regional Screening Level (1) | | | 1.17 | 11.4 | 35.9 | NE | 535 | 294 | NE | 1,770 | 802 | 121 | 0.298 | 251 | 2.51 | 25.10 | 0.251 | 0.251 | NE | 2.51 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR-17 | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Nov-19 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Jan-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | 0.07 | <0.10 | <0.10 | <0.30 |
| GBR-18* | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jul-94 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Mar-21 | | <0.10 | 0.18 | <0.10 | <0.10 | <0.10 | 0.26 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-20* | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 2.6 | 0.72 | 0.60 | <0.10 | 0.30 | 1.9 | <0.10 | 0.30 | 0.38 | 0.28 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-21S* | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-21D* | May-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | 0.34 | 0.22 | <0.10 | 5.0 | 9.0 | 0.26 | 1.0 | 0.56 | 0.84 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-22* | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-23* | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24S* | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24D* | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | **10.0** | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| | Jan-95 | | nd | nd | nd | nd | nd | 1.2 | 0.34 | nd | nd | 0.07 | nd | 0.064 | nd | nd | nd | nd | nd | nd |
| | Jan-00 | | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-05 | | nd | 5.4 | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-10 | | **5.8** | 7.7 | 4.9 | <2.5 | <5.0 | 1.0 | 0.62 | <0.60 | <0.30 | <0.30 | <0.070 | <0.20 | <0.10 | <0.070 | <0.070 | <0.070 | <0.080 | <0.080 |
| | Aug-15 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Nov-19 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | 0.18 | 0.28 | <0.10 | 0.28 | 0.36 | 0.22 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |

**TABLE 6**
**GROUNDWATER ANALYTICAL RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Polycylic Aromatic Hydrocarbons (PAHs) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthylene | acenaphthene | fluorene | phenanthrene | anthracene | fluoranthene | pyrene | benz(a)anthracene | chrysene | benzo(b)fluoranthene | benzo(k)fluoranthene | benzo(e)pyrene | dibenz(a,h)anthracene | benzo(g,h,i)perylene | indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 0.2 | NE | NE | NE |
| EPA Regional Screening Level (1) | | | 1.17 | 11.4 | 35.9 | NE | 535 | 294 | NE | 1,770 | 802 | 121 | 0.298 | 251 | 2.51 | 25.10 | 0.251 | 0.251 | NE | 2.51 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR-25* | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | 1.2 | <0.10 | <0.10 | 1.2 | 2.0 | 0.66 | 0.64 | 0.52 | 0.90 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-26 | Oct-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (No Recovery) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-30 | Dec-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| | Jan-95 | | nd | nd | nd | nd | nd | nd | 0.031 | nd | nd | nd | nd | 0.11 | 0.04 | nd | nd | nd | nd | nd |
| | Jan-00 | | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Nov-19 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-31 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |
| | Jan-00 | | nd | nd | nd | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | nd | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Nov-19 | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Jan-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-32* | Aug-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan 2010 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-33 | Sep-89 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-34 | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.10 | 0.24 | 0.18 | <0.10 | 0.30 | 0.62 | <0.10 | 0.30 | 0.36 | 0.22 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-35 | Feb-21 | | **25** | **220** | **37** | <1.0 | 47 | 61 | 87 | 16 | 9.4 | 27 | <1.0 | 2.6 | <1.0 | <1.0 | <0.70 | <1.0 | <1.0 | <3.0 |

**TABLE 6**
**GROUNDWATER ANALYTICAL RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Polycylic Aromatic Hydrocarbons (PAHs) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthylene | acenaphthene | fluorene | phenanthrene | anthracene | fluoranthene | pyrene | benz(a)anthracene | chrysene | benzo(b)fluoranthene | benzo(k)fluoranthene | benzo(e)pyrene | dibenz(a,h)anthracene | benzo(g,h,i)perylene | indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 0.2 | NE | NE | NE |
| EPA Regional Screening Level (1) | | | 1.17 | 11.4 | 35.9 | NE | 535 | 294 | NE | 1,770 | 802 | 121 | 0.298 | 251 | 2.51 | 25.10 | 0.251 | 0.251 | NE | 2.51 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR-39 | Feb-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-40 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-41 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-48 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-49 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-50 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| GBR-52/GRW-8 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |

**TABLE 6**
**GROUNDWATER ANALYTICAL RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Polycylic Aromatic Hydrocarbons (PAHs) | naphthalene | 1-methylnaphthalene | 2-methylnaphthalene | acenaphthylene | acenaphthene | fluorene | phenanthrene | anthracene | fluoranthene | pyrene | benz(a)anthracene | chrysene | benzo(b)fluoranthene | benzo(k)fluoranthene | benzo(e)pyrene | dibenz(a,h)anthracene | benzo(g,h,i)perylene | indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| NMWQCC Standard | | | combined 30 | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 0.2 | NE | NE | NE |
| EPA Regional Screening Level (1) | | | 1.17 | 11.4 | 35.9 | NE | 535 | 294 | NE | 1,770 | 802 | 121 | 0.298 | 251 | 2.51 | 25.10 | 0.251 | 0.251 | NE | 2.51 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| SHS-9 | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.10 | 0.48 | 0.22 | <0.10 | 1.3 | 3.0 | <0.10 | 0.40 | 0.40 | 0.34 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |
| SHS-13 | Jan-21 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.20 | <0.20 | <0.10 | <0.10 | <0.10 | <0.10 | <0.070 | <0.10 | <0.10 | <0.30 |

**Notes:**
(1) - EPA Regional Screening Level for tap water using hazard quotient of 1.0 (non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (carcinogens)
(2) - "Background" Concentration Proposed in Lee Acres DRAFT Remedial Investigation Report Prepared for the US Bureau of Land Management (dated February 1992)
(3) - Regional Background Concentrations Established in Document Titled *Hydrogeology and Water Resources of San Juan Basin, New Mexico* , Stone et al., dated 1983
(4) - Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT Remedial Investigation Report and Record of Decision (dated May 2004).
(5) - Background Threshold Value Established for the Former Giant Bloomfield Refinery
* - asterisk indicates that the well is screened withing the bedrock aquifer, no asterisk indicates that a well is screened in the alluvial aquifer
--- - not tested
µg/L - micrograms per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
PSH - phase separated hydrocarbons
USEPA - United States Environmental Protection Agency
**BOLD** - bold and yellow highlights indicates concentration exceeds the NMWQCC standard, where NMWQCC are not established, concentrations compared to EPA regional screening levels

**TABLE 7**
**GROUNDWATER ANALYTICAL RESULTS - TOTAL METALS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Total Metals | arsenic | barium | beryllium | cadmium | chromium (total) | iron | lead | manganese | mercury | nickel | selenium | silver | thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 0.1 | 2 | 0.004 | 0.005 | 0.05 | 1 | 0.015 | 0.2 | 0.002 | 0.2 | 0.05 | 0.05 | 0.002 |
| EPA Regional Screening Level (1) | | | 0.000517 | 3.77 | 0.0246 | 0.0092 | 22.5 | 14 | 0.015 | 0.434 | 0.000626 | 0.392 | 0.0998 | 0.0941 | 0.0002 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | nd | nd | nd | nd | 0.0144 - 0.113 | nd - 1.48 | nd | 0.0161 - 0.423 | nd | nd | 0.008 - 0.0095 | 0.0273 - 0.0309 | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | 0 - 3.4 | NE | 0.001 - 0.018 | 0.001 - 0.060 | 0.010 - 16 | 0 - 0.055 | 0 - 2.6 | NE | NE | 0.002 - 0.04 | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 0.05 | 1.0 | NE | 0.010 | 0.113 | 16 | 0.050 | 0.346 | 0.002 | 0.20 | 0.010 | 0.05 | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | 1.29 | 97.8 | NE | 5.28 | NE | NE | NE | NE | NE |
| GRW-1/GBR-38 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Mar-21 | | 0.0020 | 0.014 | <0.0010 | <0.00050 | <0.0060 | 0.86 | 0.0011 | 2.9 | <0.00020 | 0.012 | 0.0024 | <0.00050 | <0.00025 |
| GRW-2/GBR-42 | Sep-89 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.023 | 0.066 | <0.0010 | <0.00050 | 0.018 | 22 | <0.00050 | 3.3 | <0.00020 | **0.26** | <0.0010 | <0.00050 | <0.00025 |
| GRW-3/GBR-29 | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **6.8** | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | 0.89 | --- | 0.69 | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | 2.3 | --- | 1.4 | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0013 | 0.21 | <0.0010 | <0.00050 | <0.0060 | 3.8 | <0.00050 | 1.8 | <0.00020 | 0.0074 | <0.0010 | <0.00050 | <0.00025 |
| GRW-4/GBR-43 | Sep-89 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0028 | 0.024 | <0.0010 | <0.00050 | 0.013 | 3.3 | 0.00098 | 4.4 | <0.00020 | 0.016 | <0.0010 | <0.00050 | <0.00025 |
| GRW-5/ GBR-37 | Jun-88 | | | | | | | | | | | | | | |
| | Feb-21 | | 0.0028 | 0.048 | <0.0010 | <0.00050 | <0.0060 | 1.8 | 0.0015 | **5.7** | <0.00020 | 0.015 | <0.0010 | <0.00050 | <0.00025 |
| GRW-6/GBR-44 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **1.80** | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | 15 | --- | **18** | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | 8.0 | --- | **5.9** | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.025 | <0.0010 | <0.00050 | <0.0060 | 1.6 | <0.00050 | 2.1 | <0.00020 | 0.0058 | <0.0010 | <0.00050 | <0.00025 |
| GRW-9/GBR-6 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.034 | <0.0010 | <0.00050 | <0.0060 | 1.9 | <0.00050 | 0.53 | <0.00020 | 0.0027 | <0.0010 | <0.00050 | <0.00025 |
| GRW-10/GBR-36 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.017 | <0.0010 | <0.00050 | <0.0060 | 1.8 | 0.0015 | 1.0 | <0.00020 | 0.00 | <0.0010 | <0.00050 | <0.00025 |
| GRW-11/GBR-27 | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.017 | <0.0010 | <0.00050 | <0.0060 | 5.9 | 0.0024 | 2.4 | <0.00020 | 0.0012 | 0.0020 | <0.00050 | <0.00025 |

**TABLE 7**
**GROUNDWATER ANALYTICAL RESULTS - TOTAL METALS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Total Metals | arsenic | barium | beryllium | cadmium | chromium (total) | iron | lead | manganese | mercury | nickel | selenium | silver | thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 0.1 | 2 | 0.004 | 0.005 | 0.05 | 1 | 0.015 | 0.2 | 0.002 | 0.2 | 0.05 | 0.05 | 0.002 |
| EPA Regional Screening Level (1) | | | 0.000517 | 3.77 | 0.0246 | 0.0092 | 22.5 | 14 | 0.015 | 0.434 | 0.000626 | 0.392 | 0.0998 | 0.0941 | 0.0002 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | nd | nd | nd | nd | 0.0144 - 0.113 | nd - 1.48 | nd | 0.0161 - 0.423 | nd | nd | 0.008 - 0.0095 | 0.0273 - 0.0309 | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | 0 - 3.4 | NE | 0.001 - 0.018 | 0.001 - 0.060 | 0.010 - 16 | 0 - 0.055 | 0 - 2.6 | NE | NE | 0.002 - 0.04 | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 0.05 | 1.0 | NE | 0.010 | 0.113 | 16 | 0.050 | 0.346 | 0.002 | 0.20 | 0.010 | 0.05 | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | 1.29 | 97.8 | NE | 5.28 | NE | NE | NE | NE | NE |
| GRW-12/GBR-28 | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.014 | 0.087 | <0.0010 | <0.00050 | <0.0060 | 14 | 0.0012 | 0.47 | <0.00020 | 0.0070 | <0.0010 | <0.00050 | <0.00025 |
| GRW-13/GBR-14 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.0082 | <0.0010 | <0.00050 | <0.0060 | 0.32 | 0.00059 | 1.1 | <0.00020 | 0.015 | 0.017 | <0.00050 | <0.00025 |
| GBR-5* | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0043 | 0.012 | <0.0010 | <0.00050 | 0.054 | 4.5 | 0.0063 | 4.4 | <0.00020 | 0.0049 | 0.0026 | <0.00050 | <0.00025 |
| GBR-7 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-8 | Oct-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.062 | 0.35 | <0.0010 | <0.00050 | <0.0060 | 52 | **0.038** | 3.6 | <0.00020 | 0.018 | 0.0027 | <0.00050 | <0.00025 |
| GBR-9 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0026 | 0.018 | <0.0010 | <0.00050 | <0.0060 | 1.6 | 0.00063 | 0.43 | <0.00020 | 0.016 | <0.0010 | <0.00050 | <0.00025 |
| GBR-10 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-11 | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0015 | 0.15 | <0.0010 | <0.00050 | <0.0060 | 44 | 0.0018 | 0.93 | <0.00020 | 0.0061 | <0.0010 | <0.00050 | <0.00025 |
| GBR-13* | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0018 | 0.042 | <0.0010 | <0.00050 | <0.0060 | 3.1 | 0.0048 | 4.7 | <0.00020 | 0.011 | <0.0050 | <0.00050 | <0.00025 |
| GBR-15 | Oct-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.014 | <0.0010 | <0.00050 | <0.0060 | 0.59 | 0.00067 | 0.48 | <0.00020 | 0.0030 | <0.0010 | <0.00050 | <0.00025 |

**TABLE 7**
**GROUNDWATER ANALYTICAL RESULTS - TOTAL METALS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Total Metals | arsenic | barium | beryllium | cadmium | chromium (total) | iron | lead | manganese | mercury | nickel | selenium | silver | thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 0.1 | 2 | 0.004 | 0.005 | 0.05 | 1 | 0.015 | 0.2 | 0.002 | 0.2 | 0.05 | 0.05 | 0.002 |
| EPA Regional Screening Level (1) | | | 0.000517 | 3.77 | 0.0246 | 0.0092 | 22.5 | 14 | 0.015 | 0.434 | 0.000626 | 0.392 | 0.0998 | 0.0941 | 0.0002 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | nd | nd | nd | nd | 0.0144 - 0.113 | nd - 1.48 | nd | 0.0161 - 0.423 | nd | nd | 0.008 - 0.0095 | 0.0273 - 0.0309 | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | 0 - 3.4 | NE | 0.001 - 0.018 | 0.001 - 0.060 | 0.010 - 16 | 0 - 0.055 | 0 - 2.6 | NE | NE | 0.002 - 0.04 | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 0.05 | 1.0 | NE | 0.010 | 0.113 | 16 | 0.050 | 0.346 | 0.002 | 0.20 | 0.010 | 0.05 | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | 1.29 | 97.8 | NE | 5.28 | NE | NE | NE | NE | NE |
| GBR-17 | Jun-86 | | 0.01 | nd | nd | nd | nd | nd | nd | nd | nd | 0.10 | --- | nd | --- |
| | Dec-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **4.4** | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | 3.60 | --- | <0.0020 | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | **120** | --- | 3.80 | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.0010 | 0.014 | <0.0010 | <0.00050 | 0.011 | 0.79 | 0.00064 | 0.014 | <0.00020 | 0.0056 | 0.0030 | <0.00050 | <0.00025 |
| GBR-18* | Jun-86 | | --- | nd | nd | nd | nd | nd | nd | nd | --- | nd | --- | nd | --- |
| | Jul-94 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Mar-21 | | <0.0050 | 0.040 | <0.0050 | <0.0025 | 0.013 | 68 | **0.031** | 0.25 | <0.00020 | 0.020 | <0.0050 | <0.0025 | <0.0012 |
| GBR-20* | Jun-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0026 | 0.23 | <0.0010 | <0.00050 | <0.0060 | 22 | 0.0034 | 0.53 | <0.00020 | 0.0073 | <0.0010 | <0.00050 | <0.00025 |
| GBR-21S* | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-21D* | May-88 | | --- | --- | --- | --- | --- | --- | --- | --- | | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.27 | <0.0010 | <0.00050 | <0.0060 | 0.97 | 0.0022 | 0.33 | <0.00020 | 0.014 | <0.0010 | <0.00050 | <0.00025 |
| GBR-22* | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-23* | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24S* | Nov-86 | | nd | 0.10 | nd | nd | nd | nd | nd | **43** | --- | **0.60** | --- | nd | --- |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-24D* | Nov-86 | | nd | 0.10 | nd | nd | nd | nd | nd | **43** | --- | **0.60** | --- | nd | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **9.2** | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | 11 | --- | 1.8 | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | 8.3 | --- | 1.4 | --- | --- | --- | --- | --- |
| | Feb-21 | | <0.0010 | 0.016 | <0.0010 | <0.00050 | <0.0060 | 0.46 | 0.0010 | 0.9 | <0.00020 | 0.0037 | <0.0010 | <0.00050 | <0.00025 |

**TABLE 7**
**GROUNDWATER ANALYTICAL RESULTS - TOTAL METALS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Total Metals | arsenic | barium | beryllium | cadmium | chromium (total) | iron | lead | manganese | mercury | nickel | selenium | silver | thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 0.1 | 2 | 0.004 | 0.005 | 0.05 | 1 | 0.015 | 0.2 | 0.002 | 0.2 | 0.05 | 0.05 | 0.002 |
| EPA Regional Screening Level (1) | | | 0.000517 | 3.77 | 0.0246 | 0.0092 | 22.5 | 14 | 0.015 | 0.434 | 0.000626 | 0.392 | 0.0998 | 0.0941 | 0.0002 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | nd | nd | nd | nd | 0.0144 - 0.113 | nd - 1.48 | nd | 0.0161 - 0.423 | nd | nd | 0.008 - 0.0095 | 0.0273 - 0.0309 | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | 0 - 3.4 | NE | 0.001 - 0.018 | 0.001 - 0.060 | 0.010 - 16 | 0 - 0.055 | 0 - 2.6 | NE | NE | 0.002 - 0.04 | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 0.05 | 1.0 | NE | 0.010 | 0.113 | 16 | 0.050 | 0.346 | 0.002 | 0.20 | 0.010 | 0.05 | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | 1.29 | 97.8 | NE | 5.28 | NE | NE | NE | NE | NE |
| GBR-25* | May-86 | | --- | --- | --- | --- | --- | --- | --- | --- | | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.014 | 0.48 | <0.0010 | <0.00050 | <0.0060 | 26 | **0.028** | 2.7 | <0.00020 | 0.0075 | 0.0031 | <0.00050 | <0.00025 |
| GBR-26 | Oct-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (No Recovery) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-30 | Dec-86 | | nd | nd | nd | **0.19** | nd | nd | nd | 2.2 | --- | nd | --- | nd | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | 7.6 | --- | 0.50 | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | 43 | --- | 4.2 | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.0051 | 0.33 | 0.0010 | <0.00050 | 0.014 | 23 | 0.015 | 0.75 | <0.00020 | 0.027 | 0.013 | <0.00050 | <0.00025 |
| GBR-31 | Nov-86 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | 2.4 | --- | 0.45 | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | 15 | --- | 2.7 | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.0010 | 0.057 | <0.0010 | <0.00050 | <0.0060 | 2.1 | 0.0056 | 0.23 | <0.00020 | 0.0056 | 0.0063 | <0.00050 | <0.00025 |
| GBR-32* | Aug-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **9.00** | --- | --- | --- |
| | Jan 2010 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.0050 | 0.011 | <0.0020 | <0.0020 | 0.020 | 0.26 | <0.00050 | 0.56 | <0.00020 | **0.30** | 0.020 | <0.0050 | <0.00050 |
| | Nov-19 | | <0.0010 | 0.034 | <0.010 | <0.010 | 0.10 | 3.6 | 0.0012 | 2.10 | <0.00020 | 0.07 | 0.0029 | <0.025 | <0.00050 |
| | Jan-21 | | 0.0013 | 0.028 | <0.0010 | <0.00050 | 0.33 | 8.30 | 0.0011 | 1.1 | <0.00020 | 0.061 | 0.0044 | <0.00050 | <0.00025 |
| GBR-33 | Sep-89 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

**TABLE 7**
**GROUNDWATER ANALYTICAL RESULTS - TOTAL METALS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Total Metals | arsenic | barium | beryllium | cadmium | chromium (total) | iron | lead | manganese | mercury | nickel | selenium | silver | thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 0.1 | 2 | 0.004 | 0.005 | 0.05 | 1 | 0.015 | 0.2 | 0.002 | 0.2 | 0.05 | 0.05 | 0.002 |
| EPA Regional Screening Level (1) | | | 0.000517 | 3.77 | 0.0246 | 0.0092 | 22.5 | 14 | 0.015 | 0.434 | 0.000626 | 0.392 | 0.0998 | 0.0941 | 0.0002 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | nd | nd | nd | nd | 0.0144 - 0.113 | nd - 1.48 | nd | 0.0161 - 0.423 | nd | nd | 0.008 - 0.0095 | 0.0273 - 0.0309 | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | 0 - 3.4 | NE | 0.001 - 0.018 | 0.001 - 0.060 | 0.010 - 16 | 0 - 0.055 | 0 - 2.6 | NE | NE | 0.002 - 0.04 | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 0.05 | 1.0 | NE | 0.010 | 0.113 | 16 | 0.050 | 0.346 | 0.002 | 0.20 | 0.010 | 0.05 | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | 1.29 | 97.8 | NE | 5.28 | NE | NE | NE | NE | NE |
| GBR-34 | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Feb-21 | | 0.023 | 1.80 | <0.0010 | <0.00050 | <0.0060 | 20 | 0.0064 | 2.1 | <0.00020 | 0.015 | <0.0010 | <0.00050 | <0.00025 |
| GBR-35 | Feb-21 | | 0.012 | **2.7** | <0.0010 | 0.0023 | <0.0060 | 26 | **0.032** | 1.8 | <0.00020 | 0.015 | <0.0010 | <0.00050 | <0.00025 |
| GBR-39 | Feb-21 | | <0.0010 | 0.091 | <0.0010 | <0.00050 | 0.043 | 6.9 | 0.0022 | 0.19 | <0.00020 | 0.030 | <0.0010 | <0.00050 | 0.00045 |
| GBR-40 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-41 | Jun-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-48 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **10.0** | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.050 | 0.67 | **0.011** | <0.0020 | 0.95 | **170** | **0.11** | **6.40** | 0.00046 | **0.28** | **0.089** | <0.0050 | **0.0023** |
| | Nov-19 | | 0.0076 | 0.31 | 0.0038 | <0.0020 | 0.23 | 48 | **0.031** | 1.80 | <0.00020 | 0.10 | 0.018 | <0.0050 | 0.0005 |
| | Jan-21 | | 0.0050 | 0.20 | 0.00200 | <0.00050 | 0.050 | 29 | **0.016** | 0.67 | <0.00020 | 0.068 | 0.02 | <0.00050 | 0.00038 |
| GBR-49 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | <20 | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | 0.0057 | 0.058 | <0.0020 | <0.0020 | 0.38 | 7.1 | 0.0038 | 0.54 | <0.00020 | 0.11 | 0.0069 | <0.0050 | <0.00050 |
| | Nov-19 | | <0.0010 | 0.021 | <0.0020 | <0.0020 | 0.10 | 1.4 | 0.00083 | 0.87 | <0.00020 | 0.12 | 0.0011 | 0.0063 | <0.00050 |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GBR-50 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Dec-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **10** | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | <0.0050 | 0.024 | <0.0020 | <0.0020 | 0.073 | 2.2 | 0.0013 | 0.19 | <0.00020 | 0.04 | 0.0089 | <0.0050 | <0.00050 |
| | Nov-19 | | <0.0010 | 0.018 | <0.0020 | <0.0020 | 0.039 | 2.2 | 0.0010 | 0.14 | <0.00020 | 0.06 | 0.0083 | 0.0079 | <0.00050 |
| | Jan-21 | | <0.0010 | 0.012 | <0.0010 | <0.00050 | 0.035 | 2.5 | 0.0068 | 0.16 | <0.00020 | 0.013 | 0.010 | <0.00050 | <0.00025 |

**TABLE 7**
**GROUNDWATER ANALYTICAL RESULTS - TOTAL METALS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Total Metals | arsenic | barium | beryllium | cadmium | chromium (total) | iron | lead | manganese | mercury | nickel | selenium | silver | thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 0.1 | 2 | 0.004 | 0.005 | 0.05 | 1 | 0.015 | 0.2 | 0.002 | 0.2 | 0.05 | 0.05 | 0.002 |
| EPA Regional Screening Level (1) | | | 0.000517 | 3.77 | 0.0246 | 0.0092 | 22.5 | 14 | 0.015 | 0.434 | 0.000626 | 0.392 | 0.0998 | 0.0941 | 0.0002 |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | nd | nd | nd | nd | 0.0144 - 0.113 | nd - 1.48 | nd | 0.0161 - 0.423 | nd | nd | 0.008 - 0.0095 | 0.0273 - 0.0309 | NE |
| Lee Acres Regional Background Concentration (3) | | | NE | 0 - 3.4 | NE | 0.001 - 0.018 | 0.001 - 0.060 | 0.010 - 16 | 0 - 0.055 | 0 - 2.6 | NE | NE | 0.002 - 0.04 | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 0.05 | 1.0 | NE | 0.010 | 0.113 | 16 | 0.050 | 0.346 | 0.002 | 0.20 | 0.010 | 0.05 | NE |
| GBR Background Concentrations (5) | | | NE | NE | NE | NE | 1.29 | 97.8 | NE | 5.28 | NE | NE | NE | NE | NE |
| GBR-52/GRW-8 | Nov-88 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-05 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | **2.0** | --- | --- | --- |
| | Jan-10 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Aug-15 | | --- | --- | --- | --- | --- | 8.20 | --- | 0.15 | --- | --- | --- | --- | --- |
| | Nov-19 | | --- | --- | --- | --- | --- | 1.40 | --- | 0.026 | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.0010 | 0.016 | <0.0010 | <0.00050 | <0.0060 | 0.32 | <0.00050 | 0.0094 | <0.00020 | <0.0010 | 0.0052 | <0.00050 | <0.00025 |
| SHS-9 | Aug-15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Jan-21 | | <0.0010 | 0.62 | <0.0010 | <0.00050 | <0.0060 | 1.4 | 0.0032 | 0.22 | <0.00020 | 0.011 | <0.0010 | <0.00050 | <0.00025 |
| SHS-13 | Jan-21 | | 0.0018 | 0.083 | <0.0010 | <0.00050 | <0.0060 | 0.26 | <0.00050 | 3.7 | <0.00020 | 0.010 | <0.0010 | <0.00050 | <0.0025 |

**Notes:**
(1) - EPA Regional Screening Level for tap water using hazard quotient of 1.0 (non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (carcinogens)
(2) - "Background" Concentration Proposed in Lee Acres DRAFT Remedial Investigation Report Prepared for the US Bureau of Land Management (dated February 1992)
(3) - Regional Background Concentrations Established in Document Titled *Hydrogeology and Water Resources of San Juan Basin, New Mexico* , Stone et al., dated 1983
(4) - Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT Remedial Investigation Report and Record of Decision (dated May 2004).
(5) - Background Threshold Value Established for the Former Giant Bloomfield Refinery
* - asterisk indicates that the well is screened withing the bedrock aquifer, no asterisk indicates that a well is screened in the alluvial aquifer
--- - not tested
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
PSH - phase separated hydrocarbons
USEPA - United States Environmental Protection Agency
**BOLD** - bold and highlighted cells indicates concentration exceeds the greater of GBR background concentrations or NMWQCC standards; where NMWQCC standards are not established, concentrations compared to EPA regional screening levels

**TABLE 8**
**GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY PARAMETERS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | General Chemistry | chloride | fluoride | nitrate + nitrite as N | sulfate | total dissolved solids |
|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 250 | 1.6 | NE | 600 | 1,000 |
| EPA Regional Screening Level (1) | | | NE | 0.799 | NE | NE | NE |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | 6.4 - 404 | NE | 1.2 - 4.9 | 420 - 2,120 | 760 - 3,600 |
| Lee Acres Regional Background Concentration (3) | | | 2 - 34,000 | NE | 0.10 - 1,640 | 1.9 - 14,000 | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 34,000 | NE | 10 | 14,000 | 10,000 |
| GBR Background Concentrations (5) | | | 560 | NE | NE | 2,800 | 4,599 |
| GRW-1/GBR-38 | Jun-88 | | --- | --- | --- | --- | --- |
| | Mar-21 | | 40 | 0.85 | <0.50 | 2,100 | 3,540 |
| GRW-2/GBR-42 | Sep-89 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 100 | 0.59 | <0.50 | 660 | 1,880 |
| GRW-3/GBR-29 | Jun-86 | | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- |
| | Jan-00 | | 148 | --- | --- | 145 | 1,540 |
| | Jan-05 | | 36 | --- | --- | 2,000 | 3,300 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 38 | 0.95 | <0.10 | 1,900 | 3,320 |
| | Nov-19 | | 100 | <0.50 | <0.50 | 450 | 1,990 |
| | Feb-21 | | 110 | 1.0 | <0.50 | 440 | 1,860 |
| GRW-4/GBR-43 | Sep-89 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 120 | 1.10 | <0.50 | 1,300 | 2,790 |
| GRW-5/ GBR-37 | Jun-88 | | | | | | |
| | Feb-21 | | 91 | 1.0 | <0.50 | 1,500 | 2,790 |
| GRW-6/GBR-44 | Jun-88 | | --- | --- | --- | --- | --- |
| | Jan-00 | | 162 | --- | --- | 395 | 1,680 |
| | Jan-05 | | 96 | --- | --- | 440 | 1,600 |
| | Jan-10 | | --- | --- | --- | --- | |
| | Aug-15 | | 88 | 0.55 | <1.0 | 1,400 | 3,220 |
| | Nov-19 | | 94 | 0.60 | <0.50 | 1,200 | 2,470 |
| | Feb-21 | | 97 | 0.93 | <0.50 | 1,500 | 2,570 |
| GRW-9/GBR-6 | Nov-86 | | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 59 | <0.50 | <0.50 | 1,900 | 3,260 |
| GRW-10/GBR-36 | Jun-88 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 51 | 1.1 | <0.50 | 2,200 | 3,460 |
| GRW-11/GBR-27 | Jun-86 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 29 | 1.3 | <0.50 | 2,400 | 3,880 |
| GRW-12/GBR-28 | May-86 | | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 230 | 0.74 | <0.50 | 500 | 1,880 |
| GRW-13/GBR-14 | Nov-86 | | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- |
| | Jan-00 | | 264 | --- | --- | 1,640 | 510 |
| | Feb-21 | | 220 | 0.85 | 1.3 | 1,900 | 3,340 |
| GBR-5* | Jun-86 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 89 | <0.50 | <0.50 | 1,700 | 3,290 |
| GBR-7 | Nov-86 | | --- | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- |

**TABLE 8**
**GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY PARAMETERS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | General Chemistry | chloride | fluoride | nitrate + nitrite as N | sulfate | total dissolved solids |
|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 250 | 1.6 | NE | 600 | 1,000 |
| EPA Regional Screening Level (1) | | | NE | 0.799 | NE | NE | NE |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | 6.4 - 404 | NE | 1.2 - 4.9 | 420 - 2,120 | 760 - 3,600 |
| Lee Acres Regional Background Concentration (3) | | | 2 - 34,000 | NE | 0.10 - 1,640 | 1.9 - 14,000 | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 34,000 | NE | 10 | 14,000 | 10,000 |
| GBR Background Concentrations (5) | | | 560 | NE | NE | 2,800 | 4,599 |
| GBR-8 | Oct-86 | | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 86 | --- | --- | --- | --- |
| | Feb-21 | | 100 | 0.59 | <0.50 | 1,300 | 2,430 |
| GBR-9 | Nov-86 | | --- | --- | --- | --- | --- |
| | Aug-88 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 110 | 0.88 | <0.50 | 1,200 | 2,520 |
| GBR-10 | Nov-86 | | --- | --- | --- | --- | --- |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- |
| GBR-11 | Jun-86 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 95 | --- | --- | --- | --- |
| | Feb-21 | | 110 | <0.50 | <0.50 | 960 | 1,890 |
| GBR-13* | Jun-86 | | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- |
| | Feb-21 | | 110 | 1.1 | <0.50 | 1,200 | 2,380 |
| GBR-15 | Oct-86 | | --- | --- | --- | --- | --- |
| | Dec-88 | | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- |
| | Jan-00 | | 313 | --- | --- | 1,210 | 2,910 |
| | Feb-21 | | 92 | 0.94 | <0.10 | 2,000 | 3,460 |
| GBR-17 | Jun-86 | | **1,005** | --- | --- | 1,202 | 4,355 |
| | Dec-88 | | 370 | --- | --- | 2,270 | 3,996 |
| | Jan-95 | | --- | --- | --- | --- | --- |
| | Dec-00 | | 4.0 | --- | --- | 1,060 | 1,930 |
| | Dec-05 | | 48 | --- | --- | 1,000 | 2,200 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 43 | 0.68 | 5.8 | 1,100 | 1,960 |
| | Nov-19 | | 55 | <0.50 | 5.2 | 1,200 | 2,150 |
| | Jan-21 | | 52 | 0.57 | 5.5 | 1,300 | 2,220 |
| GBR-18* | Jun-86 | | 262 | --- | --- | **3,141** | **4,935** |
| | Jul-94 | | --- | --- | --- | --- | --- |
| | Mar-21 | | 43 | <0.50 | 1.8 | 190 | **5,100** |
| GBR-20* | Jun-86 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 96 | --- | --- | --- | --- |
| | Feb-21 | | 89 | 0.66 | <0.50 | 250 | 1,850 |
| GBR-21S* | Jan-21 (Dry) | | --- | --- | --- | --- | --- |
| GBR-21D* | May-88 | | | | | | |
| | Aug-15 | | 330 | --- | --- | --- | --- |
| | Feb-21 | | 310 | 0.66 | <0.50 | 780 | 2,220 |
| GBR-22* | May-86 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 470 | --- | --- | --- | --- |
| | Jan-21 (Not Sampled, PSH) | | --- | --- | --- | --- | --- |

**TABLE 8**
**GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY PARAMETERS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | General Chemistry | chloride | fluoride | nitrate + nitrite as N | sulfate | total dissolved solids |
|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 250 | 1.6 | NE | 600 | 1,000 |
| EPA Regional Screening Level (1) | | | NE | 0.799 | NE | NE | NE |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | 6.4 - 404 | NE | 1.2 - 4.9 | 420 - 2,120 | 760 - 3,600 |
| Lee Acres Regional Background Concentration (3) | | | 2 - 34,000 | NE | 0.10 - 1,640 | 1.9 - 14,000 | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 34,000 | NE | 10 | 14,000 | 10,000 |
| GBR Background Concentrations (5) | | | 560 | NE | NE | 2,800 | 4,599 |
| GBR-23* | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- |
| GBR-24S* | Nov-86 | | **618** | --- | --- | 943 | 2,826 |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- |
| GBR-24D* | Nov-86 | | **618** | --- | --- | 943 | 2,826 |
| | Jun-88 | | **630** | --- | --- | 1,640 | 3,487 |
| | Jan-95 | | --- | --- | --- | --- | --- |
| | Jan-00 | | **610** | --- | --- | 1,380 | 3,550 |
| | Jan-05 | | 310 | --- | --- | 1,900 | 3,400 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 160 | 0.96 | 0.23 | 2,100 | 3,380 |
| | Nov-19 | | 170 | 0.58 | <1.0 | 2,100 | 3,420 |
| | Feb-21 | | 200 | 0.52 | <0.10 | 2,100 | 3,360 |
| GBR-25* | May-86 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 520 | --- | --- | --- | --- |
| | Feb-21 | | 390 | 0.77 | <0.50 | 660 | 2,480 |
| GBR-26 | Oct-86 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 170 | --- | --- | --- | --- |
| | Jan-21 (No Recovery) | | --- | --- | --- | --- | --- |
| GBR-30 | Dec-86 | | 133 | --- | --- | 389 | 1,308 |
| | Jun-88 | | 370 | --- | --- | 2,270 | 3,996 |
| | Jan-95 | | --- | --- | --- | --- | --- |
| | Jan-00 | | 310 | --- | --- | 1,460 | 3,140 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 310 | 0.59 | 5.2 | 1,600 | 3,020 |
| | Nov-19 | | 280 | <0.50 | 1.4 | 1,700 | 3,040 |
| | Feb-21 | | 220 | 0.42 | 0.95 | 1,900 | 3,150 |
| GBR-31 | Nov-86 | | --- | --- | --- | --- | --- |
| | Jun-88 | | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- |
| | Jan-00 | | 181 | --- | --- | 1,560 | 3,030 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 250 | 0.63 | 2.6 | 1,700 | 3,170 |
| | Nov-19 | | 290 | <0.50 | <0.50 | 1,600 | 3,220 |
| | Jan-21 | | 85 | 0.54 | 7.1 | 1,600 | 2,770 |
| GBR-32* | Aug-88 | | **588** | --- | --- | 1,830 | 4,400 |
| | Jan-95 | | **569** | --- | --- | 1,770 | 3,830 |
| | Dec-00 | | **735** | --- | --- | 2,190 | **4,840** |
| | Dec-05 | | 520 | --- | --- | 1,700 | 4,400 |
| | Jan 2010 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 370 | 0.49 | 3.1 | 2,000 | 3,830 |
| | Nov-19 | | 190 | <0.50 | <1.0 | 1,700 | 3,200 |
| | Jan-21 | | 170 | 0.37 | <1.0 | 1,900 | 3,230 |
| GBR-33 | Sep-89 | | --- | --- | --- | --- | --- |
| | Jan-21 (Dry or Obstructed) | | --- | --- | --- | --- | --- |

**TABLE 8**
**GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY PARAMETERS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | General Chemistry | chloride | fluoride | nitrate + nitrite as N | sulfate | total dissolved solids |
|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 250 | 1.6 | NE | 600 | 1,000 |
| EPA Regional Screening Level (1) | | | NE | 0.799 | NE | NE | NE |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | 6.4 - 404 | NE | 1.2 - 4.9 | 420 - 2,120 | 760 - 3,600 |
| Lee Acres Regional Background Concentration (3) | | | 2 - 34,000 | NE | 0.10 - 1,640 | 1.9 - 14,000 | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 34,000 | NE | 10 | 14,000 | 10,000 |
| GBR Background Concentrations (5) | | | 560 | NE | NE | 2,800 | 4,599 |
| GBR-34 | Aug-15 | | 280 | --- | --- | --- | --- |
| | Feb-21 | | 270 | 0.86 | <0.50 | 49 | 1,440 |
| GBR-35 | Feb-21 | | 250 | 0.92 | <0.50 | 10 | 1,230 |
| GBR-39 | Feb-21 | | 160 | 0.54 | <0.50 | 1,000 | 1,860 |
| GBR-40 | Jun-88 | | --- | --- | --- | --- | --- |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- |
| GBR-41 | Jun-88 | | --- | --- | --- | --- | --- |
| | Jan-21 (Dry) | | --- | --- | --- | --- | --- |
| GBR-48 | Nov-88 | | **1,300** | **4.7** | 8.0 | 1,900 | **5,900** |
| | Jan-95 | | **708** | --- | --- | 1,940 | **4,740** |
| | Dec-00 | | **1,200** | --- | --- | 1,990 | **5,340** |
| | Dec-05 | | 420 | --- | --- | 1,300 | 3,400 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 370 | 0.45 | 7.3 | 2,100 | 3,730 |
| | Nov-19 | | 270 | <0.50 | 1.9 | 2,000 | 3,450 |
| | Jan-21 | | 290 | 0.39 | 2.1 | 2,100 | 3,720 |
| GBR-49 | Nov-88 | | **790** | **3.6** | 5.1 | 1,800 | --- |
| | Jan-95 | | 225 | --- | --- | 1,530 | 3,100 |
| | Dec-00 | | 426 | --- | --- | 1,910 | 3,800 |
| | Dec-05 | | 530 | --- | --- | 1,900 | **4,900** |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 180 | 0.62 | <0.10 | 1,500 | 2,840 |
| | Nov-19 | | 97 | <0.50 | <1.0 | 1,500 | 2,710 |
| | Jan-21 (Obstructed) | | --- | --- | --- | --- | --- |
| GBR-50 | Nov-88 | | 110 | **2.3** | 1.8 | 1,300 | --- |
| | Jan-95 | | 39 | --- | --- | 1,940 | 2,690 |
| | Dec-00 | | 4.0 | --- | --- | 1,540 | 2,580 |
| | Dec-05 | | 51 | --- | --- | 1,300 | 2,700 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 44 | 0.83 | 5.0 | 1,700 | 2,760 |
| | Nov-19 | | 69 | <0.50 | 6.9 | 1,700 | 2,910 |
| | Jan-21 | | 60 | 0.56 | 2.4 | 2,100 | 3,100 |
| GBR-52/GRW-8 | Nov-88 | | --- | --- | --- | --- | --- |
| | Jan-95 | | --- | --- | --- | --- | --- |
| | Jan-00 | | 96 | --- | --- | 1,500 | 2,700 |
| | Jan-05 | | 67 | --- | --- | 1,700 | 2,800 |
| | Jan-10 | | --- | --- | --- | --- | --- |
| | Aug-15 | | 65 | 0.71 | 5.7 | 1,400 | 2,840 |
| | Nov-19 | | 60 | <0.50 | 6.9 | 1,500 | 2,600 |
| | Jan-21 | | 56 | 0.64 | 7.9 | 1,600 | 2,590 |

**TABLE 8**
**GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY PARAMETERS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | General Chemistry | chloride | fluoride | nitrate + nitrite as N | sulfate | total dissolved solids |
|---|---|---|---|---|---|---|---|
| Unit | | | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | 250 | 1.6 | NE | 600 | 1,000 |
| EPA Regional Screening Level (1) | | | NE | 0.799 | NE | NE | NE |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | 6.4 - 404 | NE | 1.2 - 4.9 | 420 - 2,120 | 760 - 3,600 |
| Lee Acres Regional Background Concentration (3) | | | 2 - 34,000 | NE | 0.10 - 1,640 | 1.9 - 14,000 | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | 34,000 | NE | 10 | 14,000 | 10,000 |
| GBR Background Concentrations (5) | | | 560 | NE | NE | 2,800 | 4,599 |
| SHS-9 | Aug-15 | | 96 | --- | --- | --- | --- |
| | Jan-21 | | 130 | 0.74 | <1.0 | 26 | 1,540 |
| SHS-13 | Jan-21 | | 330 | 0.65 | 1.6 | 360 | 1,690 |

**Notes:**
(1) - EPA Regional Screening Level for tap water using hazard quotient of 1.0 (non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (carcinogens)
(2) - "Background" Concentration Proposed in Lee Acres DRAFT Remedial Investigation Report Prepared for the US Bureau of Land Management (dated February 1992)
(3) - Regional Background Concentrations Established in Document Titled *Hydrogeology and Water Resources of San Juan Basin, New Mexico* , Stone et al., dated 1983
(4) - Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT Remedial Investigation Report and Record of Decision (dated May 2004).
(5) - Background Threshold Value Established for the Former Giant Bloomfield Refinery
* - asterisk indicates that the well is screened withing the bedrock aquifer, no asterisk indicates that a well is screened in the alluvial aquifer
--- - not tested
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
PSH - phase separated hydrocarbons
USEPA - United States Environmental Protection Agency
**BOLD** - bold and highlighted cells indicates concentration exceeds the greater of GBR background concentrations or NMWQCC standards; where NMWQCC standards are not established, concentrations compared to EPA regional screening levels

**TABLE 9**
**GROUNDWATER ANALYTICAL RESULTS - BLM SPLIT SAMPLING OF UPGRADIENT WELLS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Sampling Method | Metals | total arsenic | dissolved arsenic | relative percent difference* | total barium | dissolved barium | relative percent difference* | total beryllium | dissolved beryllium | relative percent difference* | total cadmium | dissolved cadmium | relative percent difference* | total chromium | dissolved chromium | relative percent difference* | total iron | dissolved iron | relative percent difference* | total lead | dissolved lead | relative percent difference* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- |
| NMWQCC Standard | | | | 0.1 | 0.1 | --- | 2 | 2 | --- | 0.004 | 0.004 | --- | 0.005 | 0.005 | --- | 0.05 | 0.05 | --- | 1 | 1 | --- | 0.015 | 0.015 | --- |
| EPA Regional Screening Level (1) | | | | 0.000517 | 0.000517 | --- | 3.77 | 3.77 | --- | 0.0246 | 0.0246 | --- | 0.0092 | 0.0092 | --- | 22.5 | 22.5 | --- | 14 | 14 | --- | 0.015 | 0.015 | --- |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | | nd | nd | --- | nd | nd | --- | nd | nd | --- | nd | nd | --- | 0.0144 - 0.113 | 0.0144 - 0.113 | --- | nd - 1.48 | nd - 1.48 | --- | nd | nd | --- |
| Lee Acres Regional Background Concentration (3) | | | | NE | NE | --- | 0 - 3.4 | 0 - 3.4 | --- | NE | NE | --- | 0.001 - 0.018 | 0.001 - 0.018 | --- | 0.001 - 0.060 | 0.001 - 0.060 | --- | 0.010 - 16 | 0.010 - 16 | --- | 0 - 0.055 | 0 - 0.055 | --- |
| Lee Acres RI/ROD Remedial Goals (4) | | | | 0.05 | 0.05 | --- | 1.0 | 1.0 | --- | NE | NE | --- | 0.010 | 0.010 | --- | 0.113 | 0.113 | --- | 16 | 16 | --- | 0.050 | 0.050 | --- |
| GBR Background Concentrations (5) | | | | NE | NE | --- | NE | NE | --- | NE | NE | --- | NE | NE | --- | 1.29 | 1.29 | --- | 97.8 | 97.8 | --- | NE | NE | --- |
| GBR-17 | Jan-21 | Bailer | | <0.0010 | --- | --- | 0.014 | --- | --- | <0.0010 | --- | --- | <0.00050 | --- | --- | 0.011 | --- | --- | 0.79 | --- | --- | 0.00064 | --- | --- |
| | Apr-21 | Low Flow | | <0.0010 | <0.0010 | --- | 0.011 | 0.009 | -20% | <0.0010 | <0.0010 | --- | <0.00050 | <0.00050 | --- | 0.0033 | 0.0018 | -59% | <0.050 | <0.020 | --- | <0.00050 | <0.00050 | --- |
| | relative percent difference** | | | --- | --- | --- | -24% | --- | --- | --- | --- | --- | --- | --- | --- | -108% | --- | --- | -188% | --- | --- | -88% | | |
| GBR-32 (6) | Jan-21 | Bailer | | 0.0013 | --- | --- | 0.028 | --- | --- | <0.0010 | --- | --- | <0.00050 | --- | --- | 0.33 | --- | --- | 8.30 | --- | --- | 0.0011 | --- | --- |
| | Apr-21 | Low Flow | | 0.0013 | <0.0010 | -89% | 0.054 | 0.012 | -127% | <0.0010 | <0.0010 | --- | <0.00050 | <0.00050 | --- | 0.013 | <0.0010 | -185% | 6.0 | <0.020 | -199% | 0.0025 | <0.00050 | -164% |
| | relative percent difference** | | | 0% | --- | --- | 63% | --- | --- | --- | --- | --- | --- | --- | --- | -185% | --- | --- | -32% | --- | --- | 78% | | |
| GBR-48 | Jan-21 | Bailer | | 0.0050 | --- | --- | 0.20 | --- | --- | 0.00200 | --- | --- | <0.00050 | --- | --- | 0.050 | --- | --- | 29 | --- | --- | **0.016** | --- | --- |
| | Apr-21 | Low Flow | | 0.0028 | <0.0010 | -139% | 0.12 | 0.012 | -164% | <0.0010 | <0.0010 | --- | <0.00050 | <0.00050 | --- | 0.042 | 0.0016 | -185% | 17 | <0.020 | -200% | 0.0082 | <0.00050 | -188% |
| | relative percent difference** | | | -56% | --- | --- | -50% | --- | --- | -120% | --- | --- | --- | --- | --- | -17% | --- | --- | -52% | --- | --- | -64% | | |
| GBR-50 | Jan-21 | Bailer | | <0.0010 | --- | --- | 0.012 | --- | --- | <0.0010 | --- | --- | <0.00050 | --- | --- | 0.035 | --- | --- | 2.5 | --- | --- | 0.0068 | --- | --- |
| | Apr-21 | Low Flow | | <0.0010 | <0.0010 | --- | 0.0091 | 0.008 | -13% | <0.0010 | <0.0010 | --- | <0.00050 | <0.00050 | --- | 0.0023 | 0.0012 | -63% | 0.06 | <0.020 | -143% | <0.00050 | <0.00050 | --- |
| | relative percent difference** | | | --- | --- | --- | -27% | --- | --- | --- | --- | --- | --- | --- | --- | -175% | --- | --- | -191% | --- | --- | -186% | | |

Notes:
(1) - EPA Regional Screening Level for tap water using hazard quotient of 1.0 (non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (carcinogens)
(2) - "Background" Concentration Proposed in Lee Acres DRAFT Remedial Investigation Report Prepared for the US Bureau of Land Management (dated February 1992)
(3) - Regional Background Concentrations Established in Document Titled *Hydrogeology and Water Resources of San Juan Basin, New Mexico* , Stone et al., dated 1983
(4) - Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT Remedial Investigation Report and Record of Decision (dated May 2004).
(5) - Background Threshold Value Established for the Former Giant Bloomfield Refinery
(6) - well is screened withing the bedrock aquifer
* - relative percent difference of concentrations from total to dissolved, negative numbers indicate a decrease in concentrations, positive numbers indicate an increase in concentrations. Half of the reporting limit used if non-detect.
** - relative percent difference of concentrations from bailer sampling to low-flow sampling, negative numbers indicate a decrease in concentrations, positive numbers indicate an increase in concentrations. Half of the reporting limit used if non-detect.
--- - not tested
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
USEPA - United States Environmental Protection Agency
**BOLD -** bold and highlighted cells indicates concentration exceeds the greater of GBR background concentrations or NMWQCC standards; where NMWQCC standards are not established, concentrations compared to EPA regional screening levels

**TABLE 9**
**GROUNDWATER ANALYTICAL RESULTS - BLM SPLIT SAMPLING OF UPGRADIENT WELLS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| Well ID | Sample Date | Sampling Method | Metals | total manganese | dissolved manganese | relative percent difference* | total nickel | dissolved nickel | relative percent difference* | total selenium | dissolved selenium | relative percent difference* | total silver | dissolved silver | relative percent difference* | total thallium | dissolved thallium | relative percent difference* | General Chemistry | chloride | fluoride | nitrate + nitrite as N | sulfate | dissolved organic carbon | total dissolved solids |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | | | | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- | mg/L | mg/L | --- | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| NMWQCC Standard | | | | 0.2 | 0.2 | --- | 0.2 | 0.2 | --- | 0.05 | 0.05 | --- | 0.05 | 0.05 | --- | 0.002 | 0.002 | --- | | 250 | 1.6 | NE | 600 | NE | 1,000 |
| EPA Regional Screening Level (1) | | | | 0.434 | 0.434 | --- | 0.392 | 0.392 | --- | 0.0998 | 0.0998 | --- | 0.0941 | 0.0941 | --- | 0.0002 | 0.0002 | --- | | NE | 0.799 | NE | NE | NE | NE |
| Lee Acres Alluvial Aquifer Background Concentration (2) | | | | 0.0161 - 0.423 | 0.0161 - 0.423 | --- | nd | nd | --- | 0.008 - 0.0095 | 0.008 - 0.0095 | --- | 0.0273 - 0.0309 | 0.0273 - 0.0309 | --- | NE | NE | --- | | 6.4 - 404 | NE | 1.2 - 4.9 | 420 - 2,120 | NE | 760 - 3,600 |
| Lee Acres Regional Background Concentration (3) | | | | 0 - 2.6 | 0 - 2.6 | --- | NE | NE | --- | 0.002 - 0.04 | 0.002 - 0.04 | --- | NE | NE | --- | NE | NE | --- | | 2 - 34,000 | NE | 0.10 - 1,640 | 1.9 - 14,000 | NE | NE |
| Lee Acres RI/ROD Remedial Goals (4) | | | | 0.346 | 0.346 | --- | 0.20 | 0.20 | --- | 0.010 | 0.010 | --- | 0.05 | 0.05 | --- | NE | NE | --- | | 34,000 | NE | 10 | 14,000 | NE | 10,000 |
| GBR Background Concentrations (5) | | | | 5.28 | 5.28 | --- | NE | NE | --- | NE | NE | --- | NE | NE | --- | NE | NE | --- | | 560 | NE | NE | 2,800 | NE | 4,599 |
| GBR-17 | Jan-21 | Bailer | | 0.014 | --- | --- | 0.0056 | --- | --- | 0.0030 | --- | --- | <0.00050 | --- | --- | <0.00025 | --- | --- | | 52 | 0.57 | 5.5 | 1,300 | --- | 2,220 |
| | Apr-21 | Low Flow | | 0.015 | <0.0020 | -175% | 0.0014 | <0.0010 | -95% | 0.0038 | 0.0032 | -17% | <0.00050 | <0.0050 | --- | <0.00025 | <0.00050 | --- | | 59 | 0.33 | 7.1 | 1,300 | <1.0 | 2,330 |
| | relative percent difference** | | | 7% | --- | --- | -120% | --- | --- | 24% | --- | --- | --- | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- | --- |
| GBR-32 (6) | Jan-21 | Bailer | | 1.1 | --- | --- | 0.061 | --- | --- | 0.0044 | --- | --- | <0.00050 | --- | --- | <0.00025 | --- | --- | | 170 | 0.37 | <1.0 | 1,900 | --- | 3,230 |
| | Apr-21 | Low Flow | | 2.0 | 1.4 | -35% | 0.059 | 0.034 | -54% | 0.0025 | 0.0014 | -56% | <0.00050 | <0.0050 | --- | <0.00025 | <0.00050 | --- | | 160 | <0.50 | 1.6 | 1,800 | 1.9 | 3,240 |
| | relative percent difference** | | | 58% | --- | --- | -3% | --- | --- | -55% | --- | --- | --- | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- | --- |
| GBR-48 | Jan-21 | Bailer | | 0.67 | --- | --- | 0.068 | --- | --- | 0.02 | --- | --- | <0.00050 | --- | --- | 0.00038 | --- | --- | | 290 | 0.39 | 2.1 | 2,100 | --- | 3,720 |
| | Apr-21 | Low Flow | | 0.38 | <0.0020 | -199% | 0.058 | 0.041 | -34% | 0.015 | 0.012 | -22% | <0.00050 | <0.0050 | --- | <0.00025 | <0.00050 | --- | | 290 | <0.50 | 2.8 | 1,700 | 1.6 | 3,410 |
| | relative percent difference** | | | -55% | --- | --- | -16% | --- | --- | -29% | --- | --- | --- | --- | --- | -101% | --- | --- | | --- | --- | --- | --- | --- | --- |
| GBR-50 | Jan-21 | Bailer | | 0.16 | --- | --- | 0.013 | --- | --- | 0.010 | --- | --- | <0.00050 | --- | --- | <0.00025 | --- | --- | | 60 | 0.56 | 2.4 | 2,100 | --- | 3,100 |
| | Apr-21 | Low Flow | | 0.018 | 0.0093 | -64% | 0.0014 | <0.0010 | -95% | 0.011 | 0.011 | --- | <0.00050 | <0.0050 | --- | <0.00025 | <0.00050 | --- | | 69 | 0.2 | 8.9 | 1,800 | <1.0 | 3,100 |
| | relative percent difference** | | | -160% | --- | --- | -161% | --- | --- | 10% | --- | --- | --- | --- | --- | --- | --- | --- | | --- | --- | --- | --- | --- | --- |

Notes:
(1) - EPA Regional Screening Level for tap water using hazard quotient of 1.0 (non-carcinogens) and cancer risk of 1 in 100,000 exposed persons (carcinogens)
(2) - "Background" Concentration Proposed in Lee Acres DRAFT Remedial Investigation Report Prepared for the US Bureau of Land Management (dated February 1992)
(3) - Regional Background Concentrations Established in Document Titled *Hydrogeology and Water Resources of San Juan Basin, New Mexico* , Stone et al., dated 1983
(4) - Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT Remedial Investigation Report and Record of Decision (dated May 2004).
(5) - Background Threshold Value Established for the Former Giant Bloomfield Refinery
(6) - well is screened withing the bedrock aquifer
* - relative percent difference of concentrations from total to dissolved, negative numbers indicate a decrease in concentrations, positive numbers indicate an increase in concentrations. Half of the reporting limit used if non-detect.
** - relative percent difference of concentrations from bailer sampling to low-flow sampling, negative numbers indicate a decrease in concentrations, positive numbers indicate an increase in concentrations. Half of the reporting limit used if non-detect.
--- - not tested
mg/L - milligrams per liter
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
USEPA - United States Environmental Protection Agency
**BOLD** - bold and highlighted cells indicates concentration exceeds the greater of GBR background concentrations or NMWQCC standards; where NMWQCC standards are not established, concentrations compared to EPA regional screening levels

**TABLE 10**
**BACKGROUND THRESHOLD VALUES STATISTICAL ANALYSIS AND RESULTS**

**FORMER GIANT BLOOMFIELD REFINERY**
**WESTERN REFINING SOUTHWEST, LLC**
**SAN JUAN COUNTY, NEW MEXICO**

| | | | | | | | | | | | | NDs replaced with PQL - Analyzed as Detections (per Agency's request) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Units** | **Number of Samples** | **Percent ND** | **Number of ND** | **Detections** | **ND EM** | **Distribution** | **Min** | **Max** | **Mean** | **Standard Deviation** | **CV** | **ND EM** | **Distribution** | **95%UTL 95% Coverage** | **Proposed Background Threshold Values (BTVs)** | **Comments** |
| Chloride | mg/L | 48 | 0 | 0 | 48 | NA | Non-Parametric\Max | 43 | 560 | 218.4 | 148 | | | | | 560 | No Change. Dataset do not follow a discernible distribution, use Max value as UTL |
| Chromium | mg/L | 40 | 2.5 | 1 | 39 | ROS | Lognormal | 0.0069 | 1.4 | 0.277 | 0.351 | 1.268 | PQL | Gamma-WH | 1.294 | 1.29 | Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 1.4 due to highly variable sample data, recommend using UTL based on Gamma distribution with WH approximation |
| Iron | mg/L | 41 | 4.878 | 2 | 39 | ROS | Lognormal | 0.01 | 170 | 17.35 | 31.73 | 1.829 | PQL | Gamma-HW | 97.75 | 97.8 | Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 170 due to highly variable sample data, recommend using UTL based on Gamma distribution with HW approximation |
| Manganese | mg/L | 32 | 0 | 0 | 32 | NA | Lognormal | 0.041 | 6.4 | 1.187 | 1.416 | | | | | 5.28 | Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 6.4 due to highly variable sample data, recommend using UTL based on Gamma distribution with HW approximation |
| Sulfate | mg/L | 48 | 0 | 0 | 48 | NA | Non-Parametric\Max | 190 | 2,800 | 1,776 | 405.6 | | | | | 2,800 | Dataset do not follow a discernible distribution, use Max value as UTL |
| Total Dissolved Solids | mg/L | 48 | 0 | 0 | 48 | NA | Normal | 1,460 | 5,100 | 3,265 | 645.2 | | | | | 4,599 | Low coefficient of variation, use UTL based on normal distribution |

**Notes:**
CV - Coefficient of Variation
HW - Hawkins–Wixley approximation
KM - Kaplan-Meier method
NA - Not Applicable
ND - Non-detect
ND EM - Non-detect estimation method
ROS - Regression on order statistics
WH - Wilson-Hilferty approximation

# APPENDIX A – SITE GROUNDWATER ANALYTICAL LABORATORY REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

February 15, 2021

Gregory McCartney

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX: (505) 632-3911

RE: 2021 Giant Former Refinery OrderNo.: 2102004

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 8 sample(s) on 1/30/2021 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-50
**Project:** 2021 Giant Former Refinery
**Collection Date:** 1/29/2021 11:38:00 AM
**Lab ID:** 2102004-001 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| Lead | 0.0068 | 0.00050 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| Nickel | 0.013 | 0.0010 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| Selenium | 0.010 | 0.0010 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/3/2021 10:44:38 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.56 | 0.10 | | mg/L | 1 | 2/2/2021 11:51:36 AM | R75020 |
| Chloride | 60 | 10 | | mg/L | 20 | 2/2/2021 12:04:28 PM | R75020 |
| Sulfate | 2100 | 25 | * | mg/L | 50 | 2/4/2021 12:07:38 PM | R75072 |
| Nitrate+Nitrite as N | 2.4 | 1.0 | | mg/L | 5 | 2/2/2021 11:26:33 PM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 3100 | 20.0 | * | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.012 | 0.0030 | | mg/L | 1 | 2/4/2021 8:35:12 AM | 57858 |
| Chromium | 0.035 | 0.0060 | | mg/L | 1 | 2/4/2021 8:35:12 AM | 57858 |
| Iron | 2.5 | 0.25 | * | mg/L | 5 | 2/4/2021 8:41:54 AM | 57858 |
| Manganese | 0.16 | 0.0020 | * | mg/L | 1 | 2/4/2021 8:35:12 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 12:55:11 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-50
**Project:** 2021 Giant Former Refinery
**Collection Date:** 1/29/2021 11:38:00 AM
**Lab ID:** 2102004-001 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 75.5 | 26.3-112 | | %Rec | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 55.5 | 21.1-110 | | %Rec | 1 | 2/5/2021 6:02:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 74.5 | 17.6-167 | | %Rec | 1 | 2/5/2021 6:02:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Acetone | 10 | 10 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-50
**Project:** 2021 Giant Former Refinery
**Collection Date:** 1/29/2021 11:38:00 AM
**Lab ID:** 2102004-001 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 81.7 | 70-130 | | %Rec | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 99.2 | 70-130 | | %Rec | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Surr: Dibromofluoromethane | 103 | 70-130 | | %Rec | 1 | 2/8/2021 7:01:17 PM | A75144 |
| Surr: Toluene-d8 | 95.5 | 70-130 | | %Rec | 1 | 2/8/2021 7:01:17 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-48
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:06:00 PM
**Lab ID:** 2102004-002 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0050 | 0.0010 | | mg/L | 1 | 2/3/2021 10:57:52 AM | 57858 |
| Beryllium | 0.0020 | 0.0010 | | mg/L | 1 | 2/3/2021 10:57:52 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/3/2021 10:57:52 AM | 57858 |
| Lead | 0.016 | 0.00050 | * | mg/L | 1 | 2/3/2021 10:57:52 AM | 57858 |
| Nickel | 0.068 | 0.0050 | | mg/L | 5 | 2/4/2021 10:57:13 AM | 57858 |
| Selenium | 0.020 | 0.0010 | | mg/L | 1 | 2/3/2021 10:57:52 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/3/2021 10:57:52 AM | 57858 |
| Thallium | 0.00038 | 0.00025 | | mg/L | 1 | 2/3/2021 10:57:52 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.39 | 0.10 | | mg/L | 1 | 2/2/2021 12:17:20 PM | R75020 |
| Chloride | 290 | 10 | * | mg/L | 20 | 2/2/2021 12:30:12 PM | R75020 |
| Sulfate | 2100 | 25 | * | mg/L | 50 | 2/4/2021 12:19:59 PM | R75072 |
| Nitrate+Nitrite as N | 2.1 | 1.0 | | mg/L | 5 | 2/2/2021 11:39:26 PM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 3720 | 40.0 | *D | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.20 | 0.0030 | | mg/L | 1 | 2/4/2021 8:55:27 AM | 57858 |
| Chromium | 0.050 | 0.0060 | | mg/L | 1 | 2/4/2021 8:55:27 AM | 57858 |
| Iron | 29 | 2.5 | * | mg/L | 50 | 2/4/2021 10:40:43 AM | 57858 |
| Manganese | 0.67 | 0.0020 | * | mg/L | 1 | 2/4/2021 8:55:27 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 12:57:15 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-48
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:06:00 PM
**Lab ID:** 2102004-002 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 81.5 | 26.3-112 | | %Rec | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 61.0 | 21.1-110 | | %Rec | 1 | 2/5/2021 6:48:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 87.0 | 17.6-167 | | %Rec | 1 | 2/5/2021 6:48:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Acetone | ND | 10 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-48
**Project:** 2021 Giant Former Refinery
**Collection Date:** 1/29/2021 12:06:00 PM
**Lab ID:** 2102004-002 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 82.3 | 70-130 | | %Rec | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 95.7 | 70-130 | | %Rec | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Surr: Dibromofluoromethane | 105 | 70-130 | | %Rec | 1 | 2/8/2021 7:30:01 PM | A75144 |
| Surr: Toluene-d8 | 102 | 70-130 | | %Rec | 1 | 2/8/2021 7:30:01 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-32
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:32:00 PM
**Lab ID:** 2102004-003 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0013 | 0.0010 | | mg/L | 1 | 2/3/2021 10:59:59 AM | 57858 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/3/2021 10:59:59 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/3/2021 10:59:59 AM | 57858 |
| Lead | 0.0011 | 0.00050 | | mg/L | 1 | 2/3/2021 10:59:59 AM | 57858 |
| Nickel | 0.061 | 0.0050 | | mg/L | 5 | 2/4/2021 10:59:19 AM | 57858 |
| Selenium | 0.0044 | 0.0010 | | mg/L | 1 | 2/3/2021 10:59:59 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/3/2021 10:59:59 AM | 57858 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/3/2021 10:59:59 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.37 | 0.10 | | mg/L | 1 | 2/2/2021 12:43:04 PM | R75020 |
| Chloride | 170 | 10 | | mg/L | 20 | 2/2/2021 12:55:56 PM | R75020 |
| Sulfate | 1900 | 25 | * | mg/L | 50 | 2/4/2021 12:32:20 PM | R75072 |
| Nitrate+Nitrite as N | ND | 1.0 | | mg/L | 5 | 2/2/2021 11:52:18 PM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 3230 | 20.0 | * | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.028 | 0.0030 | | mg/L | 1 | 2/4/2021 8:59:49 AM | 57858 |
| Chromium | 0.33 | 0.0060 | * | mg/L | 1 | 2/4/2021 8:59:49 AM | 57858 |
| Iron | 8.3 | 0.50 | * | mg/L | 10 | 2/4/2021 10:42:54 AM | 57858 |
| Manganese | 1.1 | 0.010 | * | mg/L | 5 | 2/4/2021 9:02:01 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 12:59:19 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-32
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:32:00 PM
**Lab ID:** 2102004-003 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 88.0 | 26.3-112 | | %Rec | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 70.0 | 21.1-110 | | %Rec | 1 | 2/5/2021 7:35:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 88.0 | 17.6-167 | | %Rec | 1 | 2/5/2021 7:35:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Acetone | ND | 10 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-32
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:32:00 PM
**Lab ID:** 2102004-003 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 84.4 | 70-130 | | %Rec | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 97.2 | 70-130 | | %Rec | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Surr: Dibromofluoromethane | 100 | 70-130 | | %Rec | 1 | 2/8/2021 7:58:42 PM | A75144 |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 2/8/2021 7:58:42 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:53:00 PM
**Lab ID:** 2102004-004 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| Lead | 0.00064 | 0.00050 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| Nickel | 0.0056 | 0.0010 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| Selenium | 0.0030 | 0.0010 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/3/2021 11:02:05 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.57 | 0.10 | | mg/L | 1 | 2/2/2021 1:34:32 PM | R75020 |
| Chloride | 52 | 10 | | mg/L | 20 | 2/2/2021 1:47:23 PM | R75020 |
| Sulfate | 1300 | 25 | * | mg/L | 50 | 2/4/2021 12:44:40 PM | R75072 |
| Nitrate+Nitrite as N | 5.5 | 1.0 | | mg/L | 5 | 2/3/2021 12:05:10 AM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 2220 | 20.0 | * | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.014 | 0.0030 | | mg/L | 1 | 2/4/2021 9:04:08 AM | 57858 |
| Chromium | 0.011 | 0.0060 | | mg/L | 1 | 2/4/2021 9:04:08 AM | 57858 |
| Iron | 0.79 | 0.050 | * | mg/L | 1 | 2/4/2021 9:04:08 AM | 57858 |
| Manganese | 0.014 | 0.0020 | | mg/L | 1 | 2/4/2021 9:04:08 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 1:01:23 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:53:00 PM
**Lab ID:** 2102004-004 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 85.0 | 26.3-112 | | %Rec | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 69.0 | 21.1-110 | | %Rec | 1 | 2/5/2021 8:21:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 91.0 | 17.6-167 | | %Rec | 1 | 2/5/2021 8:21:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Acetone | ND | 10 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 12:53:00 PM
**Lab ID:** 2102004-004 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 81.6 | 70-130 | | %Rec | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 99.8 | 70-130 | | %Rec | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Surr: Dibromofluoromethane | 98.9 | 70-130 | | %Rec | 1 | 2/8/2021 8:27:19 PM | A75144 |
| Surr: Toluene-d8 | 99.1 | 70-130 | | %Rec | 1 | 2/8/2021 8:27:19 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-52
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 1:19:00 PM
**Lab ID:** 2102004-005 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| Lead | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| Nickel | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| Selenium | 0.0052 | 0.0010 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:01:25 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.64 | 0.10 | | mg/L | 1 | 2/2/2021 2:00:15 PM | R75020 |
| Chloride | 56 | 10 | | mg/L | 20 | 2/2/2021 2:13:07 PM | R75020 |
| Sulfate | 1600 | 25 | * | mg/L | 50 | 2/4/2021 12:57:01 PM | R75072 |
| Nitrate+Nitrite as N | 7.9 | 1.0 | | mg/L | 5 | 2/3/2021 12:18:01 AM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 2590 | 20.0 | * | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.016 | 0.0030 | | mg/L | 1 | 2/4/2021 9:08:40 AM | 57858 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 9:08:40 AM | 57858 |
| Iron | 0.32 | 0.050 | * | mg/L | 1 | 2/4/2021 9:08:40 AM | 57858 |
| Manganese | 0.0094 | 0.0020 | | mg/L | 1 | 2/4/2021 9:08:40 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 1:03:28 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-52
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 1:19:00 PM
**Lab ID:** 2102004-005 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 83.0 | 26.3-112 | | %Rec | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 67.0 | 21.1-110 | | %Rec | 1 | 2/5/2021 9:08:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 86.0 | 17.6-167 | | %Rec | 1 | 2/5/2021 9:08:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Acetone | ND | 10 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-52
**Project:** 2021 Giant Former Refinery
**Collection Date:** 1/29/2021 1:19:00 PM
**Lab ID:** 2102004-005 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 84.1 | 70-130 | | %Rec | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 97.4 | 70-130 | | %Rec | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Surr: Dibromofluoromethane | 100 | 70-130 | | %Rec | 1 | 2/8/2021 8:55:58 PM | A75144 |
| Surr: Toluene-d8 | 101 | 70-130 | | %Rec | 1 | 2/8/2021 8:55:58 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** SHS-13
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 1:38:00 PM
**Lab ID:** 2102004-006 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0018 | 0.0010 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| Lead | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| Nickel | 0.010 | 0.0010 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:03:30 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.65 | 0.50 | | mg/L | 5 | 2/2/2021 2:25:59 PM | R75020 |
| Chloride | 330 | 10 | * | mg/L | 20 | 2/2/2021 2:38:53 PM | R75020 |
| Sulfate | 360 | 10 | * | mg/L | 20 | 2/2/2021 2:38:53 PM | R75020 |
| Nitrate+Nitrite as N | 1.6 | 1.0 | | mg/L | 5 | 2/3/2021 12:30:53 AM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 1690 | 20.0 | * | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.083 | 0.0030 | | mg/L | 1 | 2/4/2021 9:13:08 AM | 57858 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 9:13:08 AM | 57858 |
| Iron | 0.26 | 0.050 | | mg/L | 1 | 2/4/2021 9:13:08 AM | 57858 |
| Manganese | 3.7 | 0.010 | * | mg/L | 5 | 2/4/2021 9:22:39 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 1:05:26 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** SHS-13
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 1:38:00 PM
**Lab ID:** 2102004-006 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 97.0 | 26.3-112 | | %Rec | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 74.0 | 21.1-110 | | %Rec | 1 | 2/5/2021 9:55:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 91.5 | 17.6-167 | | %Rec | 1 | 2/5/2021 9:55:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Acetone | ND | 10 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** SHS-13
**Project:** 2021 Giant Former Refinery
**Collection Date:** 1/29/2021 1:38:00 PM
**Lab ID:** 2102004-006 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 81.7 | 70-130 | | %Rec | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 94.5 | 70-130 | | %Rec | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Surr: Dibromofluoromethane | 99.2 | 70-130 | | %Rec | 1 | 2/8/2021 9:24:40 PM | A75144 |
| Surr: Toluene-d8 | 98.2 | 70-130 | | %Rec | 1 | 2/8/2021 9:24:40 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** SHS-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 1:53:00 PM
**Lab ID:** 2102004-007 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| Lead | 0.0032 | 0.00050 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| Nickel | 0.011 | 0.0010 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:05:37 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.74 | 0.50 | | mg/L | 5 | 2/2/2021 2:51:44 PM | R75020 |
| Chloride | 130 | 10 | | mg/L | 20 | 2/2/2021 3:04:36 PM | R75020 |
| Sulfate | 26 | 2.5 | | mg/L | 5 | 2/2/2021 2:51:44 PM | R75020 |
| Nitrate+Nitrite as N | ND | 1.0 | | mg/L | 5 | 2/3/2021 12:43:46 AM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 1540 | 20.0 | * | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.62 | 0.0030 | | mg/L | 1 | 2/4/2021 9:24:57 AM | 57858 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 9:24:57 AM | 57858 |
| Iron | 1.4 | 0.25 | * | mg/L | 5 | 2/4/2021 9:27:05 AM | 57858 |
| Manganese | 0.22 | 0.0020 | * | mg/L | 1 | 2/4/2021 9:24:57 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 1:07:24 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| 1-Methylnaphthalene | 0.48 | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| 2-Methylnaphthalene | 0.22 | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Acenaphthene | 1.3 | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Fluorene | 3.0 | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Anthracene | 0.40 | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Fluoranthene | 0.40 | 0.20 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Pyrene | 0.34 | 0.20 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** SHS-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 1:53:00 PM
**Lab ID:** 2102004-007 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 88.5 | 26.3-112 | | %Rec | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 49.5 | 21.1-110 | | %Rec | 1 | 2/5/2021 10:42:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 71.5 | 17.6-167 | | %Rec | 1 | 2/5/2021 10:42:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Ethylbenzene | 5.1 | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Acetone | ND | 10 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** SHS-9
**Project:** 2021 Giant Former Refinery
**Collection Date:** 1/29/2021 1:53:00 PM
**Lab ID:** 2102004-007 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Isopropylbenzene | 2.3 | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| n-Propylbenzene | 2.5 | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 90.1 | 70-130 | | %Rec | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 98.8 | 70-130 | | %Rec | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Surr: Dibromofluoromethane | 97.9 | 70-130 | | %Rec | 1 | 2/8/2021 9:53:15 PM | A75144 |
| Surr: Toluene-d8 | 97.3 | 70-130 | | %Rec | 1 | 2/8/2021 9:53:15 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-31
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 2:16:00 PM
**Lab ID:** 2102004-008 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| Lead | 0.0015 | 0.00050 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| Nickel | 0.0056 | 0.0010 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| Selenium | 0.0063 | 0.0010 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:07:43 AM | 57858 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.54 | 0.50 | | mg/L | 5 | 2/2/2021 3:17:28 PM | R75020 |
| Chloride | 85 | 2.5 | | mg/L | 5 | 2/2/2021 3:17:28 PM | R75020 |
| Sulfate | 1600 | 25 | * | mg/L | 50 | 2/4/2021 1:09:22 PM | R75072 |
| Nitrate+Nitrite as N | 7.1 | 1.0 | | mg/L | 5 | 2/3/2021 12:56:38 AM | R75020 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 2770 | 20.0 | * | mg/L | 1 | 2/3/2021 3:02:00 PM | 57847 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.057 | 0.0030 | | mg/L | 1 | 2/4/2021 9:29:12 AM | 57858 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 9:29:12 AM | 57858 |
| Iron | 2.1 | 0.25 | * | mg/L | 5 | 2/4/2021 9:31:23 AM | 57858 |
| Manganese | 0.23 | 0.0020 | * | mg/L | 1 | 2/4/2021 9:29:12 AM | 57858 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/5/2021 1:09:23 PM | 57882 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-31
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 2:16:00 PM
**Lab ID:** 2102004-008 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Surr: Nitrobenzene-d5 | 101 | 26.3-112 | | %Rec | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Surr: 2-Fluorobiphenyl | 59.5 | 21.1-110 | | %Rec | 1 | 2/5/2021 11:29:00 AM | 57841 |
| Surr: 4-Terphenyl-d14 | 84.5 | 17.6-167 | | %Rec | 1 | 2/5/2021 11:29:00 AM | 57841 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Acetone | ND | 10 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-31
**Project:** 2021 Giant Former Refinery **Collection Date:** 1/29/2021 2:16:00 PM
**Lab ID:** 2102004-008 **Matrix:** AQUEOUS **Received Date:** 1/30/2021 9:15:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Surr: 1,2-Dichloroethane-d4 | 83.5 | 70-130 | | %Rec | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Surr: 4-Bromofluorobenzene | 93.3 | 70-130 | | %Rec | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Surr: Dibromofluoromethane | 97.9 | 70-130 | | %Rec | 1 | 2/8/2021 10:21:43 PM | A75144 |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 2/8/2021 10:21:43 PM | A75144 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-57858** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW** Batch ID: **57858** RunNo: **75033**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648557** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | | | | | | | | |
| Chromium | ND | 0.0060 | | | | | | | | |
| Iron | ND | 0.050 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |

Sample ID: **LLLCS-57858** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC** Batch ID: **57858** RunNo: **75033**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648559** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | 0.002000 | 0 | 103 | 50 | 150 | | | |
| Chromium | 0.0067 | 0.0060 | 0.006000 | 0 | 111 | 50 | 150 | | | |
| Iron | ND | 0.050 | 0.02000 | 0 | 110 | 50 | 150 | | | |
| Manganese | ND | 0.0020 | 0.002000 | 0 | 98.8 | 50 | 150 | | | |

Sample ID: **LCS-57858** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW** Batch ID: **57858** RunNo: **75033**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648561** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.49 | 0.0030 | 0.5000 | 0 | 98.7 | 85 | 115 | | | |
| Chromium | 0.50 | 0.0060 | 0.5000 | 0 | 99.1 | 85 | 115 | | | |
| Iron | 0.54 | 0.050 | 0.5000 | 0 | 107 | 85 | 115 | | | |
| Manganese | 0.48 | 0.0020 | 0.5000 | 0 | 96.9 | 85 | 115 | | | |

Sample ID: **2102004-001DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-50** Batch ID: **57858** RunNo: **75073**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2650011** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.51 | 0.0030 | 0.5000 | 0.01247 | 99.7 | 70 | 130 | | | |
| Chromium | 0.51 | 0.0060 | 0.5000 | 0.03514 | 94.3 | 70 | 130 | | | |
| Manganese | 0.65 | 0.0020 | 0.5000 | 0.1583 | 98.1 | 70 | 130 | | | |

Sample ID: **2102004-001DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-50** Batch ID: **57858** RunNo: **75073**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2650012** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.54 | 0.0030 | 0.5000 | 0.01247 | 106 | 70 | 130 | 5.98 | 20 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
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| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **2102004-001DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-50** Batch ID: **57858** RunNo: **75073**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2650012** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 0.54 | 0.0060 | 0.5000 | 0.03514 | 100 | 70 | 130 | 5.73 | 20 | |
| Manganese | 0.69 | 0.0020 | 0.5000 | 0.1583 | 106 | 70 | 130 | 6.16 | 20 | |

Sample ID: **2102004-001DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-50** Batch ID: **57858** RunNo: **75073**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2650014** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 2.9 | 0.25 | 0.5000 | 2.493 | 83.4 | 70 | 130 | | | |

Sample ID: **2102004-001DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-50** Batch ID: **57858** RunNo: **75073**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2650018** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 2.9 | 0.25 | 0.5000 | 2.493 | 73.5 | 70 | 130 | 1.72 | 20 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-57858** SampType: **MBLK** TestCode: **EPA 200.8: Metals**
Client ID: **PBW** Batch ID: **57858** RunNo: **75032**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648496** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | | | | | | | | |
| Beryllium | ND | 0.0010 | | | | | | | | |
| Cadmium | ND | 0.00050 | | | | | | | | |
| Lead | ND | 0.00050 | | | | | | | | |
| Nickel | ND | 0.0010 | | | | | | | | |
| Selenium | ND | 0.0010 | | | | | | | | |
| Silver | ND | 0.00050 | | | | | | | | |
| Thallium | ND | 0.00025 | | | | | | | | |

Sample ID: **MSLLLCS-57858** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **57858** RunNo: **75032**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648497** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | 0.001000 | 0 | 93.1 | 50 | 150 | | | |
| Beryllium | 0.0010 | 0.0010 | 0.001000 | 0 | 101 | 50 | 150 | | | |
| Cadmium | 0.00051 | 0.00050 | 0.0005000 | 0 | 101 | 50 | 150 | | | |
| Lead | ND | 0.00050 | 0.0005000 | 0 | 96.8 | 50 | 150 | | | |
| Nickel | ND | 0.0010 | 0.001000 | 0 | 89.9 | 50 | 150 | | | |
| Selenium | ND | 0.0010 | 0.001000 | 0 | 93.0 | 50 | 150 | | | |
| Silver | ND | 0.00050 | 0.0005000 | 0 | 85.9 | 50 | 150 | | | |

Sample ID: **MSLCS-57858** SampType: **LCS** TestCode: **EPA 200.8: Metals**
Client ID: **LCSW** Batch ID: **57858** RunNo: **75032**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648498** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.024 | 0.0010 | 0.02500 | 0 | 95.2 | 85 | 115 | | | |
| Beryllium | 0.025 | 0.0010 | 0.02500 | 0 | 98.6 | 85 | 115 | | | |
| Cadmium | 0.012 | 0.00050 | 0.01250 | 0 | 99.1 | 85 | 115 | | | |
| Lead | 0.012 | 0.00050 | 0.01250 | 0 | 96.0 | 85 | 115 | | | |
| Nickel | 0.024 | 0.0010 | 0.02500 | 0 | 96.8 | 85 | 115 | | | |
| Selenium | 0.025 | 0.0010 | 0.02500 | 0 | 98.7 | 85 | 115 | | | |
| Silver | 0.012 | 0.00050 | 0.01250 | 0 | 99.3 | 85 | 115 | | | |
| Thallium | 0.012 | 0.00025 | 0.01250 | 0 | 96.3 | 85 | 115 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MSLLLCS-TL-57858** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **57858** RunNo: **75032**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648499** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | ND | 0.00025 | 0.0002500 | 0 | 98.8 | 50 | 150 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57882** | SampType: **MBLK** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57882** | RunNo: **75108** |
| Prep Date: **2/3/2021** | Analysis Date: **2/5/2021** | SeqNo: **2651426** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | | | | | | | | |

| Sample ID: **LLLCS-57882** | SampType: **LCSLL** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **57882** | RunNo: **75108** |
| Prep Date: **2/3/2021** | Analysis Date: **2/5/2021** | SeqNo: **2651427** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | 0.0001500 | 0 | 79.1 | 50 | 150 | | | |

| Sample ID: **LCS-57882** | SampType: **LCS** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57882** | RunNo: **75108** |
| Prep Date: **2/3/2021** | Analysis Date: **2/5/2021** | SeqNo: **2651428** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0049 | 0.00020 | 0.005000 | 0 | 98.0 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75020** | RunNo: **75020** |
| Prep Date: | Analysis Date: **2/2/2021** | SeqNo: **2648214** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 0.10 | | | | | | | | |
| Chloride | ND | 0.50 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |
| Nitrate+Nitrite as N | ND | 0.20 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75020** | RunNo: **75020** |
| Prep Date: | Analysis Date: **2/2/2021** | SeqNo: **2648215** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 0.51 | 0.10 | 0.5000 | 0 | 101 | 90 | 110 | | | |
| Chloride | 4.7 | 0.50 | 5.000 | 0 | 94.9 | 90 | 110 | | | |
| Sulfate | 9.6 | 0.50 | 10.00 | 0 | 96.4 | 90 | 110 | | | |
| Nitrate+Nitrite as N | 3.4 | 0.20 | 3.500 | 0 | 97.7 | 90 | 110 | | | |

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75072** | RunNo: **75072** |
| Prep Date: | Analysis Date: **2/4/2021** | SeqNo: **2650544** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75072** | RunNo: **75072** |
| Prep Date: | Analysis Date: **2/4/2021** | SeqNo: **2650545** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 9.5 | 0.50 | 10.00 | 0 | 95.2 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **A75144** RunNo: **75144**
Prep Date: Analysis Date: **2/8/2021** SeqNo: **2653046** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 18 | 1.0 | 20.00 | 0 | 91.9 | 70 | 130 | | | |
| Toluene | 19 | 1.0 | 20.00 | 0 | 96.8 | 70 | 130 | | | |
| Chlorobenzene | 19 | 1.0 | 20.00 | 0 | 96.5 | 70 | 130 | | | |
| 1,1-Dichloroethene | 18 | 1.0 | 20.00 | 0 | 89.6 | 70 | 130 | | | |
| Trichloroethene (TCE) | 17 | 1.0 | 20.00 | 0 | 86.7 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 8.2 | | 10.00 | | 82.0 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.5 | | 10.00 | | 95.1 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 9.1 | | 10.00 | | 91.5 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.5 | | 10.00 | | 95.0 | 70 | 130 | | | |

Sample ID: **vsb fridge** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **A75144** RunNo: **75144**
Prep Date: Analysis Date: **2/8/2021** SeqNo: **2653047** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **vsb fridge** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A75144** | RunNo: **75144** |
| Prep Date: | Analysis Date: **2/8/2021** | SeqNo: **2653047** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **vsb fridge** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A75144** | RunNo: **75144** |
| Prep Date: | Analysis Date: **2/8/2021** | SeqNo: **2653047** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 8.4 | | 10.00 | | 83.9 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.7 | | 10.00 | | 97.4 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 9.7 | | 10.00 | | 97.3 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10 | | 10.00 | | 102 | 70 | 130 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **mb-57859** SampType: **MBLK** TestCode: **EPA Method 8270SIM**
Client ID: **PBW** Batch ID: **57859** RunNo: **75123**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2651788** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: Nitrobenzene-d5 | 3.1 | | 4.000 | | 78.5 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 4.1 | | 8.000 | | 51.8 | 27.7 | 118 | | | |
| Surr: 2-Fluorobiphenyl | 2.2 | | 4.000 | | 54.5 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 3.2 | | 4.000 | | 80.0 | 17.6 | 167 | | | |

Sample ID: **lcs-57859** SampType: **LCS** TestCode: **EPA Method 8270SIM**
Client ID: **LCSW** Batch ID: **57859** RunNo: **75123**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2651789** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: Nitrobenzene-d5 | 4.6 | | 5.000 | | 92.8 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 6.1 | | 10.00 | | 60.8 | 27.7 | 118 | | | |
| Surr: 2-Fluorobiphenyl | 3.3 | | 5.000 | | 66.0 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 5.3 | | 5.000 | | 107 | 17.6 | 167 | | | |

Sample ID: **lcsd-57859** SampType: **LCSD** TestCode: **EPA Method 8270SIM**
Client ID: **LCSS02** Batch ID: **57859** RunNo: **75123**
Prep Date: **2/2/2021** Analysis Date: **2/4/2021** SeqNo: **2651790** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: Nitrobenzene-d5 | 5.5 | | 5.000 | | 111 | 26.3 | 112 | 0 | 0 | |
| Surr: 2,4,6-Tribromophenol | 7.1 | | 10.00 | | 70.6 | 27.7 | 118 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 3.8 | | 5.000 | | 76.8 | 21.1 | 110 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 4.7 | | 5.000 | | 94.8 | 17.6 | 167 | 0 | 0 | |

Sample ID: **mb-57841** SampType: **MBLK** TestCode: **EPA Method 8270SIM**
Client ID: **PBW** Batch ID: **57841** RunNo: **75123**
Prep Date: **2/2/2021** Analysis Date: **2/5/2021** SeqNo: **2651799** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | 0.10 | | | | | | | | |
| 1-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| Acenaphthylene | ND | 0.10 | | | | | | | | |
| Acenaphthene | ND | 0.10 | | | | | | | | |
| Fluorene | ND | 0.10 | | | | | | | | |
| Phenanthrene | ND | 0.10 | | | | | | | | |
| Anthracene | ND | 0.10 | | | | | | | | |
| Fluoranthene | ND | 0.20 | | | | | | | | |
| Pyrene | ND | 0.20 | | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **mb-57841** SampType: **MBLK** TestCode: **EPA Method 8270SIM**
Client ID: **PBW** Batch ID: **57841** RunNo: **75123**
Prep Date: **2/2/2021** Analysis Date: **2/5/2021** SeqNo: **2651799** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benz(a)anthracene | ND | 0.10 | | | | | | | | |
| Chrysene | ND | 0.10 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(a)pyrene | ND | 0.070 | | | | | | | | |
| Dibenz(a,h)anthracene | ND | 0.10 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.10 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | | | | | | | |
| Surr: Nitrobenzene-d5 | 2.9 | | 4.000 | | 72.5 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 0 | | 8.000 | | 0 | 27.7 | 118 | | | S |
| Surr: 2-Fluorobiphenyl | 2.1 | | 4.000 | | 51.5 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 2.1 | | 4.000 | | 52.5 | 17.6 | 167 | | | |

Sample ID: **lcs-57841** SampType: **LCS** TestCode: **EPA Method 8270SIM**
Client ID: **LCSW** Batch ID: **57841** RunNo: **75123**
Prep Date: **2/2/2021** Analysis Date: **2/5/2021** SeqNo: **2651800** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 1.3 | 0.10 | 2.000 | 0 | 67.0 | 18.5 | 83.4 | | | |
| 1-Methylnaphthalene | 1.3 | 0.10 | 2.000 | 0 | 67.0 | 15.1 | 89.6 | | | |
| 2-Methylnaphthalene | 1.3 | 0.10 | 2.000 | 0 | 67.0 | 15 | 90.6 | | | |
| Acenaphthylene | 1.4 | 0.10 | 2.000 | 0 | 70.0 | 18.2 | 95.3 | | | |
| Acenaphthene | 1.3 | 0.10 | 2.000 | 0 | 67.0 | 23.9 | 90.3 | | | |
| Fluorene | 1.3 | 0.10 | 2.000 | 0 | 67.0 | 16.8 | 106 | | | |
| Phenanthrene | 1.4 | 0.10 | 2.000 | 0 | 71.0 | 23.3 | 105 | | | |
| Anthracene | 1.4 | 0.10 | 2.000 | 0 | 70.0 | 15 | 112 | | | |
| Fluoranthene | 1.7 | 0.20 | 2.000 | 0 | 85.0 | 15.4 | 138 | | | |
| Pyrene | 1.3 | 0.20 | 2.000 | 0 | 64.0 | 15 | 128 | | | |
| Benz(a)anthracene | 2.3 | 0.10 | 2.000 | 0 | 114 | 38.7 | 111 | | | S |
| Chrysene | 1.5 | 0.10 | 2.000 | 0 | 74.0 | 32.6 | 96.6 | | | |
| Benzo(b+k)fluoranthene | 3.7 | 0.20 | 4.000 | 0 | 91.5 | 18.3 | 114 | | | |
| Benzo(a)pyrene | 2.1 | 0.070 | 2.000 | 0 | 104 | 24.5 | 123 | | | |
| Dibenz(a,h)anthracene | 1.9 | 0.10 | 2.000 | 0 | 93.0 | 17.8 | 118 | | | |
| Benzo(g,h,i)perylene | 1.7 | 0.10 | 2.000 | 0 | 86.0 | 22.2 | 110 | | | |
| Indeno(1,2,3-cd)pyrene | 3.4 | 0.30 | 2.000 | 0 | 171 | 20.8 | 115 | | | S |
| Surr: Nitrobenzene-d5 | 5.4 | | 5.000 | | 108 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 0 | | 10.00 | | 0 | 27.7 | 118 | | | S |
| Surr: 2-Fluorobiphenyl | 3.8 | | 5.000 | | 75.2 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 4.1 | | 5.000 | | 81.6 | 17.6 | 167 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **lcsd-57841** SampType: **LCSD** TestCode: **EPA Method 8270SIM**
Client ID: **LCSS02** Batch ID: **57841** RunNo: **75123**
Prep Date: **2/2/2021** Analysis Date: **2/5/2021** SeqNo: **2651801** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 1.3 | 0.10 | 2.000 | 0 | 63.0 | 18.5 | 83.4 | 6.15 | 20 | |
| 1-Methylnaphthalene | 1.3 | 0.10 | 2.000 | 0 | 64.0 | 15.1 | 89.6 | 4.58 | 20 | |
| 2-Methylnaphthalene | 1.3 | 0.10 | 2.000 | 0 | 64.0 | 15 | 90.6 | 4.58 | 20 | |
| Acenaphthylene | 1.4 | 0.10 | 2.000 | 0 | 69.0 | 18.2 | 95.3 | 1.44 | 20 | |
| Acenaphthene | 1.3 | 0.10 | 2.000 | 0 | 63.0 | 23.9 | 90.3 | 6.15 | 20 | |
| Fluorene | 1.3 | 0.10 | 2.000 | 0 | 65.0 | 16.8 | 106 | 3.03 | 20 | |
| Phenanthrene | 1.3 | 0.10 | 2.000 | 0 | 67.0 | 23.3 | 105 | 5.80 | 20 | |
| Anthracene | 1.4 | 0.10 | 2.000 | 0 | 70.0 | 15 | 112 | 0 | 20 | |
| Fluoranthene | 1.7 | 0.20 | 2.000 | 0 | 85.0 | 15.4 | 138 | 0 | 20 | |
| Pyrene | 1.4 | 0.20 | 2.000 | 0 | 72.0 | 15 | 128 | 11.8 | 20 | |
| Benz(a)anthracene | 1.8 | 0.10 | 2.000 | 0 | 88.0 | 38.7 | 111 | 25.7 | 20 | R |
| Chrysene | 1.5 | 0.10 | 2.000 | 0 | 77.0 | 32.6 | 96.6 | 3.97 | 20 | |
| Benzo(b+k)fluoranthene | 3.1 | 0.20 | 4.000 | 0 | 77.0 | 18.3 | 114 | 17.2 | 0 | |
| Benzo(a)pyrene | 1.6 | 0.070 | 2.000 | 0 | 79.0 | 24.5 | 123 | 27.3 | 20 | R |
| Dibenz(a,h)anthracene | 1.7 | 0.10 | 2.000 | 0 | 83.0 | 17.8 | 118 | 11.4 | 20 | |
| Benzo(g,h,i)perylene | 1.6 | 0.10 | 2.000 | 0 | 82.0 | 22.2 | 110 | 4.76 | 20 | |
| Indeno(1,2,3-cd)pyrene | 2.9 | 0.30 | 2.000 | 0 | 145 | 20.8 | 115 | 16.5 | 20 | S |
| Surr: Nitrobenzene-d5 | 5.1 | | 5.000 | | 102 | 26.3 | 112 | 0 | 0 | |
| Surr: 2,4,6-Tribromophenol | 0 | | 10.00 | | 0 | 27.7 | 118 | 0 | 0 | S |
| Surr: 2-Fluorobiphenyl | 3.4 | | 5.000 | | 68.8 | 21.1 | 110 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 5.0 | | 5.000 | | 100 | 17.6 | 167 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102004**
***15-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57847** | SampType: **MBLK** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57847** | RunNo: **75038** |
| Prep Date: **2/2/2021** | Analysis Date: **2/3/2021** | SeqNo: **2648794** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

| Sample ID: **LCS-57847** | SampType: **LCS** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57847** | RunNo: **75038** |
| Prep Date: **2/2/2021** | Analysis Date: **2/3/2021** | SeqNo: **2648795** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1020 | 20.0 | 1000 | 0 | 102 | 80 | 120 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2102004** RcptNo: **1**

Received By: **Juan Rojas** **1/30/2021 9:15:00 AM** Juan Rojas

Completed By: **Desiree Dominguez** **2/1/2021 9:22:58 AM** DD

Reviewed By: JR 2/1/21

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. How was the sample delivered? | Courier | | |

## Log In

| | | | |
|---|---|---|---|
| 3. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 4. Were all samples received at a temperature of >0° C to 6.0°C | Yes ☑ | No ☐ | NA ☐ |
| 5. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 6. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 7. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 8. Was preservative added to bottles? | Yes ☒ | ~~No ☑~~ cec 2/1/21 | NA ☐ |
| 9. Received at least 1 vial with headspace <1/4" for AQ VOA? | Yes ☑ | No ☐ | NA ☐ |
| 10. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 12. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 13. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 14. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: 16 (<2 or >12 unless noted)

Adjusted? Yes

Checked by: cec 2/1/21

## Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks: added ~0.5mL to 0070 for Ph <2 cec 2/1/21

17. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 2.4 | Good | Yes | | | |
| 2 | 1.3 | Good | Yes | | | |
| 3 | 1.6 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Marathon
Greg McCartney
Mailing Address:

Phone #:
email or Fax#:
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: 2021 Giant Former Refinery
Project #:
Project Manager: Stuart Hyde
Sampler: T.Short, C.McGinn
On Ice: ☒ Yes ☐ No
# of Coolers: 3
Cooler Temp(including CF): See Remarks (°C)


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


**Analysis Request**

| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2102004 | BTEX / MTBE / TMB's (8021) | TPH:8015D(GRO / DRO / MRO) | 8081 Pesticides/8082 PCB's | EDB (Method 504.1) | PAHs by 8310 or 8270SIMS | RCRA 8 Metals | Cl, F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) | See attached |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.29.21 | 1138 | Aq | GBR-50 | Various | Various | -001 | | | | | | | | | | | X |
| | 1206 | | GBR-48 | | | -002 | | | | | | | | | | | X |
| | 1232 | | GBR-32 | | | -003 | | | | | | | | | | | X |
| | 1253 | | GBR-17 | | | -004 | | | | | | | | | | | X |
| | 1319 | | GBR-52 | | | -005 | | | | | | | | | | | X |
| | 1338 | | SHS-13 | | | -006 | | | | | | | | | | | X |
| | 1353 | | SHS-9 | | | -007 | | | | | | | | | | | X |
| ↓ | 1416 | ↓ | GBR-31 | ↓ | ↓ | -008 | | | | | | | | | | | X |

| Date | Time | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 1.29.21 | 1536 | Caitlin McGinn | Christine Walker | | 1/29/21 | 1530 |
| 1/29/21 | 1963 | Christine Walker | | courier | 1/30/21 | 9:15 |

Remarks: cc: stuart.hyde@wsp.com 2.4-0=2.4
travis.short@wsp.com 1.3-0=1.3
caitlin.mcginn@wsp.com 1.6-0=1.6
Quote # 2112

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

| Recommended Analyte List for GBR Site-Wide Sampling Event |
| --- |
| **VOCs Method 8260** |
| benzene |
| toluene |
| ethylbenzene |
| methyl tert-butyl ether (MTBE) |
| 1,2,4-trimethylbenzene |
| 1,3,5-trimethylbenzene |
| 1,2-dichloroethane (EDC) |
| 1,2-dibromoethane (EDB) |
| naphthalene |
| 1-methylnaphthalene |
| 2-methylnaphthalene |
| acetone |
| bromobenzene |
| bromodichloromethane |
| bromoform |
| bromomethane |
| 2-butanone |
| carbon disulfide |
| carbon tetrachloride |
| chlorobenzene |
| chloroethane |
| chloroform |
| chloromethane |
| 2-chlorotoluene |
| 4-chlorotoluene |
| cis-1,2-dichloroethene (cis-1,2-DCE) |
| cis-1,3-dichloropropene |
| 1,2-dibromo-3-chloropropane |
| dibromochloromethane |
| dibromomethane |
| 1,2-dichlorobenzene |
| 1,3-dichlorobenzene |
| 1,4-dichlorobenzene |
| dichlorodifluoromethane |
| 1,1-dichloroethane |
| 1,1-dichloroethene (1,1-DCE) |
| 1,2-dichloropropane |
| 1,3-dichloropropane |
| 2,2-dichloropropane |
| 1,1-dichloropropene |
| hexachlorobutadiene |
| 2-hexanone |
| isopropylbenzene |

| |
|---|
| 4-isopropytoluene |
| 4-methyl-2-pentanone |
| methylene chloride |
| n-butylbenzene |
| n-propylbenzene |
| sec-butylbenzene |
| styrene |
| tert-butylbenzene |
| 1,1,1,2-tetrachloroethane |
| 1,1,2,2-tetrachloroethane |
| tetrachloroethene (PCE) |
| trans-1,2-dichloroethene (trans-1,2-DCE) |
| trans-1,3-dichloropropene |
| 1,2,3-trichlorobenzene |
| 1,2,4-trichlorobenzene |
| 1,1,1-trichloroethane |
| 1,1,2-trichloroethane |
| trichloroethene (TCE) |
| trichlorofluoromethane |
| 1,2,3-trichloropropane |
| vinyl chloride |
| xylenes, total |
| **PAHs Method 8270** |
| naphthalene |
| 1-methylnaphthalene |
| 2-methylnaphthalene |
| acenaphthylene |
| acenaphthene |
| fluorene |
| phenanthrene |
| anthracene |
| fluoranthene |
| pyrene |
| benz(a)anthracene |
| chrysene |
| benzo(b)fluoranthene |
| benzo(k)fluoranthene |
| benzo(a)pyrene |
| dibenz(a,h)anthracene |
| benzo(g,h,i)perylene |
| indeno(1,2,3-cd)pyrene |
| **Anions Method 300.0** |
| chloride |
| sulfate |
| fluoride |
| nitrate + nitrite as N |
| **Metals Method 200.7** |

| |
|---|
| barium* |
| beryllium |
| cadmium* |
| chromium* |
| iron |
| manganese |
| nickel |
| silver* |
| **Metals Method 200.8** |
| arsenic* |
| lead* |
| selenium* |
| thallium |
| **Mercury** |
| Mercury* |
| **Total Dissolved Solids Method M2540C** |
| total dissolved solids |

* - asterisks denotes RCRA 8 Metal

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

February 12, 2021

Gregory J. McCartney

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX: (505) 632-3911

RE: 2021 Giant Former Refinery OrderNo.: 2102074

Dear Gregory J. McCartney:

Hall Environmental Analysis Laboratory received 7 sample(s) on 2/2/2021 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-24D
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 10:30:00 AM
**Lab ID:** 2102074-001 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| Lead | 0.0010 | 0.00050 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| Nickel | 0.0037 | 0.0010 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:30:52 AM | 57890 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.52 | 0.50 | | mg/L | 5 | 2/3/2021 6:31:24 PM | R75057 |
| Chloride | 200 | 25 | | mg/L | 50 | 2/3/2021 6:44:16 PM | R75057 |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | mg/L | 1 | 2/2/2021 12:21:37 PM | R75022 |
| Nitrogen, Nitrate (As N) | ND | 0.10 | | mg/L | 1 | 2/2/2021 12:21:37 PM | R75022 |
| Sulfate | 2100 | 25 | * | mg/L | 50 | 2/3/2021 6:44:16 PM | R75057 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 3360 | 20.0 | * | mg/L | 1 | 2/3/2021 3:10:00 PM | 57864 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.016 | 0.0030 | | mg/L | 1 | 2/4/2021 9:33:31 AM | 57889 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 9:33:31 AM | 57889 |
| Iron | 0.46 | 0.050 | * | mg/L | 1 | 2/4/2021 9:33:31 AM | 57889 |
| Manganese | 0.92 | 0.0020 | * | mg/L | 1 | 2/4/2021 9:33:31 AM | 57889 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:12:56 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Acenaphthene | 0.18 | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Fluorene | 0.28 | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Anthracene | 0.28 | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Fluoranthene | 0.36 | 0.20 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Pyrene | 0.22 | 0.20 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-24D
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 10:30:00 AM
**Lab ID:** 2102074-001 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Surr: Nitrobenzene-d5 | 69.5 | 26.3-112 | | %Rec | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Surr: 2-Fluorobiphenyl | 52.0 | 21.1-110 | | %Rec | 1 | 2/4/2021 9:09:00 PM | 57859 |
| Surr: 4-Terphenyl-d14 | 83.0 | 17.6-167 | | %Rec | 1 | 2/4/2021 9:09:00 PM | 57859 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2-Dichloroethane (EDC) | 1.3 | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Acetone | ND | 10 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-24D
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 10:30:00 AM
**Lab ID:** 2102074-001 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Surr: 1,2-Dichloroethane-d4 | 82.0 | 70-130 | | %Rec | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Surr: 4-Bromofluorobenzene | 99.3 | 70-130 | | %Rec | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Surr: Dibromofluoromethane | 88.2 | 70-130 | | %Rec | 1 | 2/9/2021 6:30:36 PM | C75172 |
| Surr: Toluene-d8 | 94.4 | 70-130 | | %Rec | 1 | 2/9/2021 6:30:36 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-30
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 10:50:00 AM
**Lab ID:** 2102074-002 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0051 | 0.0010 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| Beryllium | 0.0010 | 0.0010 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| Lead | 0.015 | 0.00050 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| Nickel | 0.027 | 0.0010 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| Selenium | 0.013 | 0.0010 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:32:58 AM | 57890 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.42 | 0.10 | | mg/L | 1 | 2/3/2021 7:23:34 PM | R75057 |
| Chloride | 220 | 25 | | mg/L | 50 | 2/3/2021 7:35:55 PM | R75057 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/2/2021 1:11:16 PM | R75022 |
| Nitrogen, Nitrate (As N) | 0.95 | 0.50 | | mg/L | 5 | 2/2/2021 1:11:16 PM | R75022 |
| Sulfate | 1900 | 25 | * | mg/L | 50 | 2/3/2021 7:35:55 PM | R75057 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 3150 | 20.0 | * | mg/L | 1 | 2/3/2021 3:10:00 PM | 57864 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.33 | 0.0030 | | mg/L | 1 | 2/4/2021 9:38:03 AM | 57890 |
| Chromium | 0.014 | 0.0060 | | mg/L | 1 | 2/4/2021 9:38:03 AM | 57890 |
| Iron | 23 | 2.5 | * | mg/L | 50 | 2/4/2021 11:03:05 AM | 57890 |
| Manganese | 0.75 | 0.0020 | * | mg/L | 1 | 2/4/2021 9:38:03 AM | 57890 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:15:00 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-30
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 10:50:00 AM
**Lab ID:** 2102074-002 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Surr: Nitrobenzene-d5 | 78.0 | 26.3-112 | | %Rec | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Surr: 2-Fluorobiphenyl | 59.5 | 21.1-110 | | %Rec | 1 | 2/4/2021 9:56:00 PM | 57859 |
| Surr: 4-Terphenyl-d14 | 83.5 | 17.6-167 | | %Rec | 1 | 2/4/2021 9:56:00 PM | 57859 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Acetone | ND | 10 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-30
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 10:50:00 AM
**Lab ID:** 2102074-002 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Surr: 1,2-Dichloroethane-d4 | 80.0 | 70-130 | | %Rec | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Surr: 4-Bromofluorobenzene | 92.8 | 70-130 | | %Rec | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Surr: Dibromofluoromethane | 91.5 | 70-130 | | %Rec | 1 | 2/9/2021 7:56:43 PM | C75172 |
| Surr: Toluene-d8 | 100 | 70-130 | | %Rec | 1 | 2/9/2021 7:56:43 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-39
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 11:00:00 AM
**Lab ID:** 2102074-003 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| Lead | 0.0022 | 0.00050 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| Nickel | 0.030 | 0.0010 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| Thallium | 0.00045 | 0.00025 | | mg/L | 1 | 2/4/2021 11:35:04 AM | 57890 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.54 | 0.50 | | mg/L | 5 | 2/3/2021 9:28:17 AM | R75059 |
| Chloride | 160 | 10 | | mg/L | 20 | 2/3/2021 9:41:10 AM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 9:28:17 AM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 9:28:17 AM | R75059 |
| Sulfate | 1000 | 25 | * | mg/L | 50 | 2/4/2021 9:58:53 PM | R75078 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 1860 | 20.0 | * | mg/L | 1 | 2/3/2021 3:10:00 PM | 57864 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.091 | 0.0030 | | mg/L | 1 | 2/4/2021 9:42:24 AM | 57890 |
| Chromium | 0.043 | 0.0060 | | mg/L | 1 | 2/4/2021 9:42:24 AM | 57890 |
| Iron | 6.9 | 0.50 | * | mg/L | 10 | 2/4/2021 11:05:12 AM | 57890 |
| Manganese | 0.19 | 0.0020 | * | mg/L | 1 | 2/4/2021 9:42:24 AM | 57890 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:17:05 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-39
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 11:00:00 AM
**Lab ID:** 2102074-003 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Surr: Nitrobenzene-d5 | 68.0 | 26.3-112 | | %Rec | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Surr: 2-Fluorobiphenyl | 53.0 | 21.1-110 | | %Rec | 1 | 2/4/2021 10:43:00 PM | 57859 |
| Surr: 4-Terphenyl-d14 | 95.5 | 17.6-167 | | %Rec | 1 | 2/4/2021 10:43:00 PM | 57859 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2-Dichloroethane (EDC) | 1.2 | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Acetone | ND | 10 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-39
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 11:00:00 AM
**Lab ID:** 2102074-003 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Surr: 1,2-Dichloroethane-d4 | 81.6 | 70-130 | | %Rec | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Surr: 4-Bromofluorobenzene | 97.1 | 70-130 | | %Rec | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Surr: Dibromofluoromethane | 92.9 | 70-130 | | %Rec | 1 | 2/9/2021 8:25:17 PM | C75172 |
| Surr: Toluene-d8 | 95.3 | 70-130 | | %Rec | 1 | 2/9/2021 8:25:17 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-15
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 11:15:00 AM
**Lab ID:** 2102074-004 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| Lead | 0.00067 | 0.00050 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| Nickel | 0.0030 | 0.0010 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:37:10 AM | 57890 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.94 | 0.10 | | mg/L | 1 | 2/3/2021 9:54:02 AM | R75059 |
| Chloride | 92 | 10 | | mg/L | 20 | 2/3/2021 10:06:54 AM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | mg/L | 1 | 2/3/2021 9:54:02 AM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.10 | | mg/L | 1 | 2/3/2021 9:54:02 AM | R75059 |
| Sulfate | 2000 | 50 | * | mg/L | 100 | 2/4/2021 10:11:46 PM | R75078 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 3460 | 20.0 | * | mg/L | 1 | 2/3/2021 3:10:00 PM | 57864 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.014 | 0.0030 | | mg/L | 1 | 2/4/2021 9:53:51 AM | 57890 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 10:52:37 AM | 57890 |
| Iron | 0.59 | 0.050 | * | mg/L | 1 | 2/4/2021 9:53:51 AM | 57890 |
| Manganese | 0.48 | 0.0020 | * | mg/L | 1 | 2/4/2021 9:53:51 AM | 57890 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:19:09 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Fluorene | 0.26 | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Anthracene | 0.30 | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Pyrene | 0.22 | 0.20 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-15
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 11:15:00 AM
**Lab ID:** 2102074-004 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Surr: Nitrobenzene-d5 | 76.0 | 26.3-112 | | %Rec | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Surr: 2-Fluorobiphenyl | 59.0 | 21.1-110 | | %Rec | 1 | 2/4/2021 11:31:00 PM | 57859 |
| Surr: 4-Terphenyl-d14 | 93.0 | 17.6-167 | | %Rec | 1 | 2/4/2021 11:31:00 PM | 57859 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Acetone | ND | 10 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-15
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 11:15:00 AM
**Lab ID:** 2102074-004 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Surr: 1,2-Dichloroethane-d4 | 83.3 | 70-130 | | %Rec | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Surr: 4-Bromofluorobenzene | 91.8 | 70-130 | | %Rec | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Surr: Dibromofluoromethane | 94.4 | 70-130 | | %Rec | 1 | 2/9/2021 8:53:50 PM | C75172 |
| Surr: Toluene-d8 | 98.4 | 70-130 | | %Rec | 1 | 2/9/2021 8:53:50 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-21D
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 11:40:00 AM
**Lab ID:** 2102074-005 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| Lead | 0.0022 | 0.00050 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| Nickel | 0.014 | 0.0010 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:39:17 AM | 57890 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.66 | 0.50 | | mg/L | 5 | 2/3/2021 10:19:47 AM | R75059 |
| Chloride | 310 | 10 | * | mg/L | 20 | 2/3/2021 10:32:40 AM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 10:19:47 AM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 10:19:47 AM | R75059 |
| Sulfate | 780 | 10 | * | mg/L | 20 | 2/3/2021 10:32:40 AM | R75059 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 2220 | 20.0 | * | mg/L | 1 | 2/3/2021 3:10:00 PM | 57864 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.27 | 0.0030 | | mg/L | 1 | 2/4/2021 9:58:22 AM | 57890 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 10:54:44 AM | 57890 |
| Iron | 0.97 | 0.050 | * | mg/L | 1 | 2/4/2021 9:58:22 AM | 57890 |
| Manganese | 0.33 | 0.0020 | * | mg/L | 1 | 2/4/2021 9:58:22 AM | 57890 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:25:41 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| 1-Methylnaphthalene | 0.34 | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| 2-Methylnaphthalene | 0.22 | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Acenaphthene | 5.0 | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Fluorene | 9.0 | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Phenanthrene | 0.26 | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Anthracene | 1.0 | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Fluoranthene | 0.56 | 0.20 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Pyrene | 0.84 | 0.20 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-21D
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 11:40:00 AM
**Lab ID:** 2102074-005 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Surr: Nitrobenzene-d5 | 6.50 | 26.3-112 | S | %Rec | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Surr: 2-Fluorobiphenyl | 56.5 | 21.1-110 | | %Rec | 1 | 2/5/2021 12:18:00 AM | 57859 |
| Surr: 4-Terphenyl-d14 | 83.5 | 17.6-167 | | %Rec | 1 | 2/5/2021 12:18:00 AM | 57859 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Acetone | ND | 10 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-21D
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 11:40:00 AM
**Lab ID:** 2102074-005 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Isopropylbenzene | 1.3 | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| sec-Butylbenzene | 1.6 | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Surr: 1,2-Dichloroethane-d4 | 80.0 | 70-130 | | %Rec | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Surr: 4-Bromofluorobenzene | 99.0 | 70-130 | | %Rec | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Surr: Dibromofluoromethane | 94.1 | 70-130 | | %Rec | 1 | 2/9/2021 9:22:26 PM | C75172 |
| Surr: Toluene-d8 | 93.1 | 70-130 | | %Rec | 1 | 2/9/2021 9:22:26 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-25
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 12:12:00 PM
**Lab ID:** 2102074-006 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.014 | 0.0010 | * | mg/L | 1 | 2/4/2021 11:41:23 AM | 57890 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:41:23 AM | 57890 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:41:23 AM | 57890 |
| Lead | 0.028 | 0.0025 | * | mg/L | 5 | 2/4/2021 12:13:01 PM | 57890 |
| Nickel | 0.0075 | 0.0010 | | mg/L | 1 | 2/4/2021 11:41:23 AM | 57890 |
| Selenium | 0.0031 | 0.0010 | | mg/L | 1 | 2/4/2021 11:41:23 AM | 57890 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:41:23 AM | 57890 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:41:23 AM | 57890 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.77 | 0.50 | | mg/L | 5 | 2/3/2021 11:29:30 AM | R75059 |
| Chloride | 390 | 25 | * | mg/L | 50 | 2/4/2021 10:24:38 PM | R75078 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 11:29:30 AM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 11:29:30 AM | R75059 |
| Sulfate | 660 | 10 | * | mg/L | 20 | 2/3/2021 11:42:23 AM | R75059 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 2480 | 200 | *D | mg/L | 1 | 2/3/2021 3:10:00 PM | 57864 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.48 | 0.0030 | | mg/L | 1 | 2/4/2021 10:02:53 AM | 57890 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 10:56:56 AM | 57890 |
| Iron | 26 | 2.5 | * | mg/L | 50 | 2/4/2021 11:07:30 AM | 57890 |
| Manganese | 2.7 | 0.010 | * | mg/L | 5 | 2/4/2021 10:05:04 AM | 57890 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:27:40 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| 1-Methylnaphthalene | 1.2 | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Acenaphthene | 1.2 | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Fluorene | 2.0 | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Phenanthrene | 0.66 | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Anthracene | 0.64 | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Fluoranthene | 0.52 | 0.20 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Pyrene | 0.90 | 0.20 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-25
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 12:12:00 PM
**Lab ID:** 2102074-006 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Surr: Nitrobenzene-d5 | 81.0 | 26.3-112 | | %Rec | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Surr: 2-Fluorobiphenyl | 44.0 | 21.1-110 | | %Rec | 1 | 2/5/2021 1:05:00 AM | 57859 |
| Surr: 4-Terphenyl-d14 | 92.5 | 17.6-167 | | %Rec | 1 | 2/5/2021 1:05:00 AM | 57859 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Toluene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Ethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Methyl tert-butyl ether (MTBE) | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2,4-Trimethylbenzene | 6.7 | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2-Dichloroethane (EDC) | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Naphthalene | ND | 10 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 2-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Acetone | ND | 50 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Bromobenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Bromodichloromethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Bromoform | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Bromomethane | ND | 15 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 2-Butanone | ND | 50 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Carbon disulfide | ND | 50 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Carbon Tetrachloride | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Chlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Chloroethane | ND | 10 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Chloroform | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Chloromethane | ND | 15 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 2-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 4-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| cis-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| cis-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2-Dibromo-3-chloropropane | ND | 10 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Dibromochloromethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Dibromomethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-25
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 12:12:00 PM
**Lab ID:** 2102074-006 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,2-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,3-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,4-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Dichlorodifluoromethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,1-Dichloroethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,1-Dichloroethene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,3-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 2,2-Dichloropropane | ND | 10 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,1-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Hexachlorobutadiene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 2-Hexanone | ND | 50 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Isopropylbenzene | 6.8 | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 4-Isopropyltoluene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 4-Methyl-2-pentanone | ND | 50 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Methylene Chloride | ND | 15 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| n-Butylbenzene | ND | 15 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| n-Propylbenzene | 8.5 | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| sec-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Styrene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| tert-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,1,2,2-Tetrachloroethane | ND | 10 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Tetrachloroethene (PCE) | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| trans-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| trans-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,1,1-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,1,2-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Trichloroethene (TCE) | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Trichlorofluoromethane | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| 1,2,3-Trichloropropane | ND | 10 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Vinyl chloride | ND | 5.0 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Xylenes, Total | ND | 7.5 | D | µg/L | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Surr: 1,2-Dichloroethane-d4 | 82.0 | 70-130 | D | %Rec | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Surr: 4-Bromofluorobenzene | 90.3 | 70-130 | D | %Rec | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Surr: Dibromofluoromethane | 89.7 | 70-130 | D | %Rec | 5 | 2/9/2021 9:50:59 PM | C75172 |
| Surr: Toluene-d8 | 90.8 | 70-130 | D | %Rec | 5 | 2/9/2021 9:50:59 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-34
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 12:30:00 PM
**Lab ID:** 2102074-007 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.023 | 0.0010 | * | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| Lead | 0.0064 | 0.00050 | | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| Nickel | 0.015 | 0.0010 | | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/4/2021 11:47:43 AM | 57890 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.86 | 0.50 | | mg/L | 5 | 2/3/2021 11:55:15 AM | R75059 |
| Chloride | 270 | 10 | * | mg/L | 20 | 2/3/2021 12:08:07 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 11:55:15 AM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 11:55:15 AM | R75059 |
| Sulfate | 49 | 2.5 | | mg/L | 5 | 2/3/2021 11:55:15 AM | R75059 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 1440 | 100 | *D | mg/L | 1 | 2/3/2021 3:10:00 PM | 57864 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 1.8 | 0.015 | | mg/L | 5 | 2/4/2021 10:09:21 AM | 57890 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/4/2021 10:59:07 AM | 57890 |
| Iron | 20 | 2.5 | * | mg/L | 50 | 2/4/2021 11:09:42 AM | 57890 |
| Manganese | 2.1 | 0.010 | * | mg/L | 5 | 2/4/2021 10:09:21 AM | 57890 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:29:39 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| 1-Methylnaphthalene | 0.24 | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| 2-Methylnaphthalene | 0.18 | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Acenaphthene | 0.30 | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Fluorene | 0.62 | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Anthracene | 0.30 | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Fluoranthene | 0.36 | 0.20 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Pyrene | 0.22 | 0.20 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |

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**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-34
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/1/2021 12:30:00 PM
**Lab ID:** 2102074-007 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Surr: Nitrobenzene-d5 | 81.5 | 26.3-112 | | %Rec | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Surr: 2-Fluorobiphenyl | 49.0 | 21.1-110 | | %Rec | 1 | 2/5/2021 1:53:00 AM | 57859 |
| Surr: 4-Terphenyl-d14 | 90.0 | 17.6-167 | | %Rec | 1 | 2/5/2021 1:53:00 AM | 57859 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Ethylbenzene | 1.7 | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Acetone | 27 | 10 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

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| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-34
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/1/2021 12:30:00 PM
**Lab ID:** 2102074-007 **Matrix:** AQUEOUS **Received Date:** 2/2/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Surr: 1,2-Dichloroethane-d4 | 83.4 | 70-130 | | %Rec | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Surr: 4-Bromofluorobenzene | 91.3 | 70-130 | | %Rec | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Surr: Dibromofluoromethane | 89.8 | 70-130 | | %Rec | 1 | 2/9/2021 10:19:39 PM | C75172 |
| Surr: Toluene-d8 | 96.8 | 70-130 | | %Rec | 1 | 2/9/2021 10:19:39 PM | C75172 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
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| PQL | Practical Quanitative Limit | RL | Reporting Limit |
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# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57890** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57890** | RunNo: **75073** |
| Prep Date: **2/3/2021** | Analysis Date: **2/4/2021** | SeqNo: **2649973** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | | | | | | | | |
| Chromium | ND | 0.0060 | | | | | | | | |
| Iron | ND | 0.050 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |

| Sample ID: **LLLCS-57890** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **57890** | RunNo: **75073** |
| Prep Date: **2/3/2021** | Analysis Date: **2/4/2021** | SeqNo: **2649975** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | 0.002000 | 0 | 89.3 | 50 | 150 | | | |
| Chromium | ND | 0.0060 | 0.006000 | 0 | 90.2 | 50 | 150 | | | |
| Iron | ND | 0.050 | 0.02000 | 0 | 115 | 50 | 150 | | | |
| Manganese | 0.0020 | 0.0020 | 0.002000 | 0 | 101 | 50 | 150 | | | |

| Sample ID: **LCS-57890** | SampType: **LCS** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57890** | RunNo: **75073** |
| Prep Date: **2/3/2021** | Analysis Date: **2/4/2021** | SeqNo: **2649977** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.49 | 0.0030 | 0.5000 | 0 | 98.1 | 85 | 115 | | | |
| Chromium | 0.48 | 0.0060 | 0.5000 | 0 | 96.5 | 85 | 115 | | | |
| Iron | 0.49 | 0.050 | 0.5000 | 0 | 98.9 | 85 | 115 | | | |
| Manganese | 0.49 | 0.0020 | 0.5000 | 0 | 97.8 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57890** | SampType: **MBLK** | TestCode: **EPA 200.8: Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57890** | RunNo: **75061** |
| Prep Date: **2/3/2021** | Analysis Date: **2/4/2021** | SeqNo: **2649690** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | | | | | | | | |
| Beryllium | ND | 0.0010 | | | | | | | | |
| Cadmium | ND | 0.00050 | | | | | | | | |
| Lead | ND | 0.00050 | | | | | | | | |
| Nickel | ND | 0.0010 | | | | | | | | |
| Selenium | ND | 0.0010 | | | | | | | | |
| Silver | ND | 0.00050 | | | | | | | | |
| Thallium | ND | 0.00025 | | | | | | | | |

| Sample ID: **MSLLLCS-57890** | SampType: **LCSLL** | TestCode: **EPA 200.8: Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **57890** | RunNo: **75061** |
| Prep Date: **2/3/2021** | Analysis Date: **2/4/2021** | SeqNo: **2649691** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0010 | 0.0010 | 0.001000 | 0 | 100 | 50 | 150 | | | |
| Beryllium | ND | 0.0010 | 0.001000 | 0 | 99.1 | 50 | 150 | | | |
| Cadmium | ND | 0.00050 | 0.0005000 | 0 | 95.2 | 50 | 150 | | | |
| Lead | 0.00050 | 0.00050 | 0.0005000 | 0 | 100 | 50 | 150 | | | |
| Nickel | ND | 0.0010 | 0.001000 | 0 | 91.7 | 50 | 150 | | | |
| Selenium | ND | 0.0010 | 0.001000 | 0 | 79.8 | 50 | 150 | | | |
| Silver | ND | 0.00050 | 0.0005000 | 0 | 65.5 | 50 | 150 | | | |

| Sample ID: **MSLCS-57890** | SampType: **LCS** | TestCode: **EPA 200.8: Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57890** | RunNo: **75061** |
| Prep Date: **2/3/2021** | Analysis Date: **2/4/2021** | SeqNo: **2649692** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.025 | 0.0010 | 0.02500 | 0 | 98.1 | 85 | 115 | | | |
| Beryllium | 0.025 | 0.0010 | 0.02500 | 0 | 98.8 | 85 | 115 | | | |
| Cadmium | 0.012 | 0.00050 | 0.01250 | 0 | 97.5 | 85 | 115 | | | |
| Lead | 0.013 | 0.00050 | 0.01250 | 0 | 100 | 85 | 115 | | | |
| Nickel | 0.024 | 0.0010 | 0.02500 | 0 | 96.4 | 85 | 115 | | | |
| Selenium | 0.024 | 0.0010 | 0.02500 | 0 | 97.3 | 85 | 115 | | | |
| Silver | 0.012 | 0.00050 | 0.01250 | 0 | 99.8 | 85 | 115 | | | |
| Thallium | 0.012 | 0.00025 | 0.01250 | 0 | 99.5 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MSLLLCS-TL-57890** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **57890** RunNo: **75061**
Prep Date: **2/3/2021** Analysis Date: **2/4/2021** SeqNo: **2649693** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 0.00026 | 0.00025 | 0.0002500 | 0 | 103 | 50 | 150 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-57968** SampType: **MBLK** TestCode: **EPA Method 245.1: Mercury**
Client ID: **PBW** Batch ID: **57968** RunNo: **75166**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653912** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | | | | | | | | |

Sample ID: **LLLCS-57968** SampType: **LCSLL** TestCode: **EPA Method 245.1: Mercury**
Client ID: **BatchQC** Batch ID: **57968** RunNo: **75166**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653913** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | 0.0001500 | 0 | 74.4 | 50 | 150 | | | |

Sample ID: **LCS-57968** SampType: **LCS** TestCode: **EPA Method 245.1: Mercury**
Client ID: **LCSW** Batch ID: **57968** RunNo: **75166**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653914** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0056 | 0.00020 | 0.005000 | 0 | 111 | 85 | 115 | | | |

Sample ID: **2102074-004DMS** SampType: **MS** TestCode: **EPA Method 245.1: Mercury**
Client ID: **GBR-15** Batch ID: **57968** RunNo: **75166**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654007** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0056 | 0.00020 | 0.005000 | 0 | 112 | 75 | 125 | | | |

Sample ID: **2102074-004DMSD** SampType: **MSD** TestCode: **EPA Method 245.1: Mercury**
Client ID: **GBR-15** Batch ID: **57968** RunNo: **75166**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654008** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0056 | 0.00020 | 0.005000 | 0 | 113 | 75 | 125 | 0.206 | 20 | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R75022** RunNo: **75022**
Prep Date: Analysis Date: **2/2/2021** SeqNo: **2648284** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrite (As N) | ND | 0.10 | | | | | | | | |
| Nitrogen, Nitrate (As N) | ND | 0.10 | | | | | | | | |

Sample ID: **2102074-001CMS** SampType: **ms** TestCode: **EPA Method 300.0: Anions**
Client ID: **GBR-24D** Batch ID: **R75022** RunNo: **75022**
Prep Date: Analysis Date: **2/2/2021** SeqNo: **2648287** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate (As N) | 2.3 | 0.10 | 2.500 | 0 | 92.7 | 86.8 | 110 | | | |

Sample ID: **2102074-001CMSD** SampType: **msd** TestCode: **EPA Method 300.0: Anions**
Client ID: **GBR-24D** Batch ID: **R75022** RunNo: **75022**
Prep Date: Analysis Date: **2/2/2021** SeqNo: **2648288** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate (As N) | 2.4 | 0.10 | 2.500 | 0 | 94.1 | 86.8 | 110 | 1.58 | 20 | |

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R75022** RunNo: **75022**
Prep Date: Analysis Date: **2/2/2021** SeqNo: **2648292** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrite (As N) | 0.90 | 0.10 | 1.000 | 0 | 90.2 | 90 | 110 | | | |
| Nitrogen, Nitrate (As N) | 2.3 | 0.10 | 2.500 | 0 | 93.2 | 90 | 110 | | | |

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R75057** RunNo: **75057**
Prep Date: Analysis Date: **2/3/2021** SeqNo: **2649557** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 0.10 | | | | | | | | |
| Chloride | ND | 0.50 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R75057** RunNo: **75057**
Prep Date: Analysis Date: **2/3/2021** SeqNo: **2649558** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 0.49 | 0.10 | 0.5000 | 0 | 97.8 | 90 | 110 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75057** | RunNo: **75057** |
| Prep Date: | Analysis Date: **2/3/2021** | SeqNo: **2649558** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.6 | 0.50 | 5.000 | 0 | 92.5 | 90 | 110 | | | |
| Sulfate | 9.4 | 0.50 | 10.00 | 0 | 94.3 | 90 | 110 | | | |

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75059** | RunNo: **75059** |
| Prep Date: | Analysis Date: **2/3/2021** | SeqNo: **2649611** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 0.10 | | | | | | | | |
| Chloride | ND | 0.50 | | | | | | | | |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | | | | | | | |
| Nitrogen, Nitrate (As N) | ND | 0.10 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75059** | RunNo: **75059** |
| Prep Date: | Analysis Date: **2/3/2021** | SeqNo: **2649619** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 0.51 | 0.10 | 0.5000 | 0 | 101 | 90 | 110 | | | |
| Chloride | 4.8 | 0.50 | 5.000 | 0 | 95.3 | 90 | 110 | | | |
| Nitrogen, Nitrite (As N) | 0.97 | 0.10 | 1.000 | 0 | 96.8 | 90 | 110 | | | |
| Nitrogen, Nitrate (As N) | 2.5 | 0.10 | 2.500 | 0 | 98.5 | 90 | 110 | | | |
| Sulfate | 9.7 | 0.50 | 10.00 | 0 | 96.8 | 90 | 110 | | | |

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75078** | RunNo: **75078** |
| Prep Date: | Analysis Date: **2/4/2021** | SeqNo: **2650975** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75078** | RunNo: **75078** |
| Prep Date: | Analysis Date: **2/4/2021** | SeqNo: **2650976** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.7 | 0.50 | 5.000 | 0 | 94.5 | 90 | 110 | | | |
| Sulfate | 9.6 | 0.50 | 10.00 | 0 | 96.2 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **C75172** RunNo: **75172**
Prep Date: Analysis Date: **2/9/2021** SeqNo: **2654806** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 19 | 1.0 | 20.00 | 0 | 94.3 | 70 | 130 | | | |
| Toluene | 20 | 1.0 | 20.00 | 0 | 97.8 | 70 | 130 | | | |
| Chlorobenzene | 20 | 1.0 | 20.00 | 0 | 101 | 70 | 130 | | | |
| 1,1-Dichloroethene | 19 | 1.0 | 20.00 | 0 | 94.1 | 70 | 130 | | | |
| Trichloroethene (TCE) | 17 | 1.0 | 20.00 | 0 | 83.9 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 7.8 | | 10.00 | | 77.8 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.6 | | 10.00 | | 96.2 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 8.8 | | 10.00 | | 87.7 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.2 | | 10.00 | | 91.6 | 70 | 130 | | | |

Sample ID: **mb1** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **C75172** RunNo: **75172**
Prep Date: Analysis Date: **2/9/2021** SeqNo: **2654807** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb1** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **C75172** | RunNo: **75172** |
| Prep Date: | Analysis Date: **2/9/2021** | SeqNo: **2654807** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **mb1** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **C75172** RunNo: **75172**
Prep Date: Analysis Date: **2/9/2021** SeqNo: **2654807** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 7.5 | | 10.00 | | 74.7 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.2 | | 10.00 | | 92.3 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 9.6 | | 10.00 | | 96.4 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10 | | 10.00 | | 99.9 | 70 | 130 | | | |

Sample ID: **2102074-001ams** SampType: **MS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **GBR-24D** Batch ID: **C75172** RunNo: **75172**
Prep Date: Analysis Date: **2/9/2021** SeqNo: **2654812** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 18 | 1.0 | 20.00 | 0 | 91.4 | 70 | 130 | | | |
| Toluene | 21 | 1.0 | 20.00 | 0 | 103 | 70 | 130 | | | |
| Chlorobenzene | 19 | 1.0 | 20.00 | 0 | 97.1 | 70 | 130 | | | |
| 1,1-Dichloroethene | 19 | 1.0 | 20.00 | 0 | 95.4 | 70 | 130 | | | |
| Trichloroethene (TCE) | 17 | 1.0 | 20.00 | 0 | 84.3 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 8.5 | | 10.00 | | 84.7 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 8.7 | | 10.00 | | 87.1 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.5 | | 10.00 | | 94.9 | 70 | 130 | | | |

Sample ID: **2102074-001amsd** SampType: **MSD** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **GBR-24D** Batch ID: **C75172** RunNo: **75172**
Prep Date: Analysis Date: **2/9/2021** SeqNo: **2654813** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 18 | 1.0 | 20.00 | 0 | 90.0 | 70 | 130 | 1.53 | 20 | |
| Toluene | 19 | 1.0 | 20.00 | 0 | 92.8 | 70 | 130 | 10.2 | 20 | |
| Chlorobenzene | 18 | 1.0 | 20.00 | 0 | 90.9 | 70 | 130 | 6.69 | 20 | |
| 1,1-Dichloroethene | 18 | 1.0 | 20.00 | 0 | 89.6 | 70 | 130 | 6.23 | 20 | |
| Trichloroethene (TCE) | 16 | 1.0 | 20.00 | 0 | 82.0 | 70 | 130 | 2.78 | 20 | |
| Surr: 1,2-Dichloroethane-d4 | 8.7 | | 10.00 | | 87.3 | 70 | 130 | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 9.6 | | 10.00 | | 95.7 | 70 | 130 | 0 | 0 | |
| Surr: Dibromofluoromethane | 9.2 | | 10.00 | | 92.2 | 70 | 130 | 0 | 0 | |
| Surr: Toluene-d8 | 9.5 | | 10.00 | | 94.6 | 70 | 130 | 0 | 0 | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb-57859** | SampType: **MBLK** | TestCode: **EPA Method 8270SIM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **57859** | RunNo: **75123** | | | | | | | |
| Prep Date: **2/2/2021** | Analysis Date: **2/4/2021** | SeqNo: **2651788** | Units: **µg/L** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Naphthalene | ND | 0.10 | | | | | | | | |
| 1-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| Acenaphthylene | ND | 0.10 | | | | | | | | |
| Acenaphthene | ND | 0.10 | | | | | | | | |
| Fluorene | ND | 0.10 | | | | | | | | |
| Phenanthrene | ND | 0.10 | | | | | | | | |
| Anthracene | ND | 0.10 | | | | | | | | |
| Fluoranthene | ND | 0.20 | | | | | | | | |
| Pyrene | ND | 0.20 | | | | | | | | |
| Benz(a)anthracene | ND | 0.10 | | | | | | | | |
| Chrysene | ND | 0.10 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(a)pyrene | ND | 0.070 | | | | | | | | |
| Dibenz(a,h)anthracene | ND | 0.10 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.10 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | | | | | | | |
| Surr: Nitrobenzene-d5 | 3.1 | | 4.000 | | 78.5 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 4.1 | | 8.000 | | 51.8 | 27.7 | 118 | | | |
| Surr: 2-Fluorobiphenyl | 2.2 | | 4.000 | | 54.5 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 3.2 | | 4.000 | | 80.0 | 17.6 | 167 | | | |

| Sample ID: **lcs-57859** | SampType: **LCS** | TestCode: **EPA Method 8270SIM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **57859** | RunNo: **75123** | | | | | | | |
| Prep Date: **2/2/2021** | Analysis Date: **2/4/2021** | SeqNo: **2651789** | Units: **µg/L** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Naphthalene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 18.5 | 83.4 | | | |
| 1-Methylnaphthalene | 1.2 | 0.10 | 2.000 | 0 | 61.0 | 15.1 | 89.6 | | | |
| 2-Methylnaphthalene | 1.2 | 0.10 | 2.000 | 0 | 61.0 | 15 | 90.6 | | | |
| Acenaphthylene | 1.3 | 0.10 | 2.000 | 0 | 65.0 | 18.2 | 95.3 | | | |
| Acenaphthene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 23.9 | 90.3 | | | |
| Fluorene | 1.2 | 0.10 | 2.000 | 0 | 62.0 | 16.8 | 106 | | | |
| Phenanthrene | 1.2 | 0.10 | 2.000 | 0 | 62.0 | 23.3 | 105 | | | |
| Anthracene | 1.3 | 0.10 | 2.000 | 0 | 66.0 | 15 | 112 | | | |
| Fluoranthene | 1.7 | 0.20 | 2.000 | 0 | 85.0 | 15.4 | 138 | | | |
| Pyrene | 1.4 | 0.20 | 2.000 | 0 | 72.0 | 15 | 128 | | | |
| Benz(a)anthracene | 1.8 | 0.10 | 2.000 | 0 | 91.0 | 38.7 | 111 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**

***12-Feb-21***

**Client:** Western Refining Southwest, Inc.

**Project:** 2021 Giant Former Refinery

| Sample ID: **lcs-57859** | SampType: **LCS** | TestCode: **EPA Method 8270SIM** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57859** | RunNo: **75123** |
| Prep Date: **2/2/2021** | Analysis Date: **2/4/2021** | SeqNo: **2651789** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 1.6 | 0.10 | 2.000 | 0 | 82.0 | 32.6 | 96.6 | | | |
| Benzo(b+k)fluoranthene | 3.4 | 0.20 | 4.000 | 0 | 85.5 | 18.3 | 114 | | | |
| Benzo(a)pyrene | 1.6 | 0.070 | 2.000 | 0 | 81.0 | 24.5 | 123 | | | |
| Dibenz(a,h)anthracene | 1.8 | 0.10 | 2.000 | 0 | 88.0 | 17.8 | 118 | | | |
| Benzo(g,h,i)perylene | 1.7 | 0.10 | 2.000 | 0 | 85.0 | 22.2 | 110 | | | |
| Indeno(1,2,3-cd)pyrene | 2.9 | 0.30 | 2.000 | 0 | 143 | 20.8 | 115 | | | S |
| Surr: Nitrobenzene-d5 | 4.6 | | 5.000 | | 92.8 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 6.1 | | 10.00 | | 60.8 | 27.7 | 118 | | | |
| Surr: 2-Fluorobiphenyl | 3.3 | | 5.000 | | 66.0 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 5.3 | | 5.000 | | 107 | 17.6 | 167 | | | |

| Sample ID: **lcsd-57859** | SampType: **LCSD** | TestCode: **EPA Method 8270SIM** |
|---|---|---|
| Client ID: **LCSS02** | Batch ID: **57859** | RunNo: **75123** |
| Prep Date: **2/2/2021** | Analysis Date: **2/4/2021** | SeqNo: **2651790** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 1.4 | 0.10 | 2.000 | 0 | 72.0 | 18.5 | 83.4 | 18.2 | 20 | |
| 1-Methylnaphthalene | 1.5 | 0.10 | 2.000 | 0 | 73.0 | 15.1 | 89.6 | 17.9 | 20 | |
| 2-Methylnaphthalene | 1.5 | 0.10 | 2.000 | 0 | 75.0 | 15 | 90.6 | 20.6 | 20 | R |
| Acenaphthylene | 1.5 | 0.10 | 2.000 | 0 | 75.0 | 18.2 | 95.3 | 14.3 | 20 | |
| Acenaphthene | 1.4 | 0.10 | 2.000 | 0 | 70.0 | 23.9 | 90.3 | 15.4 | 20 | |
| Fluorene | 1.5 | 0.10 | 2.000 | 0 | 74.0 | 16.8 | 106 | 17.6 | 20 | |
| Phenanthrene | 1.4 | 0.10 | 2.000 | 0 | 72.0 | 23.3 | 105 | 14.9 | 20 | |
| Anthracene | 1.5 | 0.10 | 2.000 | 0 | 77.0 | 15 | 112 | 15.4 | 20 | |
| Fluoranthene | 1.8 | 0.20 | 2.000 | 0 | 88.0 | 15.4 | 138 | 3.47 | 20 | |
| Pyrene | 1.4 | 0.20 | 2.000 | 0 | 70.0 | 15 | 128 | 2.82 | 20 | |
| Benz(a)anthracene | 1.7 | 0.10 | 2.000 | 0 | 83.0 | 38.7 | 111 | 9.20 | 20 | |
| Chrysene | 1.5 | 0.10 | 2.000 | 0 | 75.0 | 32.6 | 96.6 | 8.92 | 20 | |
| Benzo(b+k)fluoranthene | 2.9 | 0.20 | 4.000 | 0 | 73.5 | 18.3 | 114 | 15.1 | 0 | |
| Benzo(a)pyrene | 1.4 | 0.070 | 2.000 | 0 | 69.0 | 24.5 | 123 | 16.0 | 20 | |
| Dibenz(a,h)anthracene | 1.6 | 0.10 | 2.000 | 0 | 79.0 | 17.8 | 118 | 10.8 | 20 | |
| Benzo(g,h,i)perylene | 1.5 | 0.10 | 2.000 | 0 | 76.0 | 22.2 | 110 | 11.2 | 20 | |
| Indeno(1,2,3-cd)pyrene | 2.5 | 0.30 | 2.000 | 0 | 125 | 20.8 | 115 | 13.4 | 20 | S |
| Surr: Nitrobenzene-d5 | 5.5 | | 5.000 | | 111 | 26.3 | 112 | 0 | 0 | |
| Surr: 2,4,6-Tribromophenol | 7.1 | | 10.00 | | 70.6 | 27.7 | 118 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 3.8 | | 5.000 | | 76.8 | 21.1 | 110 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 4.7 | | 5.000 | | 94.8 | 17.6 | 167 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102074**
***12-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-57864** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW** Batch ID: **57864** RunNo: **75039**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648821** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

Sample ID: **LCS-57864** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW** Batch ID: **57864** RunNo: **75039**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648822** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 988 | 20.0 | 1000 | 0 | 98.8 | 80 | 120 | | | |

Sample ID: **2102074-005CDUP** SampType: **DUP** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **GBR-21D** Batch ID: **57864** RunNo: **75039**
Prep Date: **2/2/2021** Analysis Date: **2/3/2021** SeqNo: **2648842** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 2270 | 20.0 | | | | | | 1.96 | 10 | * |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2102074** RcptNo: 1

Received By: **Juan Rojas** **2/2/2021 7:30:00 AM**

Completed By: **Cheyenne Cason** **2/2/2021 8:53:25 AM**

Reviewed By: SGL 2/2/21

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. How was the sample delivered? | Courier | | |

## Log In

| | | | |
|---|---|---|---|
| 3. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 4. Were all samples received at a temperature of >0° C to 6.0°C | Yes ☐ | No ☑ | NA ☐ |
| | Sample Not Frozen | | |
| 5. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 6. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 7. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 8. Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 9. Received at least 1 vial with headspace <1/4" for AQ VOA? | Yes ☐ | No ☐ | NA ☑ |
| 10. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 12. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 13. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 14. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: 14 (<2 or >12 unless noted)

Adjusted? yes

Checked by: IO 2/2/21

## Special Handling (if applicable)

| | | | |
|---|---|---|---|
| 15. Was client notified of all discrepancies with this order? | Yes ☐ | No ☐ | NA ☑ |

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks: For metals analysis added 0.5 mL $HNO_3$ to sample -006D and -007D for proper pH. IO 2/2/21

17. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.3 | Good | Yes | | | |
| 2 | 0.6 | Good | Yes | | | |
| 3 | 0.5 | Good | Yes | | | |
| 4 | 5.8 | Good | Yes | | | |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2102074** RcptNo: 1

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 5 | 1.3 | Good | Yes | | | |
| 6 | -2.1 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Marathon
Greg McCartney
Mailing Address: ~~X~~

Phone #:
email or Fax#:
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: 2021 Giant Former Refinery
Project #:
Project Manager: Stuart Hyde.
Sampler: C. McGinn, E. Carroll
On Ice: ☒ Yes ☐ No
# of Coolers: 6
Cooler Temp(including CF): See checklist (°C)


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


**Analysis Request**

| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2102074 | BTEX / MTBE / TMB's (8021) | TPH:8015D(GRO / DRO / MRO) | 8081 Pesticides/8082 PCB's | EDB (Method 504.1) | PAHs by 8310 or 8270SIMS | RCRA 8 Metals | Cl, F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) | See attached |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.1.21 | 1030 | Aq | GBR-24D | various | various | 001 | | | | | | | | | | | |
| | 1050 | | GBR-30 | | | 002 | | | | | | | | | | | |
| | 1100 | | GBR-39 | | | 003 | | | | | | | | | | | |
| | 1115 | | GBR-15 | | | 004 | | | | | | | | | | | |
| | 1140 | | GBR-21D | | | 005 | | | | | | | | | | | |
| | 1212 | | GBR-25 | | | 006 | | | | | | | | | | | |
| | 1230 | | GBR-31 | | | 007 | | | | | | | | | | | |
| | 1140 | | GBR-26 | | | | | | | | | | | | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 2.1.21 | 1326 | Caitlin McGinn | | Courier | 2/1/21 | 1326 |
| 2/1/21 | 1841 | Christine Walters | | courier | 2/2/21 | 7:30 |

Remarks: cc: Stuart.hyde@wsp.com
caitlin.mcginn@wsp.com
eric.carroll@wsp.com
Quote # 2112


If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

| Recommended Analyte List for GBR Site-Wide Sampling Event | |
|---|---|
| **VOCs Method 8260** | **PAHs Method 8270** |
| benzene | naphthalene |
| toluene | 1-methylnaphthalene |
| ethylbenzene | 2-methylnaphthalene |
| methyl tert-butyl ether (MTBE) | acenaphthylene |
| 1,2,4-trimethylbenzene | acenaphthene |
| 1,3,5-trimethylbenzene | fluorene |
| 1,2-dichloroethane (EDC) | phenanthrene |
| 1,2-dibromoethane (EDB) | anthracene |
| naphthalene | fluoranthene |
| 1-methylnaphthalene | pyrene |
| 2-methylnaphthalene | benz(a)anthracene |
| acetone | chrysene |
| bromobenzene | benzo(b)fluoranthene |
| bromodichloromethane | benzo(k)fluoranthene |
| bromoform | benzo(a)pyrene |
| bromomethane | dibenz(a,h)anthracene |
| 2-butanone | benzo(g,h,i)perylene |
| carbon disulfide | indeno(1,2,3-cd)pyrene |
| carbon tetrachloride | **Anions Method 300.0** |
| chlorobenzene | chloride |
| chloroethane | sulfate |
| chloroform | fluoride |
| chloromethane | nitrate + nitrite as N |
| 2-chlorotoluene | **Metals Method 200.7** |
| 4-chlorotoluene | barium* |
| cis-1,2-dichloroethene (cis-1,2-DCE) | beryllium |
| cis-1,3-dichloropropene | cadmium* |
| 1,2-dibromo-3-chloropropane | chromium* |
| dibromochloromethane | iron |
| dibromomethane | manganese |
| 1,2-dichlorobenzene | nickel |
| 1,3-dichlorobenzene | silver* |
| 1,4-dichlorobenzene | **Metals Method 200.8** |
| dichlorodifluoromethane | arsenic* |
| 1,1-dichloroethane | lead* |
| 1,1-dichloroethene (1,1-DCE) | selenium* |
| 1,2-dichloropropane | thallium |
| 1,3-dichloropropane | **Mercury** |
| 2,2-dichloropropane | Mercury* |
| 1,1-dichloropropene | **Total Dissolved Solids Method M2540C** |
| hexachlorobutadiene | total dissolved solids |
| 2-hexanone | |
| isopropylbenzene | |
| 4-isopropytoluene | |
| 4-methyl-2-pentanone | |
| methylene chloride | |
| n-butylbenzene | |
| n-propylbenzene | |
| sec-butylbenzene | |
| styrene | |
| tert-butylbenzene | |
| 1,1,1,2-tetrachloroethane | |
| 1,1,2,2-tetrachloroethane | |
| tetrachloroethene (PCE) | |
| trans-1,2-dichloroethene (trans-1,2-DCE) | |
| trans-1,3-dichloropropene | |
| 1,2,3-trichlorobenzene | |
| 1,2,4-trichlorobenzene | |
| 1,1,1-trichloroethane | |
| 1,1,2-trichloroethane | |
| trichloroethene (TCE) | |
| trichlorofluoromethane | |
| 1,2,3-trichloropropane | |
| vinyl chloride | |
| xylenes, total | |

* - asterisks denotes RCRA 8 Metal

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

February 24, 2021

Gregory McCartney

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: 2021 Giant Former Refinery OrderNo.: 2102148

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 7 sample(s) on 2/3/2021 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-20
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:00:00 AM
**Lab ID:** 2102148-001 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0026 | 0.0010 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| Lead | 0.0034 | 0.00050 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| Nickel | 0.0073 | 0.0010 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/9/2021 1:17:25 PM | 57977 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.66 | 0.50 | | mg/L | 5 | 2/3/2021 5:29:50 PM | R75059 |
| Chloride | 89 | 2.5 | | mg/L | 5 | 2/3/2021 5:29:50 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 5:29:50 PM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 5:29:50 PM | R75059 |
| Sulfate | 250 | 10 | | mg/L | 20 | 2/3/2021 5:42:44 PM | R75059 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1850 | 200 | *D | mg/L | 1 | 2/9/2021 10:29:00 AM | 57947 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.23 | 0.0030 | | mg/L | 1 | 2/9/2021 9:10:13 AM | 57977 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/9/2021 9:10:13 AM | 57977 |
| Iron | 22 | 2.5 | * | mg/L | 50 | 2/9/2021 10:04:19 AM | 57977 |
| Manganese | 0.53 | 0.0020 | * | mg/L | 1 | 2/9/2021 9:10:13 AM | 57977 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:35:48 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | 2.6 | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| 1-Methylnaphthalene | 0.72 | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| 2-Methylnaphthalene | 0.60 | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Acenaphthene | 0.30 | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Fluorene | 1.9 | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Anthracene | 0.30 | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Fluoranthene | 0.38 | 0.20 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Pyrene | 0.28 | 0.20 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-20
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:00:00 AM
**Lab ID:** 2102148-001 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Surr: Nitrobenzene-d5 | 14.5 | 26.3-112 | S | %Rec | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Surr: 2-Fluorobiphenyl | 34.5 | 21.1-110 | | %Rec | 1 | 2/9/2021 10:07:00 PM | 57966 |
| Surr: 4-Terphenyl-d14 | 64.5 | 17.6-167 | | %Rec | 1 | 2/9/2021 10:07:00 PM | 57966 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | 14 | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Toluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Ethylbenzene | 120 | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Methyl tert-butyl ether (MTBE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2,4-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2-Dichloroethane (EDC) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Naphthalene | ND | 10 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 2-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Acetone | ND | 50 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Bromobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Bromodichloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Bromoform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Bromomethane | ND | 15 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 2-Butanone | ND | 50 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Carbon disulfide | ND | 50 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Carbon Tetrachloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Chlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Chloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Chloroform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Chloromethane | ND | 15 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 2-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 4-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| cis-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| cis-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2-Dibromo-3-chloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Dibromochloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Dibromomethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-20
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/2/2021 10:00:00 AM
**Lab ID:** 2102148-001 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,3-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,4-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Dichlorodifluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,1-Dichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,1-Dichloroethene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,3-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 2,2-Dichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,1-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Hexachlorobutadiene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 2-Hexanone | ND | 50 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Isopropylbenzene | 24 | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 4-Isopropyltoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 4-Methyl-2-pentanone | ND | 50 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Methylene Chloride | ND | 15 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| n-Butylbenzene | ND | 15 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| n-Propylbenzene | 19 | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| sec-Butylbenzene | 6.4 | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Styrene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| tert-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,1,2,2-Tetrachloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Tetrachloroethene (PCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| trans-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| trans-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,1,1-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,1,2-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Trichloroethene (TCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Trichlorofluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| 1,2,3-Trichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Vinyl chloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Xylenes, Total | ND | 7.5 | D | µg/L | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Surr: 1,2-Dichloroethane-d4 | 98.0 | 70-130 | D | %Rec | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Surr: 4-Bromofluorobenzene | 97.3 | 70-130 | D | %Rec | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Surr: Dibromofluoromethane | 102 | 70-130 | D | %Rec | 5 | 2/10/2021 2:35:16 AM | A75169 |
| Surr: Toluene-d8 | 105 | 70-130 | D | %Rec | 5 | 2/10/2021 2:35:16 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-5
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:15:00 AM
**Lab ID:** 2102148-002 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0043 | 0.0010 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| Lead | 0.0063 | 0.00050 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| Nickel | 0.0049 | 0.0010 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| Selenium | 0.0026 | 0.0010 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/9/2021 1:19:31 PM | 57977 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | ND | 0.50 | | mg/L | 5 | 2/3/2021 5:55:36 PM | R75059 |
| Chloride | 89 | 10 | | mg/L | 20 | 2/3/2021 6:08:28 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 5:55:36 PM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 5:55:36 PM | R75059 |
| Sulfate | 1700 | 25 | * | mg/L | 50 | 2/4/2021 10:11:49 PM | R75089 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3290 | 40.0 | *D | mg/L | 1 | 2/9/2021 10:29:00 AM | 57947 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.024 | 0.0030 | | mg/L | 1 | 2/9/2021 9:19:15 AM | 57977 |
| Chromium | 0.054 | 0.0060 | | mg/L | 1 | 2/15/2021 11:06:52 AM | 57977 |
| Iron | 4.5 | 0.25 | * | mg/L | 5 | 2/9/2021 9:20:34 AM | 57977 |
| Manganese | 4.4 | 0.010 | * | mg/L | 5 | 2/9/2021 9:20:34 AM | 57977 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:37:49 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | 0.44 | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Acenaphthene | 0.54 | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Fluorene | 1.7 | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Pyrene | 0.24 | 0.20 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-5
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/2/2021 10:15:00 AM
**Lab ID:** 2102148-002 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Benzo(g,h,i)perylene | 0.22 | 0.10 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Surr: Nitrobenzene-d5 | 148 | 26.3-112 | S | %Rec | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Surr: 2-Fluorobiphenyl | 63.0 | 21.1-110 | | %Rec | 1 | 2/9/2021 10:54:00 PM | 57966 |
| Surr: 4-Terphenyl-d14 | 82.5 | 17.6-167 | | %Rec | 1 | 2/9/2021 10:54:00 PM | 57966 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Toluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Ethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Methyl tert-butyl ether (MTBE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2,4-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2-Dichloroethane (EDC) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Naphthalene | ND | 10 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 2-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Acetone | ND | 50 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Bromobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Bromodichloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Bromoform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Bromomethane | ND | 15 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 2-Butanone | ND | 50 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Carbon disulfide | ND | 50 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Carbon Tetrachloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Chlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Chloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Chloroform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Chloromethane | ND | 15 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 2-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 4-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| cis-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| cis-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2-Dibromo-3-chloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Dibromochloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Dibromomethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-5
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/2/2021 10:15:00 AM
**Lab ID:** 2102148-002 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,3-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,4-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Dichlorodifluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,1-Dichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,1-Dichloroethene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,3-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 2,2-Dichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,1-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Hexachlorobutadiene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 2-Hexanone | ND | 50 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Isopropylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 4-Isopropyltoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 4-Methyl-2-pentanone | ND | 50 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Methylene Chloride | ND | 15 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| n-Butylbenzene | ND | 15 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| n-Propylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| sec-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Styrene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| tert-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,1,2,2-Tetrachloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Tetrachloroethene (PCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| trans-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| trans-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,1,1-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,1,2-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Trichloroethene (TCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Trichlorofluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| 1,2,3-Trichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Vinyl chloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Xylenes, Total | ND | 7.5 | D | µg/L | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Surr: 1,2-Dichloroethane-d4 | 110 | 70-130 | D | %Rec | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Surr: 4-Bromofluorobenzene | 100 | 70-130 | D | %Rec | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Surr: Dibromofluoromethane | 108 | 70-130 | D | %Rec | 5 | 2/10/2021 3:57:00 AM | A75169 |
| Surr: Toluene-d8 | 105 | 70-130 | D | %Rec | 5 | 2/10/2021 3:57:00 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-11
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:28:00 AM
**Lab ID:** 2102148-003 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0015 | 0.0010 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| Lead | 0.0018 | 0.00050 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| Nickel | 0.0061 | 0.0010 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/9/2021 1:21:38 PM | 57977 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | ND | 0.50 | | mg/L | 5 | 2/3/2021 6:21:21 PM | R75059 |
| Chloride | 110 | 10 | | mg/L | 20 | 2/3/2021 6:34:13 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 6:21:21 PM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 6:21:21 PM | R75059 |
| Sulfate | 960 | 25 | * | mg/L | 50 | 2/4/2021 10:24:14 PM | R75089 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1890 | 200 | *D | mg/L | 1 | 2/9/2021 10:29:00 AM | 57947 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.15 | 0.0030 | | mg/L | 1 | 2/9/2021 9:21:54 AM | 57977 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/9/2021 9:21:54 AM | 57977 |
| Iron | 44 | 5.0 | * | mg/L | 100 | 2/9/2021 10:05:56 AM | 57977 |
| Manganese | 0.93 | 0.010 | * | mg/L | 5 | 2/9/2021 9:25:53 AM | 57977 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:39:49 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | 0.36 | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| 1-Methylnaphthalene | 0.34 | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| 2-Methylnaphthalene | 0.24 | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Acenaphthene | 0.36 | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Fluorene | 1.4 | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Anthracene | 0.28 | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Fluoranthene | 0.36 | 0.20 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Pyrene | 0.22 | 0.20 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-11
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:28:00 AM
**Lab ID:** 2102148-003 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Surr: Nitrobenzene-d5 | 113 | 26.3-112 | S | %Rec | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Surr: 2-Fluorobiphenyl | 50.5 | 21.1-110 | | %Rec | 1 | 2/9/2021 11:41:00 PM | 57966 |
| Surr: 4-Terphenyl-d14 | 65.0 | 17.6-167 | | %Rec | 1 | 2/9/2021 11:41:00 PM | 57966 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | 11 | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Toluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Ethylbenzene | 8.5 | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Methyl tert-butyl ether (MTBE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2,4-Trimethylbenzene | 6.8 | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2-Dichloroethane (EDC) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Naphthalene | ND | 10 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 2-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Acetone | ND | 50 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Bromobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Bromodichloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Bromoform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Bromomethane | ND | 15 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 2-Butanone | ND | 50 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Carbon disulfide | ND | 50 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Carbon Tetrachloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Chlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Chloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Chloroform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Chloromethane | ND | 15 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 2-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 4-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| cis-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| cis-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2-Dibromo-3-chloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Dibromochloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Dibromomethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-11
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:28:00 AM
**Lab ID:** 2102148-003 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,3-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,4-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Dichlorodifluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,1-Dichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,1-Dichloroethene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,3-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 2,2-Dichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,1-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Hexachlorobutadiene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 2-Hexanone | ND | 50 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Isopropylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 4-Isopropyltoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 4-Methyl-2-pentanone | ND | 50 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Methylene Chloride | ND | 15 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| n-Butylbenzene | ND | 15 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| n-Propylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| sec-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Styrene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| tert-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,1,2,2-Tetrachloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Tetrachloroethene (PCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| trans-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| trans-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,1,1-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,1,2-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Trichloroethene (TCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Trichlorofluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| 1,2,3-Trichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Vinyl chloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Xylenes, Total | 15 | 7.5 | D | µg/L | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Surr: 1,2-Dichloroethane-d4 | 99.4 | 70-130 | D | %Rec | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Surr: 4-Bromofluorobenzene | 99.8 | 70-130 | D | %Rec | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Surr: Dibromofluoromethane | 103 | 70-130 | D | %Rec | 5 | 2/10/2021 4:24:17 AM | A75169 |
| Surr: Toluene-d8 | 105 | 70-130 | D | %Rec | 5 | 2/10/2021 4:24:17 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-8
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:40:00 AM
**Lab ID:** 2102148-004 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.062 | 0.0050 | * | mg/L | 5 | 2/9/2021 1:53:14 PM | 57977 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:23:44 PM | 57977 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:23:44 PM | 57977 |
| Lead | 0.038 | 0.0025 | * | mg/L | 5 | 2/9/2021 1:53:14 PM | 57977 |
| Nickel | 0.018 | 0.0010 | | mg/L | 1 | 2/9/2021 1:23:44 PM | 57977 |
| Selenium | 0.0027 | 0.0010 | | mg/L | 1 | 2/9/2021 1:23:44 PM | 57977 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:23:44 PM | 57977 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/9/2021 1:23:44 PM | 57977 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.59 | 0.50 | | mg/L | 5 | 2/3/2021 7:12:55 PM | R75059 |
| Chloride | 100 | 10 | | mg/L | 20 | 2/3/2021 7:25:47 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 7:12:55 PM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 7:12:55 PM | R75059 |
| Sulfate | 1300 | 25 | * | mg/L | 50 | 2/4/2021 10:36:38 PM | R75089 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 2430 | 100 | *D | mg/L | 1 | 2/9/2021 10:29:00 AM | 57947 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.35 | 0.0030 | | mg/L | 1 | 2/9/2021 9:29:51 AM | 57977 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 11:09:00 AM | 57977 |
| Iron | 52 | 5.0 | * | mg/L | 100 | 2/9/2021 10:07:35 AM | 57977 |
| Manganese | 3.6 | 0.010 | * | mg/L | 5 | 2/9/2021 9:39:54 AM | 57977 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:41:51 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| 1-Methylnaphthalene | 0.20 | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| 2-Methylnaphthalene | 0.20 | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Acenaphthene | 0.96 | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Fluorene | 1.9 | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Anthracene | 0.46 | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Fluoranthene | 0.38 | 0.20 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Pyrene | 0.36 | 0.20 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-8
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:40:00 AM
**Lab ID:** 2102148-004 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Surr: Nitrobenzene-d5 | 142 | 26.3-112 | S | %Rec | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Surr: 2-Fluorobiphenyl | 70.5 | 21.1-110 | | %Rec | 1 | 2/10/2021 12:28:00 AM | 57966 |
| Surr: 4-Terphenyl-d14 | 89.5 | 17.6-167 | | %Rec | 1 | 2/10/2021 12:28:00 AM | 57966 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Acetone | 39 | 10 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-8
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 10:40:00 AM
**Lab ID:** 2102148-004 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Surr: 1,2-Dichloroethane-d4 | 105 | 70-130 | | %Rec | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Surr: 4-Bromofluorobenzene | 100 | 70-130 | | %Rec | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Surr: Dibromofluoromethane | 100 | 70-130 | | %Rec | 1 | 2/10/2021 4:51:32 AM | A75169 |
| Surr: Toluene-d8 | 104 | 70-130 | | %Rec | 1 | 2/10/2021 4:51:32 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 11:15:00 AM
**Lab ID:** 2102148-005 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0026 | 0.0010 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| Lead | 0.00063 | 0.00050 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| Nickel | 0.016 | 0.0010 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/9/2021 1:25:51 PM | 57977 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.88 | 0.50 | | mg/L | 5 | 2/3/2021 7:38:39 PM | R75059 |
| Chloride | 110 | 10 | | mg/L | 20 | 2/3/2021 7:51:31 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 7:38:39 PM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 7:38:39 PM | R75059 |
| Sulfate | 1200 | 25 | * | mg/L | 50 | 2/4/2021 10:49:02 PM | R75089 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 2520 | 20.0 | * | mg/L | 1 | 2/9/2021 10:29:00 AM | 57947 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.018 | 0.0030 | | mg/L | 1 | 2/9/2021 9:41:12 AM | 57977 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/9/2021 9:41:12 AM | 57977 |
| Iron | 1.6 | 0.25 | * | mg/L | 5 | 2/10/2021 8:58:15 AM | 57977 |
| Manganese | 0.43 | 0.0020 | * | mg/L | 1 | 2/9/2021 9:41:12 AM | 57977 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:43:52 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| 1-Methylnaphthalene | 0.16 | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| 2-Methylnaphthalene | 0.18 | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Fluorene | 0.24 | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Anthracene | 0.28 | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Pyrene | 0.20 | 0.20 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 11:15:00 AM
**Lab ID:** 2102148-005 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Surr: Nitrobenzene-d5 | 106 | 26.3-112 | | %Rec | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Surr: 2-Fluorobiphenyl | 51.5 | 21.1-110 | | %Rec | 1 | 2/10/2021 1:15:00 AM | 57966 |
| Surr: 4-Terphenyl-d14 | 87.5 | 17.6-167 | | %Rec | 1 | 2/10/2021 1:15:00 AM | 57966 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Acetone | ND | 10 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 11:15:00 AM
**Lab ID:** 2102148-005 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Surr: 1,2-Dichloroethane-d4 | 103 | 70-130 | | %Rec | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Surr: 4-Bromofluorobenzene | 100 | 70-130 | | %Rec | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Surr: Dibromofluoromethane | 105 | 70-130 | | %Rec | 1 | 2/10/2021 5:18:48 AM | A75169 |
| Surr: Toluene-d8 | 101 | 70-130 | | %Rec | 1 | 2/10/2021 5:18:48 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-13
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 11:25:00 AM
**Lab ID:** 2102148-006 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0018 | 0.0010 | | mg/L | 1 | 2/9/2021 1:27:57 PM | 57977 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:27:57 PM | 57977 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:27:57 PM | 57977 |
| Lead | 0.0048 | 0.00050 | | mg/L | 1 | 2/9/2021 1:27:57 PM | 57977 |
| Nickel | 0.011 | 0.0010 | | mg/L | 1 | 2/9/2021 1:27:57 PM | 57977 |
| Selenium | ND | 0.0050 | | mg/L | 5 | 2/16/2021 5:20:14 PM | 57977 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:27:57 PM | 57977 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/9/2021 1:27:57 PM | 57977 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 1.1 | 0.50 | | mg/L | 5 | 2/3/2021 8:04:24 PM | R75059 |
| Chloride | 110 | 10 | | mg/L | 20 | 2/3/2021 8:17:16 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 8:04:24 PM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 8:04:24 PM | R75059 |
| Sulfate | 1200 | 25 | * | mg/L | 50 | 2/4/2021 11:01:27 PM | R75089 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 2380 | 100 | *D | mg/L | 1 | 2/9/2021 10:29:00 AM | 57947 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.042 | 0.0030 | | mg/L | 1 | 2/9/2021 9:51:06 AM | 57977 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/9/2021 9:51:06 AM | 57977 |
| Iron | 3.1 | 0.25 | * | mg/L | 5 | 2/9/2021 9:52:25 AM | 57977 |
| Manganese | 4.7 | 0.010 | * | mg/L | 5 | 2/9/2021 9:52:25 AM | 57977 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:45:54 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| 1-Methylnaphthalene | 0.16 | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| 2-Methylnaphthalene | 0.20 | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Acenaphthene | 0.24 | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Fluorene | 0.34 | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Anthracene | 0.32 | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Fluoranthene | 0.36 | 0.20 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Pyrene | 0.36 | 0.20 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-13
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 11:25:00 AM
**Lab ID:** 2102148-006 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Surr: Nitrobenzene-d5 | 137 | 26.3-112 | S | %Rec | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Surr: 2-Fluorobiphenyl | 70.0 | 21.1-110 | | %Rec | 1 | 2/10/2021 2:02:00 AM | 57966 |
| Surr: 4-Terphenyl-d14 | 87.0 | 17.6-167 | | %Rec | 1 | 2/10/2021 2:02:00 AM | 57966 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Acetone | ND | 10 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-13
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/2/2021 11:25:00 AM
**Lab ID:** 2102148-006 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Surr: 1,2-Dichloroethane-d4 | 99.9 | 70-130 | | %Rec | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Surr: 4-Bromofluorobenzene | 97.0 | 70-130 | | %Rec | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Surr: Dibromofluoromethane | 101 | 70-130 | | %Rec | 1 | 2/10/2021 5:46:07 AM | A75169 |
| Surr: Toluene-d8 | 104 | 70-130 | | %Rec | 1 | 2/10/2021 5:46:07 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-35
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 11:55:00 AM
**Lab ID:** 2102148-007 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.012 | 0.0010 | * | mg/L | 1 | 2/9/2021 1:34:16 PM | 57977 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:34:16 PM | 57977 |
| Cadmium | 0.0023 | 0.00050 | | mg/L | 1 | 2/9/2021 1:34:16 PM | 57977 |
| Lead | 0.032 | 0.0025 | * | mg/L | 5 | 2/9/2021 1:55:21 PM | 57977 |
| Nickel | 0.015 | 0.0010 | | mg/L | 1 | 2/9/2021 1:34:16 PM | 57977 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/9/2021 1:34:16 PM | 57977 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/9/2021 1:34:16 PM | 57977 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/9/2021 1:34:16 PM | 57977 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **CAS** | |
| Fluoride | 0.92 | 0.50 | | mg/L | 5 | 2/3/2021 8:30:09 PM | R75059 |
| Chloride | 250 | 10 | * | mg/L | 20 | 2/3/2021 8:43:00 PM | R75059 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 8:30:09 PM | R75059 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/3/2021 8:30:09 PM | R75059 |
| Sulfate | 10 | 2.5 | | mg/L | 5 | 2/3/2021 8:30:09 PM | R75059 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1230 | 200 | *D | mg/L | 1 | 2/9/2021 10:29:00 AM | 57947 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 2.7 | 0.015 | * | mg/L | 5 | 2/9/2021 10:01:25 AM | 57977 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/9/2021 10:00:07 AM | 57977 |
| Iron | 26 | 2.5 | * | mg/L | 50 | 2/9/2021 10:13:13 AM | R75157 |
| Manganese | 1.8 | 0.010 | * | mg/L | 5 | 2/9/2021 10:01:25 AM | 57977 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/9/2021 1:47:57 PM | 57968 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | 25 | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| 1-Methylnaphthalene | 220 | 2.0 | | µg/L | 20 | 2/17/2021 12:52:00 AM | 57966 |
| 2-Methylnaphthalene | 37 | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Acenaphthylene | ND | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Acenaphthene | 47 | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Fluorene | 61 | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Phenanthrene | 87 | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Anthracene | 16 | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Fluoranthene | 9.4 | 2.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Pyrene | 27 | 2.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Benz(a)anthracene | ND | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Chrysene | 2.6 | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Benzo(b)fluoranthene | ND | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-35
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/2/2021 11:55:00 AM
**Lab ID:** 2102148-007 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Benzo(a)pyrene | ND | 0.70 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Dibenz(a,h)anthracene | ND | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Benzo(g,h,i)perylene | ND | 1.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Indeno(1,2,3-cd)pyrene | ND | 3.0 | D | µg/L | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Surr: Nitrobenzene-d5 | 405 | 26.3-112 | SD | %Rec | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Surr: 2-Fluorobiphenyl | 105 | 21.1-110 | D | %Rec | 10 | 2/10/2021 2:49:00 AM | 57966 |
| Surr: 4-Terphenyl-d14 | 110 | 17.6-167 | D | %Rec | 10 | 2/10/2021 2:49:00 AM | 57966 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Acetone | ND | 10 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-35
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/2/2021 11:55:00 AM
**Lab ID:** 2102148-007 **Matrix:** AQUEOUS **Received Date:** 2/3/2021 7:30:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Surr: 1,2-Dichloroethane-d4 | 101 | 70-130 | | %Rec | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Surr: 4-Bromofluorobenzene | 103 | 70-130 | | %Rec | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Surr: Dibromofluoromethane | 105 | 70-130 | | %Rec | 1 | 2/10/2021 6:13:18 AM | A75169 |
| Surr: Toluene-d8 | 106 | 70-130 | | %Rec | 1 | 2/10/2021 6:13:18 AM | A75169 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-57977** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653478** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | | | | | | | | |
| Chromium | ND | 0.0060 | | | | | | | | |
| Iron | ND | 0.050 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |

Sample ID: **LLLCS-57977** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653480** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | 0.002000 | 0 | 120 | 50 | 150 | | | |
| Chromium | ND | 0.0060 | 0.006000 | 0 | 61.6 | 50 | 150 | | | |
| Iron | ND | 0.050 | 0.02000 | 0 | 113 | 50 | 150 | | | |
| Manganese | ND | 0.0020 | 0.002000 | 0 | 97.7 | 50 | 150 | | | |

Sample ID: **LCS-57977** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653482** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.50 | 0.0030 | 0.5000 | 0 | 99.2 | 85 | 115 | | | |
| Chromium | 0.44 | 0.0060 | 0.5000 | 0 | 87.9 | 85 | 115 | | | |
| Iron | 0.49 | 0.050 | 0.5000 | 0 | 97.5 | 85 | 115 | | | |
| Manganese | 0.48 | 0.0020 | 0.5000 | 0 | 96.2 | 85 | 115 | | | |

Sample ID: **2102148-003DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-11** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653527** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.66 | 0.0030 | 0.5000 | 0.1531 | 100 | 70 | 130 | | | |
| Chromium | 0.51 | 0.0060 | 0.5000 | 0 | 101 | 70 | 130 | | | |

Sample ID: **2102148-003DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-11** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653528** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.64 | 0.0030 | 0.5000 | 0.1531 | 97.6 | 70 | 130 | 2.19 | 20 | |
| Chromium | 0.51 | 0.0060 | 0.5000 | 0 | 102 | 70 | 130 | 0.506 | 20 | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **2102148-003DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-11** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653530** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Manganese | 1.4 | 0.010 | 0.5000 | 0.9303 | 92.0 | 70 | 130 | | | |

Sample ID: **2102148-003DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-11** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653531** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Manganese | 1.4 | 0.010 | 0.5000 | 0.9303 | 97.4 | 70 | 130 | 1.92 | 20 | |

Sample ID: **2102148-005DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-9** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653535** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.51 | 0.0030 | 0.5000 | 0.01801 | 98.1 | 70 | 130 | | | |
| Chromium | 0.59 | 0.0060 | 0.5000 | 0 | 118 | 70 | 130 | | | |
| Manganese | 0.90 | 0.0020 | 0.5000 | 0.4320 | 94.3 | 70 | 130 | | | |

Sample ID: **2102148-005DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-9** Batch ID: **57977** RunNo: **75157**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2653536** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.52 | 0.0030 | 0.5000 | 0.01801 | 101 | 70 | 130 | 2.88 | 20 | |
| Chromium | 0.59 | 0.0060 | 0.5000 | 0 | 117 | 70 | 130 | 0.957 | 20 | |
| Manganese | 0.92 | 0.0020 | 0.5000 | 0.4320 | 98.0 | 70 | 130 | 2.06 | 20 | |

Sample ID: **2102148-005DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-9** Batch ID: **57977** RunNo: **75197**
Prep Date: **2/8/2021** Analysis Date: **2/10/2021** SeqNo: **2655199** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 2.4 | 0.25 | 0.5000 | 1.639 | 161 | 70 | 130 | | | S |

Sample ID: **2102148-005DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-9** Batch ID: **57977** RunNo: **75197**
Prep Date: **2/8/2021** Analysis Date: **2/10/2021** SeqNo: **2655200** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 2.4 | 0.25 | 0.5000 | 1.639 | 153 | 70 | 130 | 1.63 | 20 | S |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-57977** SampType: **MBLK** TestCode: **EPA 200.8: Metals**
Client ID: **PBW** Batch ID: **57977** RunNo: **75170**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654055** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | | | | | | | | |
| Beryllium | ND | 0.0010 | | | | | | | | |
| Cadmium | ND | 0.00050 | | | | | | | | |
| Lead | ND | 0.00050 | | | | | | | | |
| Nickel | ND | 0.0010 | | | | | | | | |
| Selenium | ND | 0.0010 | | | | | | | | |
| Silver | ND | 0.00050 | | | | | | | | |
| Thallium | ND | 0.00025 | | | | | | | | |

Sample ID: **MSLLLCS-57977** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **57977** RunNo: **75170**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654056** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0010 | 0.0010 | 0.001000 | 0 | 103 | 50 | 150 | | | |
| Beryllium | ND | 0.0010 | 0.001000 | 0 | 89.3 | 50 | 150 | | | |
| Cadmium | 0.00055 | 0.00050 | 0.0005000 | 0 | 109 | 50 | 150 | | | |
| Lead | 0.00052 | 0.00050 | 0.0005000 | 0 | 103 | 50 | 150 | | | |
| Nickel | ND | 0.0010 | 0.001000 | 0 | 92.3 | 50 | 150 | | | |
| Selenium | ND | 0.0010 | 0.001000 | 0 | 76.5 | 50 | 150 | | | |
| Silver | ND | 0.00050 | 0.0005000 | 0 | 96.8 | 50 | 150 | | | |

Sample ID: **MSLCS-57977** SampType: **LCS** TestCode: **EPA 200.8: Metals**
Client ID: **LCSW** Batch ID: **57977** RunNo: **75170**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654057** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.025 | 0.0010 | 0.02500 | 0 | 99.5 | 85 | 115 | | | |
| Beryllium | 0.026 | 0.0010 | 0.02500 | 0 | 104 | 85 | 115 | | | |
| Cadmium | 0.013 | 0.00050 | 0.01250 | 0 | 101 | 85 | 115 | | | |
| Lead | 0.013 | 0.00050 | 0.01250 | 0 | 102 | 85 | 115 | | | |
| Nickel | 0.025 | 0.0010 | 0.02500 | 0 | 99.2 | 85 | 115 | | | |
| Selenium | 0.024 | 0.0010 | 0.02500 | 0 | 97.4 | 85 | 115 | | | |
| Silver | 0.013 | 0.00050 | 0.01250 | 0 | 104 | 85 | 115 | | | |
| Thallium | 0.013 | 0.00025 | 0.01250 | 0 | 101 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MSLLLCS(TL)-57977** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **57977** RunNo: **75170**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654058** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 0.00026 | 0.00025 | 0.0002500 | 0 | 105 | 50 | 150 | | | |

Sample ID: **2102148-006DMSLL** SampType: **MS** TestCode: **EPA 200.8: Metals**
Client ID: **GBR-13** Batch ID: **57977** RunNo: **75170**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654134** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.029 | 0.0010 | 0.02500 | 0.001824 | 110 | 70 | 130 | | | |
| Beryllium | 0.025 | 0.0010 | 0.02500 | 0 | 101 | 70 | 130 | | | |
| Cadmium | 0.012 | 0.00050 | 0.01250 | .00008367 | 98.0 | 70 | 130 | | | |
| Lead | 0.020 | 0.00050 | 0.01250 | 0.004816 | 118 | 70 | 130 | | | |
| Nickel | 0.040 | 0.0010 | 0.02500 | 0.01069 | 118 | 70 | 130 | | | |
| Silver | 0.012 | 0.00050 | 0.01250 | 0 | 93.8 | 70 | 130 | | | |
| Thallium | 0.012 | 0.00025 | 0.01250 | 0 | 97.2 | 70 | 130 | | | |

Sample ID: **2102148-006DMSDL** SampType: **MSD** TestCode: **EPA 200.8: Metals**
Client ID: **GBR-13** Batch ID: **57977** RunNo: **75170**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654135** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.029 | 0.0010 | 0.02500 | 0.001824 | 108 | 70 | 130 | 1.19 | 20 | |
| Beryllium | 0.025 | 0.0010 | 0.02500 | 0 | 99.1 | 70 | 130 | 2.40 | 22 | |
| Cadmium | 0.013 | 0.00050 | 0.01250 | .00008367 | 99.5 | 70 | 130 | 1.46 | 20 | |
| Lead | 0.019 | 0.00050 | 0.01250 | 0.004816 | 115 | 70 | 130 | 1.78 | 20 | |
| Nickel | 0.040 | 0.0010 | 0.02500 | 0.01069 | 118 | 70 | 130 | 0.0291 | 20 | |
| Silver | 0.012 | 0.00050 | 0.01250 | 0 | 95.7 | 70 | 130 | 1.93 | 20 | |
| Thallium | 0.012 | 0.00025 | 0.01250 | 0 | 96.7 | 70 | 130 | 0.462 | 20 | |

Sample ID: **2102148-006DMSLL** SampType: **MS** TestCode: **EPA 200.8: Metals**
Client ID: **GBR-13** Batch ID: **57977** RunNo: **75322**
Prep Date: **2/8/2021** Analysis Date: **2/16/2021** SeqNo: **2662153** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Selenium | ND | 0.0050 | 0.02500 | 0 | 14.9 | 70 | 130 | | | S |

Sample ID: **2102148-006DMSDL** SampType: **MSD** TestCode: **EPA 200.8: Metals**
Client ID: **GBR-13** Batch ID: **57977** RunNo: **75322**
Prep Date: **2/8/2021** Analysis Date: **2/16/2021** SeqNo: **2662154** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **2102148-006DMSDL** SampType: **MSD** TestCode: **EPA 200.8: Metals**
Client ID: **GBR-13** Batch ID: **57977** RunNo: **75322**
Prep Date: **2/8/2021** Analysis Date: **2/16/2021** SeqNo: **2662154** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Selenium | ND | 0.0050 | 0.02500 | 0 | 16.1 | 70 | 130 | 0 | 20 | S |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57968** | SampType: **MBLK** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57968** | RunNo: **75166** |
| Prep Date: **2/8/2021** | Analysis Date: **2/9/2021** | SeqNo: **2653912** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | | | | | | | | |

| Sample ID: **LLLCS-57968** | SampType: **LCSLL** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **57968** | RunNo: **75166** |
| Prep Date: **2/8/2021** | Analysis Date: **2/9/2021** | SeqNo: **2653913** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | 0.0001500 | 0 | 74.4 | 50 | 150 | | | |

| Sample ID: **LCS-57968** | SampType: **LCS** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57968** | RunNo: **75166** |
| Prep Date: **2/8/2021** | Analysis Date: **2/9/2021** | SeqNo: **2653914** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0056 | 0.00020 | 0.005000 | 0 | 111 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75059** | RunNo: **75059** |
| Prep Date: | Analysis Date: **2/3/2021** | SeqNo: **2649611** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 0.10 | | | | | | | | |
| Chloride | ND | 0.50 | | | | | | | | |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | | | | | | | |
| Nitrogen, Nitrate (As N) | ND | 0.10 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75059** | RunNo: **75059** |
| Prep Date: | Analysis Date: **2/3/2021** | SeqNo: **2649619** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 0.51 | 0.10 | 0.5000 | 0 | 101 | 90 | 110 | | | |
| Chloride | 4.8 | 0.50 | 5.000 | 0 | 95.3 | 90 | 110 | | | |
| Nitrogen, Nitrite (As N) | 0.97 | 0.10 | 1.000 | 0 | 96.8 | 90 | 110 | | | |
| Nitrogen, Nitrate (As N) | 2.5 | 0.10 | 2.500 | 0 | 98.5 | 90 | 110 | | | |
| Sulfate | 9.7 | 0.50 | 10.00 | 0 | 96.8 | 90 | 110 | | | |

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75089** | RunNo: **75089** |
| Prep Date: | Analysis Date: **2/4/2021** | SeqNo: **2650852** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75089** | RunNo: **75089** |
| Prep Date: | Analysis Date: **2/4/2021** | SeqNo: **2650853** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 9.4 | 0.50 | 10.00 | 0 | 94.4 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**

***24-Feb-21***

**Client:** Western Refining Southwest, Inc.

**Project:** 2021 Giant Former Refinery

Sample ID: **100ng lcs2** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **LCSW** Batch ID: **A75169** RunNo: **75169**

Prep Date: Analysis Date: **2/10/2021** SeqNo: **2654624** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 20 | 1.0 | 20.00 | 0 | 102 | 70 | 130 | | | |
| Toluene | 19 | 1.0 | 20.00 | 0 | 93.1 | 70 | 130 | | | |
| Chlorobenzene | 18 | 1.0 | 20.00 | 0 | 90.0 | 70 | 130 | | | |
| 1,1-Dichloroethene | 20 | 1.0 | 20.00 | 0 | 98.4 | 70 | 130 | | | |
| Trichloroethene (TCE) | 18 | 1.0 | 20.00 | 0 | 90.1 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 11 | | 10.00 | | 110 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 103 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 112 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.5 | | 10.00 | | 95.4 | 70 | 130 | | | |

Sample ID: **2102148-001ams** SampType: **MS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **GBR-20** Batch ID: **A75169** RunNo: **75169**

Prep Date: Analysis Date: **2/10/2021** SeqNo: **2654629** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 110 | 5.0 | 100.0 | 14.47 | 99.0 | 70 | 130 | | | |
| Toluene | 93 | 5.0 | 100.0 | 0 | 92.6 | 70 | 130 | | | |
| Chlorobenzene | 91 | 5.0 | 100.0 | 0 | 90.9 | 70 | 130 | | | |
| 1,1-Dichloroethene | 89 | 5.0 | 100.0 | 0 | 89.3 | 70 | 130 | | | |
| Trichloroethene (TCE) | 85 | 5.0 | 100.0 | 0 | 85.3 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 49 | | 50.00 | | 98.5 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 48 | | 50.00 | | 95.4 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 100 | 70 | 130 | | | |
| Surr: Toluene-d8 | 48 | | 50.00 | | 95.4 | 70 | 130 | | | |

Sample ID: **2102148-001amsd** SampType: **MSD** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **GBR-20** Batch ID: **A75169** RunNo: **75169**

Prep Date: Analysis Date: **2/10/2021** SeqNo: **2654630** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 110 | 5.0 | 100.0 | 14.47 | 100 | 70 | 130 | 0.970 | 20 | |
| Toluene | 95 | 5.0 | 100.0 | 0 | 95.3 | 70 | 130 | 2.82 | 20 | |
| Chlorobenzene | 92 | 5.0 | 100.0 | 0 | 91.9 | 70 | 130 | 1.12 | 20 | |
| 1,1-Dichloroethene | 89 | 5.0 | 100.0 | 0 | 89.3 | 70 | 130 | 0.0672 | 20 | |
| Trichloroethene (TCE) | 84 | 5.0 | 100.0 | 0 | 83.9 | 70 | 130 | 1.67 | 20 | |
| Surr: 1,2-Dichloroethane-d4 | 51 | | 50.00 | | 101 | 70 | 130 | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 105 | 70 | 130 | 0 | 0 | |
| Surr: Dibromofluoromethane | 52 | | 50.00 | | 105 | 70 | 130 | 0 | 0 | |
| Surr: Toluene-d8 | 49 | | 50.00 | | 97.9 | 70 | 130 | 0 | 0 | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb2** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A75169** | RunNo: **75169** |
| Prep Date: | Analysis Date: **2/10/2021** | SeqNo: **2654653** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb2** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A75169** | RunNo: **75169** |
| Prep Date: | Analysis Date: **2/10/2021** | SeqNo: **2654653** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 10 | | 10.00 | | 105 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 106 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10 | | 10.00 | | 104 | 70 | 130 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb-57966** | SampType: **MBLK** | TestCode: **EPA Method 8270SIM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **57966** | RunNo: **75176** | | | | | | | |
| Prep Date: **2/8/2021** | Analysis Date: **2/9/2021** | SeqNo: **2654266** | Units: **µg/L** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Naphthalene | ND | 0.10 | | | | | | | | |
| 1-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| Acenaphthylene | ND | 0.10 | | | | | | | | |
| Acenaphthene | ND | 0.10 | | | | | | | | |
| Fluorene | ND | 0.10 | | | | | | | | |
| Phenanthrene | ND | 0.10 | | | | | | | | |
| Anthracene | ND | 0.10 | | | | | | | | |
| Fluoranthene | ND | 0.20 | | | | | | | | |
| Pyrene | ND | 0.20 | | | | | | | | |
| Benz(a)anthracene | ND | 0.10 | | | | | | | | |
| Chrysene | ND | 0.10 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(a)pyrene | ND | 0.070 | | | | | | | | |
| Dibenz(a,h)anthracene | ND | 0.10 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.10 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | | | | | | | |
| Surr: Nitrobenzene-d5 | 3.4 | | 4.000 | | 84.5 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 20 | | 8.000 | | 247 | 27.7 | 118 | | | S |
| Surr: 2-Fluorobiphenyl | 2.3 | | 4.000 | | 57.5 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 4.4 | | 4.000 | | 110 | 17.6 | 167 | | | |

| Sample ID: **lcs-57966** | SampType: **LCS** | TestCode: **EPA Method 8270SIM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **57966** | RunNo: **75176** | | | | | | | |
| Prep Date: **2/8/2021** | Analysis Date: **2/9/2021** | SeqNo: **2654267** | Units: **µg/L** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Naphthalene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 18.5 | 83.4 | | | |
| 1-Methylnaphthalene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 15.1 | 89.6 | | | |
| 2-Methylnaphthalene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 15 | 90.6 | | | |
| Acenaphthylene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 18.2 | 95.3 | | | |
| Acenaphthene | 1.2 | 0.10 | 2.000 | 0 | 59.0 | 23.9 | 90.3 | | | |
| Fluorene | 1.2 | 0.10 | 2.000 | 0 | 59.0 | 16.8 | 106 | | | |
| Phenanthrene | 1.2 | 0.10 | 2.000 | 0 | 62.0 | 23.3 | 105 | | | |
| Anthracene | 1.3 | 0.10 | 2.000 | 0 | 63.0 | 15 | 112 | | | |
| Fluoranthene | 1.4 | 0.20 | 2.000 | 0 | 71.0 | 15.4 | 138 | | | |
| Pyrene | 1.3 | 0.20 | 2.000 | 0 | 67.0 | 15 | 128 | | | |
| Benz(a)anthracene | 1.6 | 0.10 | 2.000 | 0 | 80.0 | 38.7 | 111 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **lcs-57966** SampType: **LCS** TestCode: **EPA Method 8270SIM**
Client ID: **LCSW** Batch ID: **57966** RunNo: **75176**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654267** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 1.6 | 0.10 | 2.000 | 0 | 82.0 | 32.6 | 96.6 | | | |
| Benzo(a)pyrene | 1.5 | 0.070 | 2.000 | 0 | 73.0 | 24.5 | 123 | | | |
| Dibenz(a,h)anthracene | 1.5 | 0.10 | 2.000 | 0 | 74.0 | 17.8 | 118 | | | |
| Benzo(g,h,i)perylene | 1.6 | 0.10 | 2.000 | 0 | 79.0 | 22.2 | 110 | | | |
| Indeno(1,2,3-cd)pyrene | 2.5 | 0.30 | 2.000 | 0 | 125 | 20.8 | 115 | | | S |
| Surr: Nitrobenzene-d5 | 5.0 | | 5.000 | | 99.2 | 26.3 | 112 | | | |
| Surr: 2,4,6-Tribromophenol | 12 | | 10.00 | | 117 | 27.7 | 118 | | | |
| Surr: 2-Fluorobiphenyl | 3.2 | | 5.000 | | 63.2 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 5.3 | | 5.000 | | 107 | 17.6 | 167 | | | |

Sample ID: **lcsd-57966** SampType: **LCSD** TestCode: **EPA Method 8270SIM**
Client ID: **LCSS02** Batch ID: **57966** RunNo: **75176**
Prep Date: **2/8/2021** Analysis Date: **2/9/2021** SeqNo: **2654268** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.98 | 0.10 | 2.000 | 0 | 49.0 | 18.5 | 83.4 | 20.2 | 20 | R |
| 1-Methylnaphthalene | 1.0 | 0.10 | 2.000 | 0 | 50.0 | 15.1 | 89.6 | 18.2 | 20 | |
| 2-Methylnaphthalene | 1.0 | 0.10 | 2.000 | 0 | 50.0 | 15 | 90.6 | 18.2 | 20 | |
| Acenaphthylene | 1.0 | 0.10 | 2.000 | 0 | 51.0 | 18.2 | 95.3 | 16.2 | 20 | |
| Acenaphthene | 0.98 | 0.10 | 2.000 | 0 | 49.0 | 23.9 | 90.3 | 18.5 | 20 | |
| Fluorene | 1.1 | 0.10 | 2.000 | 0 | 53.0 | 16.8 | 106 | 10.7 | 20 | |
| Phenanthrene | 1.1 | 0.10 | 2.000 | 0 | 55.0 | 23.3 | 105 | 12.0 | 20 | |
| Anthracene | 1.1 | 0.10 | 2.000 | 0 | 56.0 | 15 | 112 | 11.8 | 20 | |
| Fluoranthene | 1.3 | 0.20 | 2.000 | 0 | 66.0 | 15.4 | 138 | 7.30 | 20 | |
| Pyrene | 1.2 | 0.20 | 2.000 | 0 | 62.0 | 15 | 128 | 7.75 | 20 | |
| Benz(a)anthracene | 1.4 | 0.10 | 2.000 | 0 | 72.0 | 38.7 | 111 | 10.5 | 20 | |
| Chrysene | 1.5 | 0.10 | 2.000 | 0 | 74.0 | 32.6 | 96.6 | 10.3 | 20 | |
| Benzo(a)pyrene | 1.3 | 0.070 | 2.000 | 0 | 66.0 | 24.5 | 123 | 10.1 | 20 | |
| Dibenz(a,h)anthracene | 1.3 | 0.10 | 2.000 | 0 | 67.0 | 17.8 | 118 | 9.93 | 20 | |
| Benzo(g,h,i)perylene | 1.4 | 0.10 | 2.000 | 0 | 71.0 | 22.2 | 110 | 10.7 | 20 | |
| Indeno(1,2,3-cd)pyrene | 1.2 | 0.30 | 2.000 | 0 | 60.0 | 20.8 | 115 | 70.3 | 20 | R |
| Surr: Nitrobenzene-d5 | 4.1 | | 5.000 | | 82.0 | 26.3 | 112 | 0 | 0 | |
| Surr: 2,4,6-Tribromophenol | 11 | | 10.00 | | 106 | 27.7 | 118 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 2.4 | | 5.000 | | 48.8 | 21.1 | 110 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 4.7 | | 5.000 | | 94.0 | 17.6 | 167 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102148**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57947** | SampType: **MBLK** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57947** | RunNo: **75149** |
| Prep Date: **2/5/2021** | Analysis Date: **2/9/2021** | SeqNo: **2653357** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

| Sample ID: **LCS-57947** | SampType: **LCS** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57947** | RunNo: **75149** |
| Prep Date: **2/5/2021** | Analysis Date: **2/9/2021** | SeqNo: **2653358** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1020 | 20.0 | 1000 | 0 | 102 | 80 | 120 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **Western Refining Southwest, Inc.** Work Order Number: **2102148** RcptNo: 1

Received By: **Juan Rojas** **2/3/2021 7:30:00 AM** Juan Rojas

Completed By: **Desiree Dominguez** **2/3/2021 9:38:14 AM** DD

Reviewed By: CC 2/5/21

300 checked by : SPA 2.3.21

## Chain of Custody

| | | | |
|---|---|---|---|
| 1. Is Chain of Custody complete? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. How was the sample delivered? | Courier | | |

## Log In

| | | | |
|---|---|---|---|
| 3. Was an attempt made to cool the samples? | Yes ☑ | No ☐ | NA ☐ |
| 4. Were all samples received at a temperature of >0° C to 6.0°C | Yes ☑ | No ☐ | NA ☐ |
| 5. Sample(s) in proper container(s)? | Yes ☑ | No ☐ | |
| 6. Sufficient sample volume for indicated test(s)? | Yes ☑ | No ☐ | |
| 7. Are samples (except VOA and ONG) properly preserved? | Yes ☑ | No ☐ | |
| 8. Was preservative added to bottles? | Yes ☐ | No ☑ | NA ☐ |
| 9. Received at least 1 vial with headspace <1/4" for AQ VOA? | Yes ☑ | No ☐ | NA ☐ |
| 10. Were any sample containers received broken? | Yes ☐ | No ☑ | |
| 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes ☑ | No ☐ | |
| 12. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | |
| 13. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 14. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | |

# of preserved bottles checked for pH: 14 (<2 or >12 unless noted)

Adjusted? YES

Checked by: DAD 2/5/21

Labeled unpres NO3 : DAD 2/3/21

## Special Handling (if applicable)

| | | | |
|---|---|---|---|
| 15. Was client notified of all discrepancies with this order? | Yes ☐ | No ☐ | NA ☑ |

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks: For metals analysis added ~ 0.5mL. $HNO_3$ to samples 001D & 007D

17. Cooler Information — for pH<2. - DAD 2/5/21

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 2.4 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Marathon

Greg McCarthey

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☒ EDD (Type) PDF

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: 2021 Giant Former Refinery

Project #:

Project Manager: Stuart Hyde

Sampler: T. Short, E. Carroll

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.5-0.1=2.4 (°C)


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107


| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2102148 |
|---|---|---|---|---|---|---|
| 2-2-2021 | 1000 | GW | GBR-20 | various | various | -001 |
| | 1015 | | GBR-5 | | | -002 |
| | 1028 | | GBR-11 | | | -003 |
| | 1040 | | GBR-8 | | | -004 |
| | 1115 | | GBR-9 | | | -005 |
| | 1125 | | GBR-13 | | | -006 |
| | 1155 | | GBR-35 | | | -007 |

Analysis Request

| BTEX / MTBE / TMB's (8021) | TPH:8015D(GRO / DRO / MRO) | 8081 Pesticides/8082 PCB's | EDB (Method 504.1) | PAHs by 8310 or 8270SIMS | RCRA 8 Metals | Cl, F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) | see Attached | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | X | | | | | | |
| | | | | | | | | | | X | | | | | | |
| | | | | | | | | | | X | | | | | | |
| | | | | | | | | | | X | | | | | | |
| | | | | | | | | | | X | | | | | | |
| | | | | | | | | | | X | | | | | | |
| | | | | | | | | | | X | | | | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 2/2 | 1322 | | Chad Ward | | 2/2/21 | 1322 |
| 2/2/21 | 1910 | Christine Walker | | courier | 2/3/21 | 7:30 |

Remarks: cc: stuart.hyde@wsp.com

Quote # 2112

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

| Recommended Analyte List for GBR Site-Wide Sampling Event | |
|---|---|
| **VOCs Method 8260** | **PAHs Method 8270** |
| benzene | naphthalene |
| toluene | 1-methylnaphthalene |
| ethylbenzene | 2-methylnaphthalene |
| methyl tert-butyl ether (MTBE) | acenaphthylene |
| 1,2,4-trimethylbenzene | acenaphthene |
| 1,3,5-trimethylbenzene | fluorene |
| 1,2-dichloroethane (EDC) | phenanthrene |
| 1,2-dibromoethane (EDB) | anthracene |
| naphthalene | fluoranthene |
| 1-methylnaphthalene | pyrene |
| 2-methylnaphthalene | benz(a)anthracene |
| acetone | chrysene |
| bromobenzene | benzo(b)fluoranthene |
| bromodichloromethane | benzo(k)fluoranthene |
| bromoform | benzo(a)pyrene |
| bromomethane | dibenz(a,h)anthracene |
| 2-butanone | benzo(g,h,i)perylene |
| carbon disulfide | indeno(1,2,3-cd)pyrene |
| carbon tetrachloride | **Anions Method 300.0** |
| chlorobenzene | chloride |
| chloroethane | sulfate |
| chloroform | fluoride |
| chloromethane | nitrate + nitrite as N |
| 2-chlorotoluene | **Metals Method 200.7** |
| 4-chlorotoluene | barium* |
| cis-1,2-dichloroethene (cis-1,2-DCE) | beryllium |
| cis-1,3-dichloropropene | cadmium* |
| 1,2-dibromo-3-chloropropane | chromium* |
| dibromochloromethane | iron |
| dibromomethane | manganese |
| 1,2-dichlorobenzene | nickel |
| 1,3-dichlorobenzene | silver* |
| 1,4-dichlorobenzene | **Metals Method 200.8** |
| dichlorodifluoromethane | arsenic* |
| 1,1-dichloroethane | lead* |
| 1,1-dichloroethene (1,1-DCE) | selenium* |
| 1,2-dichloropropane | thallium |
| 1,3-dichloropropane | **Mercury** |
| 2,2-dichloropropane | Mercury* |
| 1,1-dichloropropene | **Total Dissolved Solids Method M2540C** |
| hexachlorobutadiene | total dissolved solids |
| 2-hexanone | |
| isopropylbenzene | |
| 4-isopropytoluene | |
| 4-methyl-2-pentanone | |
| methylene chloride | |
| n-butylbenzene | |
| n-propylbenzene | |
| sec-butylbenzene | |
| styrene | |
| tert-butylbenzene | |
| 1,1,1,2-tetrachloroethane | |
| 1,1,2,2-tetrachloroethane | |
| tetrachloroethene (PCE) | |
| trans-1,2-dichloroethene (trans-1,2-DCE) | |
| trans-1,3-dichloropropene | |
| 1,2,3-trichlorobenzene | |
| 1,2,4-trichlorobenzene | |
| 1,1,1-trichloroethane | |
| 1,1,2-trichloroethane | |
| trichloroethene (TCE) | |
| trichlorofluoromethane | |
| 1,2,3-trichloropropane | |
| vinyl chloride | |
| xylenes, total | |

* - asterisks denotes RCRA 8 Metal

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

February 24, 2021

Gregory McCartney
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: 2021 Giant Former Refinery OrderNo.: 2102310

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 11 sample(s) on 2/5/2021 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:00:00 AM
**Lab ID:** 2102310-001 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| Lead | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| Nickel | 0.0027 | 0.0010 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:18:13 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | ND | 0.50 | | mg/L | 5 | 2/5/2021 4:53:20 PM | R75132 |
| Chloride | 59 | 2.5 | | mg/L | 5 | 2/5/2021 4:53:20 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 4:53:20 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 4:53:20 PM | R75132 |
| Sulfate | 1900 | 25 | * | mg/L | 50 | 2/9/2021 11:38:14 AM | R75187 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3260 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.034 | 0.0030 | | mg/L | 1 | 2/10/2021 9:21:27 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 12:19:42 PM | 57999 |
| Iron | 1.9 | 0.25 | * | mg/L | 5 | 2/10/2021 9:22:47 AM | 57999 |
| Manganese | 0.53 | 0.0020 | * | mg/L | 1 | 2/10/2021 9:21:27 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:32:13 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Acenaphthene | 0.18 | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Fluorene | 0.38 | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:00:00 AM
**Lab ID:** 2102310-001 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 5.00 | 26.3-112 | S | %Rec | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 40.5 | 21.1-110 | | %Rec | 1 | 2/16/2021 4:39:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 73.0 | 17.6-167 | | %Rec | 1 | 2/16/2021 4:39:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-9
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:00:00 AM
**Lab ID:** 2102310-001 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| tert-Butylbenzene | 2.0 | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 112 | 70-130 | | %Rec | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Surr: 4-Bromofluorobenzene | 103 | 70-130 | | %Rec | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Surr: Dibromofluoromethane | 114 | 70-130 | | %Rec | 1 | 2/10/2021 7:19:22 PM | R75222 |
| Surr: Toluene-d8 | 102 | 70-130 | | %Rec | 1 | 2/10/2021 7:19:22 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-2
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:35:00 AM
**Lab ID:** 2102310-002 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.023 | 0.0010 | * | mg/L | 1 | 2/11/2021 12:20:19 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:20:19 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:20:19 PM | 57999 |
| Lead | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:20:19 PM | 57999 |
| Nickel | 0.26 | 0.020 | | mg/L | 20 | 2/11/2021 3:45:09 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:20:19 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:20:19 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:20:19 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.59 | 0.50 | | mg/L | 5 | 2/5/2021 5:19:04 PM | R75132 |
| Chloride | 100 | 10 | | mg/L | 20 | 2/5/2021 5:31:56 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 5:19:04 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 5:19:04 PM | R75132 |
| Sulfate | 660 | 10 | * | mg/L | 20 | 2/5/2021 5:31:56 PM | R75132 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1880 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.066 | 0.0030 | | mg/L | 1 | 2/10/2021 9:29:13 AM | 57999 |
| Chromium | 0.018 | 0.0060 | | mg/L | 1 | 2/15/2021 12:21:52 PM | 57999 |
| Iron | 22 | 2.5 | * | mg/L | 50 | 2/15/2021 12:24:00 PM | 57999 |
| Manganese | 3.3 | 0.010 | * | mg/L | 5 | 2/10/2021 9:30:35 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:34:37 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-2
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:35:00 AM
**Lab ID:** 2102310-002 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 77.0 | 26.3-112 | | %Rec | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 69.0 | 21.1-110 | | %Rec | 1 | 2/16/2021 5:23:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 112 | 17.6-167 | | %Rec | 1 | 2/16/2021 5:23:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-2
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:35:00 AM
**Lab ID:** 2102310-002 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| tert-Butylbenzene | 1.6 | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 112 | 70-130 | | %Rec | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Surr: 4-Bromofluorobenzene | 102 | 70-130 | | %Rec | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Surr: Dibromofluoromethane | 113 | 70-130 | | %Rec | 1 | 2/10/2021 7:46:29 PM | R75222 |
| Surr: Toluene-d8 | 97.1 | 70-130 | | %Rec | 1 | 2/10/2021 7:46:29 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-3
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:55:00 AM
**Lab ID:** 2102310-003 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0013 | 0.0010 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| Lead | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| Nickel | 0.0074 | 0.0010 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:22:26 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 1.0 | 0.50 | | mg/L | 5 | 2/5/2021 5:44:49 PM | R75132 |
| Chloride | 110 | 10 | | mg/L | 20 | 2/5/2021 5:57:41 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 5:44:49 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 5:44:49 PM | R75132 |
| Sulfate | 440 | 10 | * | mg/L | 20 | 2/5/2021 5:57:41 PM | R75132 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1860 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.21 | 0.0030 | | mg/L | 1 | 2/10/2021 9:31:55 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 12:26:12 PM | 57999 |
| Iron | 3.8 | 0.25 | * | mg/L | 5 | 2/10/2021 9:33:15 AM | 57999 |
| Manganese | 1.8 | 0.010 | * | mg/L | 5 | 2/10/2021 9:33:15 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:36:58 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | 0.12 | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Acenaphthene | 0.36 | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Fluorene | 1.5 | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Anthracene | 0.34 | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Fluoranthene | 0.32 | 0.20 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Pyrene | 0.24 | 0.20 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-3
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:55:00 AM
**Lab ID:** 2102310-003 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 49.0 | 26.3-112 | | %Rec | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 40.0 | 21.1-110 | | %Rec | 1 | 2/16/2021 6:07:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 81.0 | 17.6-167 | | %Rec | 1 | 2/16/2021 6:07:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-3
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 10:55:00 AM
**Lab ID:** 2102310-003 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| tert-Butylbenzene | 1.8 | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 112 | 70-130 | | %Rec | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Surr: 4-Bromofluorobenzene | 104 | 70-130 | | %Rec | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Surr: Dibromofluoromethane | 116 | 70-130 | | %Rec | 1 | 2/10/2021 8:13:41 PM | R75222 |
| Surr: Toluene-d8 | 101 | 70-130 | | %Rec | 1 | 2/10/2021 8:13:41 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-4
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 11:20:00 AM
**Lab ID:** 2102310-004 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0028 | 0.0010 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| Lead | 0.00098 | 0.00050 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| Nickel | 0.016 | 0.0010 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:24:32 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 1.1 | 0.50 | | mg/L | 5 | 2/5/2021 6:10:33 PM | R75132 |
| Chloride | 120 | 10 | | mg/L | 20 | 2/5/2021 6:23:25 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 6:10:33 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 6:10:33 PM | R75132 |
| Sulfate | 1300 | 25 | * | mg/L | 50 | 2/9/2021 11:51:07 AM | R75187 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 2790 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.024 | 0.0030 | | mg/L | 1 | 2/10/2021 9:34:37 AM | 57999 |
| Chromium | 0.013 | 0.0060 | | mg/L | 1 | 2/15/2021 12:28:20 PM | 57999 |
| Iron | 3.3 | 0.25 | * | mg/L | 5 | 2/15/2021 12:43:09 PM | 57999 |
| Manganese | 4.4 | 0.010 | * | mg/L | 5 | 2/10/2021 9:38:37 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:39:19 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Acenaphthylene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Acenaphthene | 3.3 | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Fluorene | 9.0 | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Phenanthrene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Anthracene | 1.5 | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Fluoranthene | ND | 1.0 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Pyrene | 1.1 | 1.0 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Chrysene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 1.0 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-4
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 11:20:00 AM
**Lab ID:** 2102310-004 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 1.0 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.35 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.50 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 1.5 | | µg/L | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 86.5 | 26.3-112 | | %Rec | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 72.0 | 21.1-110 | | %Rec | 1 | 2/16/2021 6:51:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 105 | 17.6-167 | | %Rec | 1 | 2/16/2021 6:51:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Toluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Ethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Naphthalene | ND | 10 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 2-Methylnaphthalene | ND | 20 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Acetone | ND | 50 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Bromobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Bromodichloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Bromoform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Bromomethane | ND | 15 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 2-Butanone | ND | 50 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Carbon disulfide | ND | 50 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Carbon Tetrachloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Chlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Chloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Chloroform | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Chloromethane | ND | 15 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 2-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 4-Chlorotoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| cis-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| cis-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Dibromochloromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Dibromomethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-4
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 11:20:00 AM
**Lab ID:** 2102310-004 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,3-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,4-Dichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Dichlorodifluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,1-Dichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,1-Dichloroethene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,3-Dichloropropane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 2,2-Dichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,1-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Hexachlorobutadiene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 2-Hexanone | ND | 50 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Isopropylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 4-Isopropyltoluene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 4-Methyl-2-pentanone | ND | 50 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Methylene Chloride | ND | 15 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| n-Butylbenzene | ND | 15 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| n-Propylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| sec-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Styrene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| tert-Butylbenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 10 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Tetrachloroethene (PCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| trans-1,2-DCE | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| trans-1,3-Dichloropropene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,1,1-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,1,2-Trichloroethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Trichloroethene (TCE) | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Trichlorofluoromethane | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| 1,2,3-Trichloropropane | ND | 10 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Vinyl chloride | ND | 5.0 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Xylenes, Total | ND | 7.5 | D | µg/L | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 98.0 | 70-130 | D | %Rec | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Surr: 4-Bromofluorobenzene | 97.2 | 70-130 | D | %Rec | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Surr: Dibromofluoromethane | 98.6 | 70-130 | D | %Rec | 5 | 2/10/2021 8:40:55 PM | R75222 |
| Surr: Toluene-d8 | 99.6 | 70-130 | D | %Rec | 5 | 2/10/2021 8:40:55 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-5
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 11:45:00 AM
**Lab ID:** 2102310-005 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0028 | 0.0010 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| Lead | 0.0015 | 0.00050 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| Nickel | 0.015 | 0.0010 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:26:38 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 1.0 | 0.50 | | mg/L | 5 | 2/5/2021 6:36:17 PM | R75132 |
| Chloride | 91 | 2.5 | | mg/L | 5 | 2/5/2021 6:36:17 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 6:36:17 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 6:36:17 PM | R75132 |
| Sulfate | 1500 | 25 | * | mg/L | 50 | 2/9/2021 12:03:59 PM | R75187 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 2790 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.048 | 0.0030 | | mg/L | 1 | 2/10/2021 9:47:49 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 12:51:26 PM | 57999 |
| Iron | 1.8 | 0.25 | * | mg/L | 5 | 2/10/2021 9:49:08 AM | 57999 |
| Manganese | 5.7 | 0.020 | * | mg/L | 10 | 2/15/2021 12:53:31 PM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:46:24 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Acenaphthene | 0.22 | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Anthracene | 0.38 | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Pyrene | 0.28 | 0.20 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-5
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 11:45:00 AM
**Lab ID:** 2102310-005 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 70.5 | 26.3-112 | | %Rec | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 56.5 | 21.1-110 | | %Rec | 1 | 2/16/2021 7:34:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 109 | 17.6-167 | | %Rec | 1 | 2/16/2021 7:34:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Acetone | 23 | 10 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-5
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 11:45:00 AM
**Lab ID:** 2102310-005 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 109 | 70-130 | | %Rec | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Surr: 4-Bromofluorobenzene | 98.8 | 70-130 | | %Rec | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Surr: Dibromofluoromethane | 125 | 70-130 | | %Rec | 1 | 2/10/2021 9:08:11 PM | R75222 |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 2/10/2021 9:08:11 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-6
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:05:00 PM
**Lab ID:** 2102310-006 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| Lead | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| Nickel | 0.0058 | 0.0010 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:28:46 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.93 | 0.50 | | mg/L | 5 | 2/5/2021 7:28:25 PM | R75132 |
| Chloride | 97 | 2.5 | | mg/L | 5 | 2/5/2021 7:28:25 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 7:28:25 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 7:28:25 PM | R75132 |
| Sulfate | 1500 | 25 | * | mg/L | 50 | 2/9/2021 12:16:52 PM | R75187 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 2570 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.025 | 0.0030 | | mg/L | 1 | 2/10/2021 9:50:44 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 12:56:01 PM | 57999 |
| Iron | 1.6 | 0.25 | * | mg/L | 5 | 2/10/2021 9:51:58 AM | 57999 |
| Manganese | 2.1 | 0.010 | * | mg/L | 5 | 2/10/2021 9:51:58 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 11:34:24 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Anthracene | 0.64 | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Fluoranthene | 0.38 | 0.20 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Pyrene | 0.42 | 0.20 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-6
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:05:00 PM
**Lab ID:** 2102310-006 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 75.5 | 26.3-112 | | %Rec | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 60.5 | 21.1-110 | | %Rec | 1 | 2/16/2021 8:17:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 103 | 17.6-167 | | %Rec | 1 | 2/16/2021 8:17:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GRW-6
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/4/2021 12:05:00 PM
**Lab ID:** 2102310-006 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 103 | 70-130 | | %Rec | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Surr: 4-Bromofluorobenzene | 105 | 70-130 | | %Rec | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Surr: Dibromofluoromethane | 108 | 70-130 | | %Rec | 1 | 2/10/2021 9:35:25 PM | R75222 |
| Surr: Toluene-d8 | 100 | 70-130 | | %Rec | 1 | 2/10/2021 9:35:25 PM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-12
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:30:00 PM
**Lab ID:** 2102310-007 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.014 | 0.0010 | * | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| Lead | 0.0012 | 0.00050 | | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| Nickel | 0.0070 | 0.0010 | | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:30:51 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.74 | 0.50 | | mg/L | 5 | 2/5/2021 7:53:38 PM | R75132 |
| Chloride | 230 | 10 | | mg/L | 20 | 2/5/2021 8:06:30 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 7:53:38 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 7:53:38 PM | R75132 |
| Sulfate | 500 | 10 | * | mg/L | 20 | 2/5/2021 8:06:30 PM | R75132 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1880 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.087 | 0.0030 | | mg/L | 1 | 2/10/2021 9:53:27 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 12:58:12 PM | 57999 |
| Iron | 14 | 1.0 | * | mg/L | 20 | 2/15/2021 1:00:21 PM | 57999 |
| Manganese | 0.47 | 0.0020 | * | mg/L | 1 | 2/10/2021 9:53:27 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:53:29 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | 0.24 | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| 1-Methylnaphthalene | 0.18 | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Acenaphthene | 3.0 | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Fluorene | 1.3 | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Anthracene | 0.46 | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Fluoranthene | 0.34 | 0.20 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Pyrene | 0.30 | 0.20 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-12
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:30:00 PM
**Lab ID:** 2102310-007 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 79.0 | 26.3-112 | | %Rec | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 62.0 | 21.1-110 | | %Rec | 1 | 2/16/2021 9:57:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 99.0 | 17.6-167 | | %Rec | 1 | 2/16/2021 9:57:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Acetone | ND | 10 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GRW-12
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/4/2021 12:30:00 PM
**Lab ID:** 2102310-007 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **RAA** | |
| 1,2-Dichlorobenzene | 1.2 | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| tert-Butylbenzene | 1.7 | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Surr: 1,2-Dichloroethane-d4 | 99.5 | 70-130 | | %Rec | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Surr: 4-Bromofluorobenzene | 96.3 | 70-130 | | %Rec | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Surr: Dibromofluoromethane | 104 | 70-130 | | %Rec | 1 | 2/11/2021 7:37:02 PM | R75246 |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 2/11/2021 7:37:02 PM | R75246 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-13
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:33:00 PM
**Lab ID:** 2102310-008 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:37:12 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:37:12 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:37:12 PM | 57999 |
| Lead | 0.00059 | 0.00050 | | mg/L | 1 | 2/11/2021 12:37:12 PM | 57999 |
| Nickel | 0.015 | 0.0010 | | mg/L | 1 | 2/11/2021 12:37:12 PM | 57999 |
| Selenium | 0.017 | 0.0010 | | mg/L | 1 | 2/11/2021 3:49:22 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:37:12 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:37:12 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.85 | 0.10 | | mg/L | 1 | 2/5/2021 8:19:23 PM | R75132 |
| Chloride | 220 | 10 | | mg/L | 20 | 2/5/2021 8:32:16 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | mg/L | 1 | 2/5/2021 8:19:23 PM | R75132 |
| Nitrogen, Nitrate (As N) | 1.3 | 0.10 | | mg/L | 1 | 2/5/2021 8:19:23 PM | R75132 |
| Sulfate | 1900 | 25 | * | mg/L | 50 | 2/9/2021 12:29:43 PM | R75187 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3340 | 20.0 | * | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.0082 | 0.0030 | | mg/L | 1 | 2/10/2021 9:55:58 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 1:09:38 PM | 57999 |
| Iron | 0.32 | 0.050 | * | mg/L | 1 | 2/10/2021 9:55:58 AM | 57999 |
| Manganese | 1.1 | 0.010 | * | mg/L | 5 | 2/10/2021 9:57:35 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:55:52 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-13
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:33:00 PM
**Lab ID:** 2102310-008 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 74.5 | 26.3-112 | | %Rec | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 61.0 | 21.1-110 | | %Rec | 1 | 2/16/2021 10:41:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 102 | 17.6-167 | | %Rec | 1 | 2/16/2021 10:41:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-13
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:33:00 PM
**Lab ID:** 2102310-008 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 106 | 70-130 | | %Rec | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Surr: 4-Bromofluorobenzene | 94.7 | 70-130 | | %Rec | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Surr: Dibromofluoromethane | 119 | 70-130 | | %Rec | 1 | 2/11/2021 12:45:43 AM | R75222 |
| Surr: Toluene-d8 | 102 | 70-130 | | %Rec | 1 | 2/11/2021 12:45:43 AM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-11
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:45:00 PM
**Lab ID:** 2102310-009 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:39:18 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:39:18 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:39:18 PM | 57999 |
| Lead | 0.0024 | 0.00050 | | mg/L | 1 | 2/11/2021 12:39:18 PM | 57999 |
| Nickel | 0.0012 | 0.0010 | | mg/L | 1 | 2/11/2021 12:39:18 PM | 57999 |
| Selenium | 0.0020 | 0.0010 | | mg/L | 1 | 2/11/2021 3:55:41 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:39:18 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:39:18 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 1.3 | 0.50 | | mg/L | 5 | 2/5/2021 8:45:08 PM | R75132 |
| Chloride | 29 | 2.5 | | mg/L | 5 | 2/5/2021 8:45:08 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 8:45:08 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 8:45:08 PM | R75132 |
| Sulfate | 2400 | 50 | * | mg/L | 100 | 2/9/2021 12:42:36 PM | R75187 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3880 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.017 | 0.0030 | | mg/L | 1 | 2/10/2021 9:59:10 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 1:11:51 PM | 57999 |
| Iron | 5.9 | 0.50 | * | mg/L | 10 | 2/15/2021 1:14:01 PM | 57999 |
| Manganese | 2.4 | 0.010 | * | mg/L | 5 | 2/10/2021 10:00:30 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 10:58:17 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
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| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-11
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:45:00 PM
**Lab ID:** 2102310-009 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Surr: Nitrobenzene-d5 | 58.0 | 26.3-112 | | %Rec | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Surr: 2-Fluorobiphenyl | 50.5 | 21.1-110 | | %Rec | 1 | 2/16/2021 11:24:00 PM | 57991 |
| Surr: 4-Terphenyl-d14 | 106 | 17.6-167 | | %Rec | 1 | 2/16/2021 11:24:00 PM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-11
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 12:45:00 PM
**Lab ID:** 2102310-009 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 105 | 70-130 | | %Rec | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Surr: 4-Bromofluorobenzene | 101 | 70-130 | | %Rec | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Surr: Dibromofluoromethane | 112 | 70-130 | | %Rec | 1 | 2/11/2021 1:12:57 AM | R75222 |
| Surr: Toluene-d8 | 102 | 70-130 | | %Rec | 1 | 2/11/2021 1:12:57 AM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-10
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 1:15:00 PM
**Lab ID:** 2102310-010 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| Lead | 0.0015 | 0.00050 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| Nickel | 0.0044 | 0.0010 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| Selenium | ND | 0.0010 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| Silver | ND | 0.00050 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 2/11/2021 12:41:24 PM | 57999 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 1.1 | 0.50 | | mg/L | 5 | 2/5/2021 11:58:10 PM | R75132 |
| Chloride | 51 | 2.5 | | mg/L | 5 | 2/5/2021 11:58:10 PM | R75132 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 11:58:10 PM | R75132 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 2/5/2021 11:58:10 PM | R75132 |
| Sulfate | 2200 | 50 | * | mg/L | 100 | 2/9/2021 12:55:28 PM | R75187 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3460 | 40.0 | *D | mg/L | 1 | 2/11/2021 5:57:00 PM | 58047 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.017 | 0.0030 | | mg/L | 1 | 2/10/2021 10:07:58 AM | 57999 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 2/15/2021 1:16:09 PM | 57999 |
| Iron | 1.8 | 0.25 | * | mg/L | 5 | 2/10/2021 10:09:18 AM | 57999 |
| Manganese | 1.0 | 0.010 | * | mg/L | 5 | 2/10/2021 10:09:18 AM | 57999 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 2/12/2021 11:00:42 AM | 58036 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Pyrene | 0.22 | 0.20 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Benzo(b)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-10
**Project:** 2021 Giant Former Refinery **Collection Date:** 2/4/2021 1:15:00 PM
**Lab ID:** 2102310-010 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.20 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Surr: Nitrobenzene-d5 | 65.0 | 26.3-112 | | %Rec | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Surr: 2-Fluorobiphenyl | 54.5 | 21.1-110 | | %Rec | 1 | 2/17/2021 12:08:00 AM | 57991 |
| Surr: 4-Terphenyl-d14 | 101 | 17.6-167 | | %Rec | 1 | 2/17/2021 12:08:00 AM | 57991 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GRW-10
**Project:** 2021 Giant Former Refinery
**Collection Date:** 2/4/2021 1:15:00 PM
**Lab ID:** 2102310-010 **Matrix:** AQUEOUS **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Surr: 1,2-Dichloroethane-d4 | 109 | 70-130 | | %Rec | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Surr: 4-Bromofluorobenzene | 94.0 | 70-130 | | %Rec | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Surr: Dibromofluoromethane | 113 | 70-130 | | %Rec | 1 | 2/11/2021 1:40:00 AM | R75222 |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 2/11/2021 1:40:00 AM | R75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Trip Blank
**Project:** 2021 Giant Former Refinery **Collection Date:**
**Lab ID:** 2102310-011 **Matrix:** TRIP BLANK **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Toluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Acetone | ND | 10 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** Trip Blank
**Project:** 2021 Giant Former Refinery **Collection Date:**
**Lab ID:** 2102310-011 **Matrix:** TRIP BLANK **Received Date:** 2/5/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **BRM** | |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Styrene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Surr: 1,2-Dichloroethane-d4 | 104 | 70-130 | | %Rec | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Surr: 4-Bromofluorobenzene | 98.1 | 70-130 | | %Rec | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Surr: Dibromofluoromethane | 114 | 70-130 | | %Rec | 1 | 2/11/2021 2:07:14 AM | W75222 |
| Surr: Toluene-d8 | 100 | 70-130 | | %Rec | 1 | 2/11/2021 2:07:14 AM | W75222 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57999** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57999** | RunNo: **75197** |
| Prep Date: **2/9/2021** | Analysis Date: **2/10/2021** | SeqNo: **2655182** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | | | | | | | | |
| Iron | ND | 0.050 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |

| Sample ID: **LLLCS-57999** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **57999** | RunNo: **75197** |
| Prep Date: **2/9/2021** | Analysis Date: **2/10/2021** | SeqNo: **2655184** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | 0.002000 | 0 | 102 | 50 | 150 | | | |
| Iron | ND | 0.050 | 0.02000 | 0 | 111 | 50 | 150 | | | |
| Manganese | 0.0020 | 0.0020 | 0.002000 | 0 | 101 | 50 | 150 | | | |

| Sample ID: **LCS-57999** | SampType: **LCS** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57999** | RunNo: **75197** |
| Prep Date: **2/9/2021** | Analysis Date: **2/10/2021** | SeqNo: **2655186** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.49 | 0.0030 | 0.5000 | 0 | 97.3 | 85 | 115 | | | |
| Iron | 0.47 | 0.050 | 0.5000 | 0 | 94.3 | 85 | 115 | | | |
| Manganese | 0.47 | 0.0020 | 0.5000 | 0 | 94.5 | 85 | 115 | | | |

| Sample ID: **2102310-004DMS** | SampType: **MS** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **GRW-4** | Batch ID: **57999** | RunNo: **75197** |
| Prep Date: **2/9/2021** | Analysis Date: **2/10/2021** | SeqNo: **2655223** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.52 | 0.0030 | 0.5000 | 0.02434 | 98.8 | 70 | 130 | | | |

| Sample ID: **2102310-004DMSD** | SampType: **MSD** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **GRW-4** | Batch ID: **57999** | RunNo: **75197** |
| Prep Date: **2/9/2021** | Analysis Date: **2/10/2021** | SeqNo: **2655224** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.52 | 0.0030 | 0.5000 | 0.02434 | 99.1 | 70 | 130 | 0.279 | 20 | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **2102310-004DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GRW-4** Batch ID: **57999** RunNo: **75197**
Prep Date: **2/9/2021** Analysis Date: **2/10/2021** SeqNo: **2655226** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Manganese | 4.8 | 0.010 | 0.5000 | 4.383 | 93.2 | 70 | 130 | | | |

Sample ID: **2102310-004DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GRW-4** Batch ID: **57999** RunNo: **75197**
Prep Date: **2/9/2021** Analysis Date: **2/10/2021** SeqNo: **2655227** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Manganese | 4.8 | 0.010 | 0.5000 | 4.383 | 79.4 | 70 | 130 | 1.43 | 20 | |

Sample ID: **2102310-004DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GRW-4** Batch ID: **57999** RunNo: **75310**
Prep Date: **2/9/2021** Analysis Date: **2/15/2021** SeqNo: **2661067** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 0.52 | 0.0060 | 0.5000 | 0.01289 | 101 | 70 | 130 | | | |

Sample ID: **2102310-004DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GRW-4** Batch ID: **57999** RunNo: **75310**
Prep Date: **2/9/2021** Analysis Date: **2/15/2021** SeqNo: **2661071** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 0.52 | 0.0060 | 0.5000 | 0.01289 | 101 | 70 | 130 | 0.341 | 20 | |

Sample ID: **2102310-004DMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GRW-4** Batch ID: **57999** RunNo: **75310**
Prep Date: **2/9/2021** Analysis Date: **2/15/2021** SeqNo: **2661073** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 3.8 | 0.25 | 0.5000 | 3.299 | 98.9 | 70 | 130 | | | |

Sample ID: **2102310-004DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GRW-4** Batch ID: **57999** RunNo: **75310**
Prep Date: **2/9/2021** Analysis Date: **2/15/2021** SeqNo: **2661074** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 3.6 | 0.25 | 0.5000 | 3.299 | 58.7 | 70 | 130 | 5.45 | 20 | S |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-57999** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57999** | RunNo: **75323** |
| Prep Date: **2/9/2021** | Analysis Date: **2/16/2021** | SeqNo: **2661762** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | ND | 0.0060 | | | | | | | | |

| Sample ID: **LLLCS-57999** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **57999** | RunNo: **75323** |
| Prep Date: **2/9/2021** | Analysis Date: **2/16/2021** | SeqNo: **2661763** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 0.0069 | 0.0060 | 0.006000 | 0 | 114 | 50 | 150 | | | |

| Sample ID: **LCS-57999** | SampType: **LCS** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57999** | RunNo: **75323** |
| Prep Date: **2/9/2021** | Analysis Date: **2/16/2021** | SeqNo: **2661764** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 0.52 | 0.0060 | 0.5000 | 0 | 103 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-57999** SampType: **MBLK** TestCode: **EPA 200.8: Metals**
Client ID: **PBW** Batch ID: **57999** RunNo: **75231**
Prep Date: **2/9/2021** Analysis Date: **2/11/2021** SeqNo: **2656881** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | | | | | | | | |
| Beryllium | ND | 0.0010 | | | | | | | | |
| Cadmium | ND | 0.00050 | | | | | | | | |
| Lead | ND | 0.00050 | | | | | | | | |
| Nickel | ND | 0.0010 | | | | | | | | |
| Selenium | ND | 0.0010 | | | | | | | | |
| Silver | ND | 0.00050 | | | | | | | | |
| Thallium | ND | 0.00025 | | | | | | | | |

Sample ID: **MSLLLCS-57999** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **57999** RunNo: **75231**
Prep Date: **2/9/2021** Analysis Date: **2/11/2021** SeqNo: **2656882** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | 0.001000 | 0 | 99.0 | 50 | 150 | | | |
| Beryllium | ND | 0.0010 | 0.001000 | 0 | 90.1 | 50 | 150 | | | |
| Cadmium | 0.00050 | 0.00050 | 0.0005000 | 0 | 100 | 50 | 150 | | | |
| Lead | ND | 0.00050 | 0.0005000 | 0 | 94.2 | 50 | 150 | | | |
| Nickel | ND | 0.0010 | 0.001000 | 0 | 70.0 | 50 | 150 | | | |
| Selenium | 0.0010 | 0.0010 | 0.001000 | 0 | 103 | 50 | 150 | | | |
| Silver | ND | 0.00050 | 0.0005000 | 0 | 95.7 | 50 | 150 | | | |

Sample ID: **MSLCS-57999** SampType: **LCS** TestCode: **EPA 200.8: Metals**
Client ID: **LCSW** Batch ID: **57999** RunNo: **75231**
Prep Date: **2/9/2021** Analysis Date: **2/11/2021** SeqNo: **2656883** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.025 | 0.0010 | 0.02500 | 0 | 99.6 | 85 | 115 | | | |
| Beryllium | 0.024 | 0.0010 | 0.02500 | 0 | 97.7 | 85 | 115 | | | |
| Cadmium | 0.013 | 0.00050 | 0.01250 | 0 | 101 | 85 | 115 | | | |
| Lead | 0.013 | 0.00050 | 0.01250 | 0 | 103 | 85 | 115 | | | |
| Nickel | 0.025 | 0.0010 | 0.02500 | 0 | 101 | 85 | 115 | | | |
| Selenium | 0.025 | 0.0010 | 0.02500 | 0 | 101 | 85 | 115 | | | |
| Silver | 0.013 | 0.00050 | 0.01250 | 0 | 104 | 85 | 115 | | | |
| Thallium | 0.013 | 0.00025 | 0.01250 | 0 | 103 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MSLLLCS(TL)-57999** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **57999** RunNo: **75231**
Prep Date: **2/9/2021** Analysis Date: **2/11/2021** SeqNo: **2656884** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 0.00027 | 0.00025 | 0.0002500 | 0 | 107 | 50 | 150 | | | |

Sample ID: **2102310-010DMSLL** SampType: **MS** TestCode: **EPA 200.8: Metals**
Client ID: **GRW-10** Batch ID: **57999** RunNo: **75231**
Prep Date: **2/9/2021** Analysis Date: **2/11/2021** SeqNo: **2656924** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.027 | 0.0010 | 0.02500 | 0.0003973 | 105 | 70 | 130 | | | |
| Beryllium | 0.023 | 0.0010 | 0.02500 | 0 | 92.5 | 70 | 130 | | | |
| Cadmium | 0.012 | 0.00050 | 0.01250 | 0 | 94.1 | 70 | 130 | | | |
| Lead | 0.015 | 0.00050 | 0.01250 | 0.001471 | 107 | 70 | 130 | | | |
| Nickel | 0.031 | 0.0010 | 0.02500 | 0.004427 | 105 | 70 | 130 | | | |
| Silver | 0.012 | 0.00050 | 0.01250 | 0 | 93.4 | 70 | 130 | | | |
| Thallium | 0.013 | 0.00025 | 0.01250 | 0 | 105 | 70 | 130 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-58036** | SampType: **MBLK** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **58036** | RunNo: **75260** |
| Prep Date: **2/10/2021** | Analysis Date: **2/12/2021** | SeqNo: **2658168** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | | | | | | | | |

| Sample ID: **LLLCS-58036** | SampType: **LCSLL** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **58036** | RunNo: **75260** |
| Prep Date: **2/10/2021** | Analysis Date: **2/12/2021** | SeqNo: **2658169** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | 0.0001500 | 0 | 56.2 | 50 | 150 | | | |

| Sample ID: **LCS-58036** | SampType: **LCS** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **58036** | RunNo: **75260** |
| Prep Date: **2/10/2021** | Analysis Date: **2/12/2021** | SeqNo: **2658170** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0046 | 0.00020 | 0.005000 | 0 | 91.1 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75132** | RunNo: **75132** |
| Prep Date: | Analysis Date: **2/5/2021** | SeqNo: **2652180** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 0.10 | | | | | | | | |
| Chloride | ND | 0.50 | | | | | | | | |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | | | | | | | |
| Nitrogen, Nitrate (As N) | ND | 0.10 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75132** | RunNo: **75132** |
| Prep Date: | Analysis Date: **2/5/2021** | SeqNo: **2652181** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 0.50 | 0.10 | 0.5000 | 0 | 100 | 90 | 110 | | | |
| Chloride | 4.7 | 0.50 | 5.000 | 0 | 93.6 | 90 | 110 | | | |
| Nitrogen, Nitrite (As N) | 0.94 | 0.10 | 1.000 | 0 | 94.3 | 90 | 110 | | | |
| Nitrogen, Nitrate (As N) | 2.4 | 0.10 | 2.500 | 0 | 97.5 | 90 | 110 | | | |
| Sulfate | 9.4 | 0.50 | 10.00 | 0 | 94.3 | 90 | 110 | | | |

| Sample ID: **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75187** | RunNo: **75187** |
| Prep Date: | Analysis Date: **2/9/2021** | SeqNo: **2654873** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID: **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75187** | RunNo: **75187** |
| Prep Date: | Analysis Date: **2/9/2021** | SeqNo: **2654874** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 9.7 | 0.50 | 10.00 | 0 | 96.7 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R75222** RunNo: **75222**
Prep Date: Analysis Date: **2/10/2021** SeqNo: **2656576** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 22 | 1.0 | 20.00 | 0 | 112 | 70 | 130 | | | |
| Toluene | 20 | 1.0 | 20.00 | 0 | 97.6 | 70 | 130 | | | |
| Chlorobenzene | 19 | 1.0 | 20.00 | 0 | 95.9 | 70 | 130 | | | |
| 1,1-Dichloroethene | 20 | 1.0 | 20.00 | 0 | 101 | 70 | 130 | | | |
| Trichloroethene (TCE) | 19 | 1.0 | 20.00 | 0 | 95.5 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 11 | | 10.00 | | 107 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.9 | | 10.00 | | 99.5 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 111 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.7 | | 10.00 | | 97.1 | 70 | 130 | | | |

Sample ID: **100ng lcs2** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R75222** RunNo: **75222**
Prep Date: Analysis Date: **2/10/2021** SeqNo: **2656577** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 22 | 1.0 | 20.00 | 0 | 109 | 70 | 130 | | | |
| Toluene | 20 | 1.0 | 20.00 | 0 | 98.3 | 70 | 130 | | | |
| Chlorobenzene | 19 | 1.0 | 20.00 | 0 | 94.6 | 70 | 130 | | | |
| 1,1-Dichloroethene | 20 | 1.0 | 20.00 | 0 | 102 | 70 | 130 | | | |
| Trichloroethene (TCE) | 18 | 1.0 | 20.00 | 0 | 91.6 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 10 | | 10.00 | | 100 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 106 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.6 | | 10.00 | | 96.5 | 70 | 130 | | | |

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R75222** RunNo: **75222**
Prep Date: Analysis Date: **2/10/2021** SeqNo: **2656603** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75222** | RunNo: **75222** |
| Prep Date: | Analysis Date: **2/10/2021** | SeqNo: **2656603** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75222** | RunNo: **75222** |
| Prep Date: | Analysis Date: **2/10/2021** | SeqNo: **2656603** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 11 | | 10.00 | | 110 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 104 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 112 | 70 | 130 | | | |
| Surr: Toluene-d8 | 11 | | 10.00 | | 107 | 70 | 130 | | | |

| Sample ID: **mb2** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **W75222** | RunNo: **75222** |
| Prep Date: | Analysis Date: **2/10/2021** | SeqNo: **2656604** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb2** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **W75222** | RunNo: **75222** |
| Prep Date: | Analysis Date: **2/10/2021** | SeqNo: **2656604** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb2** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **W75222** | RunNo: **75222** |
| Prep Date: | Analysis Date: **2/10/2021** | SeqNo: **2656604** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 10 | | 10.00 | | 103 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 108 | 70 | 130 | | | |
| Surr: Toluene-d8 | 10 | | 10.00 | | 103 | 70 | 130 | | | |

| Sample ID: **100ng lcs2** | SampType: **LCS** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R75246** | RunNo: **75246** |
| Prep Date: | Analysis Date: **2/11/2021** | SeqNo: **2657558** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 22 | 1.0 | 20.00 | 0 | 111 | 70 | 130 | | | |
| Toluene | 20 | 1.0 | 20.00 | 0 | 98.5 | 70 | 130 | | | |
| Chlorobenzene | 19 | 1.0 | 20.00 | 0 | 95.0 | 70 | 130 | | | |
| 1,1-Dichloroethene | 21 | 1.0 | 20.00 | 0 | 104 | 70 | 130 | | | |
| Trichloroethene (TCE) | 19 | 1.0 | 20.00 | 0 | 97.0 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 11 | | 10.00 | | 108 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.8 | | 10.00 | | 98.3 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 114 | 70 | 130 | | | |
| Surr: Toluene-d8 | 9.8 | | 10.00 | | 97.8 | 70 | 130 | | | |

| Sample ID: **mb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75246** | RunNo: **75246** |
| Prep Date: | Analysis Date: **2/11/2021** | SeqNo: **2657559** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 1.0 | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75246** | RunNo: **75246** |
| Prep Date: | Analysis Date: **2/11/2021** | SeqNo: **2657559** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1.0 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | |
| 1-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 4.0 | | | | | | | | |
| Acetone | ND | 10 | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | |
| 2-Butanone | ND | 10 | | | | | | | | |
| Carbon disulfide | ND | 10 | | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 2.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | |
| 2-Chlorotoluene | ND | 1.0 | | | | | | | | |
| 4-Chlorotoluene | ND | 1.0 | | | | | | | | |
| cis-1,2-DCE | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dibromomethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | |
| 2,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | |
| Hexachlorobutadiene | ND | 1.0 | | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R75246** | RunNo: **75246** |
| Prep Date: | Analysis Date: **2/11/2021** | SeqNo: **2657559** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Hexanone | ND | 10 | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | |
| 4-Isopropyltoluene | ND | 1.0 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 10 | | | | | | | | |
| Methylene Chloride | ND | 3.0 | | | | | | | | |
| n-Butylbenzene | ND | 3.0 | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | |
| sec-Butylbenzene | ND | 1.0 | | | | | | | | |
| Styrene | ND | 1.0 | | | | | | | | |
| tert-Butylbenzene | ND | 1.0 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 1.0 | | | | | | | | |
| trans-1,2-DCE | ND | 1.0 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| Trichloroethene (TCE) | ND | 1.0 | | | | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 2.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| Xylenes, Total | ND | 1.5 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 11 | | 10.00 | | 110 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 9.2 | | 10.00 | | 92.3 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 112 | 70 | 130 | | | |
| Surr: Toluene-d8 | 11 | | 10.00 | | 107 | 70 | 130 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **mb-57991** | SampType: **MBLK** | TestCode: **EPA Method 8270SIM** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **57991** | RunNo: **75376** |
| Prep Date: **2/9/2021** | Analysis Date: **2/16/2021** | SeqNo: **2663900** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | 0.10 | | | | | | | | |
| 1-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.10 | | | | | | | | |
| Acenaphthylene | ND | 0.10 | | | | | | | | |
| Acenaphthene | ND | 0.10 | | | | | | | | |
| Fluorene | ND | 0.10 | | | | | | | | |
| Phenanthrene | ND | 0.10 | | | | | | | | |
| Anthracene | ND | 0.10 | | | | | | | | |
| Fluoranthene | ND | 0.20 | | | | | | | | |
| Pyrene | ND | 0.20 | | | | | | | | |
| Benz(a)anthracene | ND | 0.10 | | | | | | | | |
| Chrysene | ND | 0.10 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.10 | | | | | | | | |
| Benzo(a)pyrene | ND | 0.070 | | | | | | | | |
| Dibenz(a,h)anthracene | ND | 0.10 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.10 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | | | | | | | |
| Surr: Nitrobenzene-d5 | 2.2 | | 4.000 | | 55.0 | 26.3 | 112 | | | |
| Surr: 2-Fluorobiphenyl | 2.1 | | 4.000 | | 53.0 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 3.6 | | 4.000 | | 90.5 | 17.6 | 167 | | | |

| Sample ID: **lcs-57991** | SampType: **LCS** | TestCode: **EPA Method 8270SIM** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **57991** | RunNo: **75376** |
| Prep Date: **2/9/2021** | Analysis Date: **2/16/2021** | SeqNo: **2663901** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 1.2 | 0.10 | 2.000 | 0 | 59.0 | 18.5 | 83.4 | | | |
| 1-Methylnaphthalene | 1.2 | 0.10 | 2.000 | 0 | 59.0 | 15.1 | 89.6 | | | |
| 2-Methylnaphthalene | 1.2 | 0.10 | 2.000 | 0 | 59.0 | 15 | 90.6 | | | |
| Acenaphthylene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 18.2 | 95.3 | | | |
| Acenaphthene | 1.2 | 0.10 | 2.000 | 0 | 60.0 | 23.9 | 90.3 | | | |
| Fluorene | 1.2 | 0.10 | 2.000 | 0 | 61.0 | 16.8 | 106 | | | |
| Phenanthrene | 1.3 | 0.10 | 2.000 | 0 | 64.0 | 23.3 | 105 | | | |
| Anthracene | 1.3 | 0.10 | 2.000 | 0 | 64.0 | 15 | 112 | | | |
| Fluoranthene | 1.5 | 0.20 | 2.000 | 0 | 74.0 | 15.4 | 138 | | | |
| Pyrene | 1.4 | 0.20 | 2.000 | 0 | 70.0 | 15 | 128 | | | |
| Benz(a)anthracene | 1.6 | 0.10 | 2.000 | 0 | 78.0 | 38.7 | 111 | | | |
| Chrysene | 1.6 | 0.10 | 2.000 | 0 | 79.0 | 32.6 | 96.6 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **lcs-57991** SampType: **LCS** TestCode: **EPA Method 8270SIM**
Client ID: **LCSW** Batch ID: **57991** RunNo: **75376**
Prep Date: **2/9/2021** Analysis Date: **2/16/2021** SeqNo: **2663901** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | 1.5 | 0.10 | 2.000 | 0 | 74.0 | 23.8 | 113 | | | |
| Benzo(k)fluoranthene | 1.5 | 0.10 | 2.000 | 0 | 76.0 | 18.3 | 114 | | | |
| Benzo(a)pyrene | 1.4 | 0.070 | 2.000 | 0 | 72.0 | 24.5 | 123 | | | |
| Dibenz(a,h)anthracene | 1.5 | 0.10 | 2.000 | 0 | 73.0 | 17.8 | 118 | | | |
| Benzo(g,h,i)perylene | 1.5 | 0.10 | 2.000 | 0 | 73.0 | 22.2 | 110 | | | |
| Indeno(1,2,3-cd)pyrene | 1.6 | 0.30 | 2.000 | 0 | 80.0 | 20.8 | 115 | | | |
| Surr: Nitrobenzene-d5 | 3.7 | | 5.000 | | 73.2 | 26.3 | 112 | | | |
| Surr: 2-Fluorobiphenyl | 3.5 | | 5.000 | | 70.8 | 21.1 | 110 | | | |
| Surr: 4-Terphenyl-d14 | 5.8 | | 5.000 | | 115 | 17.6 | 167 | | | |

Sample ID: **lcsd-57991** SampType: **LCSD** TestCode: **EPA Method 8270SIM**
Client ID: **LCSS02** Batch ID: **57991** RunNo: **75376**
Prep Date: **2/9/2021** Analysis Date: **2/16/2021** SeqNo: **2663902** Units: **µg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 1.4 | 0.10 | 2.000 | 0 | 70.0 | 18.5 | 83.4 | 17.1 | 20 | |
| 1-Methylnaphthalene | 1.4 | 0.10 | 2.000 | 0 | 70.0 | 15.1 | 89.6 | 17.1 | 20 | |
| 2-Methylnaphthalene | 1.4 | 0.10 | 2.000 | 0 | 70.0 | 15 | 90.6 | 17.1 | 20 | |
| Acenaphthylene | 1.4 | 0.10 | 2.000 | 0 | 71.0 | 18.2 | 95.3 | 16.8 | 20 | |
| Acenaphthene | 1.4 | 0.10 | 2.000 | 0 | 72.0 | 23.9 | 90.3 | 18.2 | 20 | |
| Fluorene | 1.5 | 0.10 | 2.000 | 0 | 73.0 | 16.8 | 106 | 17.9 | 20 | |
| Phenanthrene | 1.5 | 0.10 | 2.000 | 0 | 74.0 | 23.3 | 105 | 14.5 | 20 | |
| Anthracene | 1.5 | 0.10 | 2.000 | 0 | 75.0 | 15 | 112 | 15.8 | 20 | |
| Fluoranthene | 1.7 | 0.20 | 2.000 | 0 | 84.0 | 15.4 | 138 | 12.7 | 20 | |
| Pyrene | 1.6 | 0.20 | 2.000 | 0 | 78.0 | 15 | 128 | 10.8 | 20 | |
| Benz(a)anthracene | 1.7 | 0.10 | 2.000 | 0 | 86.0 | 38.7 | 111 | 9.76 | 20 | |
| Chrysene | 1.7 | 0.10 | 2.000 | 0 | 85.0 | 32.6 | 96.6 | 7.32 | 20 | |
| Benzo(b)fluoranthene | 1.6 | 0.10 | 2.000 | 0 | 81.0 | 23.8 | 113 | 9.03 | 20 | |
| Benzo(k)fluoranthene | 1.7 | 0.10 | 2.000 | 0 | 83.0 | 18.3 | 114 | 8.81 | 20 | |
| Benzo(a)pyrene | 1.6 | 0.070 | 2.000 | 0 | 78.0 | 24.5 | 123 | 8.00 | 20 | |
| Dibenz(a,h)anthracene | 1.6 | 0.10 | 2.000 | 0 | 80.0 | 17.8 | 118 | 9.15 | 20 | |
| Benzo(g,h,i)perylene | 1.6 | 0.10 | 2.000 | 0 | 80.0 | 22.2 | 110 | 9.15 | 20 | |
| Indeno(1,2,3-cd)pyrene | 1.7 | 0.30 | 2.000 | 0 | 84.0 | 20.8 | 115 | 4.88 | 20 | |
| Surr: Nitrobenzene-d5 | 4.2 | | 5.000 | | 84.4 | 26.3 | 112 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 3.9 | | 5.000 | | 78.0 | 21.1 | 110 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 6.0 | | 5.000 | | 120 | 17.6 | 167 | 0 | 0 | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2102310**
***24-Feb-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-58047** | SampType: **MBLK** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **58047** | RunNo: **75241** |
| Prep Date: **2/10/2021** | Analysis Date: **2/11/2021** | SeqNo: **2657122** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

| Sample ID: **LCS-58047** | SampType: **LCS** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **58047** | RunNo: **75241** |
| Prep Date: **2/10/2021** | Analysis Date: **2/11/2021** | SeqNo: **2657123** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1060 | 20.0 | 1000 | 0 | 106 | 80 | 120 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

# Sample Log-In Check List

Client Name: Western Refining Southwest, Inc.

Work Order Number: 2102310

RcptNo: 1

Received By: Sean Livingston 2/5/2021 8:00:00 AM S Livingston

Completed By: Sean Livingston 2/5/2021 8:46:02 AM S Livingston

Reviewed By: DAD 02/08/21
(300 combo: ENM 2/5/21)

## Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

## Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

(300 combo: 10 <2) VVZ 2/5/20

## Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 0.9 | Good | Yes | | | |
| 2 | 1.3 | Good | Yes | | | |
| 3 | 2.1 | Good | Yes | | | |
| 4 | 1.4 | Good | Yes | | | |

# Chain-of-Custody Record

Client: Marathon
Greg McCartney
Mailing Address:

Phone #:
email or Fax#:
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush
Project Name:
2021 Giant Former Refinery
Project #:
Project Manager:
Stuart Hyde
Sampler: C. McGinn / E. Carroll
On Ice: ☑ Yes ☐ No
Sample Temperature: see remarks

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 2102310 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH's (8310 or 8270 SIMS) | RCRA 8 Metals | Anions ($F,Cl,NO_3,NO_2,PO_4,SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | See attached | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4.21 | 1000 | Aq | GRW-9 | Various | Various | 001 | | | | | | | | | | | | X | | | | |
| | 1035 | | GRW-2 | | | 002 | | | | | | | | | | | | X | | | | |
| | 1055 | | GRW-3 | | | 003 | | | | | | | | | | | | X | | | | |
| | 1120 | | GRW-4 | | | 004 | | | | | | | | | | | | X | | | | |
| | 1145 | | GRW-5 | | | 005 | | | | | | | | | | | | X | | | | |
| | 1205 | | GRW-6 | | | 006 | | | | | | | | | | | | X | | | | |
| | 1230 | | GRW-12 | | | 007 | | | | | | | | | | | | X | | | | |
| | 1233 | | GRW-13 | | | 008 | | | | | | | | | | | | X | | | | |
| | 1245 | | GRW-11 | | | 009 | | | | | | | | | | | | X | | | | |
| | 1315 | | GRW-10 | | | 010 | | | | | | | | | | | | X | | | | |
| | | | Trip Blank | | | 011 | | | | | | | | | | | | | | | | |
| | | | -IO 081262021 | | | | | | | | | | | | | | | | | | | |

| Date: | Time: | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 2.4.21 | 1410 | Caitlin McGinn | Christine Walker | 2/4/21 | 1410 |
| 2/4/21 | 1811 | Christine Walker | Stac courier | 2/5/21 | 8:00 |

Remarks: cc: Stuart.hyde@wsp.com
Caitlin.mcginn@wsp.com
eric.carroll@wsp.com
Quote # 2112 1.1-0.2=0.9 2.3-0.2=2.1 1.5-0.2=1.3 1.6-0.2=1.4

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

| Recommended Analyte List for GBR Site-Wide Sampling Event | |
|---|---|
| **VOCs Method 8260** | **PAHs Method 8270** |
| benzene | naphthalene |
| toluene | 1-methylnaphthalene |
| ethylbenzene | 2-methylnaphthalene |
| methyl tert-butyl ether (MTBE) | acenaphthylene |
| 1,2,4-trimethylbenzene | acenaphthene |
| 1,3,5-trimethylbenzene | fluorene |
| 1,2-dichloroethane (EDC) | phenanthrene |
| 1,2-dibromoethane (EDB) | anthracene |
| naphthalene | fluoranthene |
| 1-methylnaphthalene | pyrene |
| 2-methylnaphthalene | benz(a)anthracene |
| acetone | chrysene |
| bromobenzene | benzo(b)fluoranthene |
| bromodichloromethane | benzo(k)fluoranthene |
| bromoform | benzo(a)pyrene |
| bromomethane | dibenz(a,h)anthracene |
| 2-butanone | benzo(g,h,i)perylene |
| carbon disulfide | indeno(1,2,3-cd)pyrene |
| carbon tetrachloride | **Anions Method 300.0** |
| chlorobenzene | chloride |
| chloroethane | sulfate |
| chloroform | fluoride |
| chloromethane | nitrate + nitrite as N |
| 2-chlorotoluene | **Metals Method 200.7** |
| 4-chlorotoluene | barium* |
| cis-1,2-dichloroethene (cis-1,2-DCE) | beryllium |
| cis-1,3-dichloropropene | cadmium* |
| 1,2-dibromo-3-chloropropane | chromium* |
| dibromochloromethane | iron |
| dibromomethane | manganese |
| 1,2-dichlorobenzene | nickel |
| 1,3-dichlorobenzene | silver* |
| 1,4-dichlorobenzene | **Metals Method 200.8** |
| dichlorodifluoromethane | arsenic* |
| 1,1-dichloroethane | lead* |
| 1,1-dichloroethene (1,1-DCE) | selenium* |
| 1,2-dichloropropane | thallium |
| 1,3-dichloropropane | **Mercury** |
| 2,2-dichloropropane | Mercury* |
| 1,1-dichloropropene | **Total Dissolved Solids Method M2540C** |
| hexachlorobutadiene | total dissolved solids |
| 2-hexanone | |
| isopropylbenzene | |
| 4-isopropytoluene | |
| 4-methyl-2-pentanone | |
| methylene chloride | |
| n-butylbenzene | |
| n-propylbenzene | |
| sec-butylbenzene | |
| styrene | |
| tert-butylbenzene | |
| 1,1,1,2-tetrachloroethane | |
| 1,1,2,2-tetrachloroethane | |
| tetrachloroethene (PCE) | |
| trans-1,2-dichloroethene (trans-1,2-DCE) | |
| trans-1,3-dichloropropene | |
| 1,2,3-trichlorobenzene | |
| 1,2,4-trichlorobenzene | |
| 1,1,1-trichloroethane | |
| 1,1,2-trichloroethane | |
| trichloroethene (TCE) | |
| trichlorofluoromethane | |
| 1,2,3-trichloropropane | |
| vinyl chloride | |
| xylenes, total | |

* - asterisks denotes RCRA 8 Metal

**Analytical Report**
Lab Order **2103574**
Date Reported:

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-18
**Project:** 2021 Giant Former Refinery
**Collection Date:** 3/10/2021 12:30:00 PM
**Lab ID:** 2103574-001 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0050 | | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| Beryllium | ND | 0.0050 | | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| Cadmium | ND | 0.0025 | | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| Lead | 0.031 | 0.0025 | * | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| Nickel | 0.020 | 0.0050 | | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| Selenium | ND | 0.0050 | | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| Silver | ND | 0.0025 | | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| Thallium | ND | 0.0012 | | mg/L | 5 | 3/15/2021 12:55:36 PM | 58685 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | ND | 0.50 | | mg/L | 5 | 3/11/2021 2:45:51 PM | R75889 |
| Chloride | 43 | 2.5 | | mg/L | 5 | 3/11/2021 2:45:51 PM | R75889 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 3/11/2021 2:45:51 PM | R75889 |
| Nitrogen, Nitrate (As N) | 1.8 | 0.50 | | mg/L | 5 | 3/11/2021 2:45:51 PM | R75889 |
| Sulfate | 190 | 2.5 | | mg/L | 5 | 3/11/2021 2:45:51 PM | R75889 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 5100 | 200 | *D | mg/L | 1 | 3/16/2021 3:31:00 PM | 58717 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.040 | 0.0030 | | mg/L | 1 | 3/13/2021 9:57:47 AM | 58685 |
| Chromium | 0.013 | 0.0060 | | mg/L | 1 | 3/13/2021 9:57:47 AM | 58685 |
| Iron | 68 | 5.0 | * | mg/L | 100 | 3/13/2021 11:00:58 AM | 58685 |
| Manganese | 0.25 | 0.0020 | * | mg/L | 1 | 3/13/2021 9:57:47 AM | 58685 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 3/12/2021 2:36:09 PM | 58690 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| 1-Methylnaphthalene | 0.18 | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Fluorene | 0.26 | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-18
**Project:** 2021 Giant Former Refinery **Collection Date:** 3/10/2021 12:30:00 PM
**Lab ID:** 2103574-001 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Surr: Nitrobenzene-d5 | 60.0 | 26.3-112 | | %Rec | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Surr: 2,4,6-Tribromophenol | 0 | 27.7-118 | S | %Rec | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Surr: 2-Fluorobiphenyl | 57.5 | 21.1-110 | | %Rec | 1 | 3/16/2021 11:42:00 PM | 58709 |
| Surr: 4-Terphenyl-d14 | 83.0 | 17.6-167 | | %Rec | 1 | 3/16/2021 11:42:00 PM | 58709 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Toluene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Ethylbenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Naphthalene | ND | 2.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1-Methylnaphthalene | ND | 4.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 2-Methylnaphthalene | ND | 4.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Acetone | ND | 10 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Bromobenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Bromodichloromethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Bromoform | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Bromomethane | ND | 3.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 2-Butanone | ND | 10 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Carbon disulfide | ND | 10 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Carbon Tetrachloride | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Chlorobenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Chloroethane | ND | 2.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Chloroform | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Chloromethane | ND | 3.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 2-Chlorotoluene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 4-Chlorotoluene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| cis-1,2-DCE | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| cis-1,3-Dichloropropene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Dibromochloromethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-18
**Project:** 2021 Giant Former Refinery **Collection Date:** 3/10/2021 12:30:00 PM
**Lab ID:** 2103574-001 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Dibromomethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2-Dichlorobenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,3-Dichlorobenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,4-Dichlorobenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Dichlorodifluoromethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,1-Dichloroethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,1-Dichloroethene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2-Dichloropropane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,3-Dichloropropane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 2,2-Dichloropropane | ND | 2.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,1-Dichloropropene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Hexachlorobutadiene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 2-Hexanone | ND | 10 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Isopropylbenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 4-Isopropyltoluene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 4-Methyl-2-pentanone | ND | 10 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Methylene Chloride | ND | 3.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| n-Butylbenzene | ND | 3.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| n-Propylbenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| sec-Butylbenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Styrene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| tert-Butylbenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Tetrachloroethene (PCE) | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| trans-1,2-DCE | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| trans-1,3-Dichloropropene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,1,1-Trichloroethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,1,2-Trichloroethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Trichloroethene (TCE) | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Trichlorofluoromethane | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| 1,2,3-Trichloropropane | ND | 2.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Vinyl chloride | ND | 1.0 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Xylenes, Total | ND | 1.5 | P | µg/L | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Surr: 1,2-Dichloroethane-d4 | 97.8 | 70-130 | P | %Rec | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Surr: 4-Bromofluorobenzene | 94.0 | 70-130 | P | %Rec | 1 | 3/16/2021 2:07:14 AM | A75948 |
| Surr: Dibromofluoromethane | 98.9 | 70-130 | P | %Rec | 1 | 3/16/2021 2:07:14 AM | A75948 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-18
**Project:** 2021 Giant Former Refinery
**Collection Date:** 3/10/2021 12:30:00 PM
**Lab ID:** 2103574-001 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Surr: Toluene-d8 | 103 | 70-130 | P | %Rec | 1 | 3/16/2021 2:07:14 AM | A75948 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-1
**Project:** 2021 Giant Former Refinery **Collection Date:** 3/10/2021 1:00:00 PM
**Lab ID:** 2103574-002 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0020 | 0.0010 | | mg/L | 1 | 3/15/2021 11:41:37 AM | 58685 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 3/15/2021 11:41:37 AM | 58685 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 3/15/2021 11:41:37 AM | 58685 |
| Lead | 0.0011 | 0.00050 | | mg/L | 1 | 3/15/2021 11:41:37 AM | 58685 |
| Nickel | 0.012 | 0.0050 | | mg/L | 5 | 3/15/2021 12:57:59 PM | 58685 |
| Selenium | 0.0024 | 0.0010 | | mg/L | 1 | 3/15/2021 11:41:37 AM | 58685 |
| Silver | ND | 0.00050 | | mg/L | 1 | 3/15/2021 11:41:37 AM | 58685 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 3/15/2021 11:41:37 AM | 58685 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.85 | 0.50 | | mg/L | 5 | 3/11/2021 3:11:35 PM | R75889 |
| Chloride | 40 | 2.5 | | mg/L | 5 | 3/11/2021 3:11:35 PM | R75889 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 3/11/2021 3:11:35 PM | R75889 |
| Nitrogen, Nitrate (As N) | ND | 0.50 | | mg/L | 5 | 3/11/2021 3:11:35 PM | R75889 |
| Sulfate | 2100 | 50 | * | mg/L | 100 | 3/16/2021 10:41:25 AM | R75965 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **MH** | |
| Total Dissolved Solids | 3540 | 20.0 | * | mg/L | 1 | 3/16/2021 3:31:00 PM | 58717 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.014 | 0.0030 | | mg/L | 1 | 3/13/2021 10:00:25 AM | 58685 |
| Chromium | ND | 0.0060 | | mg/L | 1 | 3/13/2021 10:00:25 AM | 58685 |
| Iron | 0.86 | 0.050 | * | mg/L | 1 | 3/13/2021 10:00:25 AM | 58685 |
| Manganese | 2.9 | 0.010 | * | mg/L | 5 | 3/13/2021 10:02:00 AM | 58685 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 3/12/2021 2:38:33 PM | 58690 |
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Naphthalene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| 1-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| 2-Methylnaphthalene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Acenaphthylene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Acenaphthene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Fluorene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Phenanthrene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Anthracene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Fluoranthene | ND | 0.20 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Pyrene | ND | 0.20 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Benz(a)anthracene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Chrysene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Benzo(b)fluoranthene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-1
**Project:** 2021 Giant Former Refinery **Collection Date:** 3/10/2021 1:00:00 PM
**Lab ID:** 2103574-002 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8270SIM** | | | | | | Analyst: **DAM** | |
| Benzo(k)fluoranthene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Benzo(a)pyrene | ND | 0.070 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Dibenz(a,h)anthracene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Benzo(g,h,i)perylene | ND | 0.10 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Indeno(1,2,3-cd)pyrene | ND | 0.30 | | µg/L | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Surr: Nitrobenzene-d5 | 52.5 | 26.3-112 | | %Rec | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Surr: 2,4,6-Tribromophenol | 0 | 27.7-118 | S | %Rec | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Surr: 2-Fluorobiphenyl | 49.5 | 21.1-110 | | %Rec | 1 | 3/17/2021 12:25:00 AM | 58709 |
| Surr: 4-Terphenyl-d14 | 74.5 | 17.6-167 | | %Rec | 1 | 3/17/2021 12:25:00 AM | 58709 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Toluene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Acetone | ND | 10 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-1
**Project:** 2021 Giant Former Refinery **Collection Date:** 3/10/2021 1:00:00 PM
**Lab ID:** 2103574-002 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Styrene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Surr: 1,2-Dichloroethane-d4 | 91.0 | 70-130 | | %Rec | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Surr: 4-Bromofluorobenzene | 99.8 | 70-130 | | %Rec | 1 | 3/16/2021 2:35:49 AM | A75948 |
| Surr: Dibromofluoromethane | 95.7 | 70-130 | | %Rec | 1 | 3/16/2021 2:35:49 AM | A75948 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GRW-1
**Project:** 2021 Giant Former Refinery **Collection Date:** 3/10/2021 1:00:00 PM
**Lab ID:** 2103574-002 **Matrix:** AQUEOUS **Received Date:** 3/11/2021 7:50:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **JMR** | |
| Surr: Toluene-d8 | 108 | 70-130 | | %Rec | 1 | 3/16/2021 2:35:49 AM | A75948 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# APPENDIX B – UPGRADIENT BLM SPLIT SAMPLING ANALYTICAL LABORATORY REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

April 20, 2021

Gregory McCartney
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX: (505) 632-3911

RE: 2021 Giant Former Refinery OrderNo.: 2104244

Dear Gregory McCartney:

Hall Environmental Analysis Laboratory received 4 sample(s) on 4/7/2021 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-48
**Project:** 2021 Giant Former Refinery **Collection Date:** 4/6/2021 9:15:00 AM
**Lab ID:** 2104244-001 **Matrix:** AQUEOUS **Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: DISSOLVED METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| Chromium | 0.0016 | 0.0010 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| Lead | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| Nickel | 0.041 | 0.0010 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| Selenium | 0.012 | 0.0010 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| Thallium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:00:14 PM | A76553 |
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0028 | 0.0010 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| Chromium | 0.042 | 0.0010 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| Lead | 0.0082 | 0.00050 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| Nickel | 0.058 | 0.0050 | | mg/L | 5 | 4/12/2021 11:37:20 AM | 59306 |
| Selenium | 0.015 | 0.0010 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| Silver | ND | 0.00050 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 4/12/2021 11:15:46 AM | 59306 |
| **SM 5310B: DOC** | | | | | | Analyst: **AG** | |
| Organic Carbon, Dissolved | 1.6 | 1.0 | | mg/L | 1 | 4/13/2021 12:11:15 AM | A76640 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | ND | 0.50 | | mg/L | 5 | 4/7/2021 3:58:16 PM | R76513 |
| Chloride | 290 | 10 | * | mg/L | 20 | 4/7/2021 4:11:08 PM | R76513 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 4/7/2021 3:58:16 PM | R76513 |
| Nitrogen, Nitrate (As N) | 2.8 | 0.50 | | mg/L | 5 | 4/7/2021 3:58:16 PM | R76513 |
| Sulfate | 1700 | 50 | * | mg/L | 100 | 4/9/2021 8:18:25 PM | R76591 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3410 | 100 | *D | mg/L | 1 | 4/9/2021 2:30:00 PM | 59292 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.012 | 0.0020 | | mg/L | 1 | 4/8/2021 10:39:36 AM | A76547 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/8/2021 10:39:36 AM | A76547 |
| Manganese | ND | 0.0020 | | mg/L | 1 | 4/8/2021 10:39:36 AM | A76547 |
| Silver | ND | 0.0050 | | mg/L | 1 | 4/12/2021 9:08:18 AM | B76619 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.12 | 0.0030 | | mg/L | 1 | 4/9/2021 9:22:39 AM | 59306 |
| Iron | 17 | 1.0 | * | mg/L | 20 | 4/9/2021 9:33:22 AM | 59306 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-48
**Project:** 2021 Giant Former Refinery
**Collection Date:** 4/6/2021 9:15:00 AM
**Lab ID:** 2104244-001 **Matrix:** AQUEOUS **Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Manganese | 0.38 | 0.0020 | * | mg/L | 1 | 4/9/2021 9:22:39 AM | 59306 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 4/12/2021 2:37:42 PM | 59342 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-50
**Project:** 2021 Giant Former Refinery **Collection Date:** 4/6/2021 10:15:00 AM
**Lab ID:** 2104244-002 **Matrix:** AQUEOUS **Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: DISSOLVED METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| Chromium | 0.0012 | 0.0010 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| Lead | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| Nickel | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| Selenium | 0.011 | 0.0010 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| Thallium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:02:56 PM | A76553 |
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Chromium | 0.0023 | 0.0010 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Lead | ND | 0.00050 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Nickel | 0.0014 | 0.0010 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Selenium | 0.011 | 0.0010 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Silver | ND | 0.00050 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 4/12/2021 11:18:09 AM | 59306 |
| **SM 5310B: DOC** | | | | | | Analyst: **AG** | |
| Organic Carbon, Dissolved | ND | 1.0 | | mg/L | 1 | 4/13/2021 12:28:47 AM | A76640 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.17 | 0.10 | | mg/L | 1 | 4/7/2021 4:24:02 PM | R76513 |
| Chloride | 68 | 10 | | mg/L | 20 | 4/7/2021 4:36:54 PM | R76513 |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | mg/L | 1 | 4/7/2021 4:24:02 PM | R76513 |
| Nitrogen, Nitrate (As N) | 8.9 | 2.0 | | mg/L | 20 | 4/7/2021 4:36:54 PM | R76513 |
| Sulfate | 1800 | 25 | * | mg/L | 50 | 4/9/2021 8:30:50 PM | R76591 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3100 | 20.0 | * | mg/L | 1 | 4/9/2021 2:30:00 PM | 59292 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.0080 | 0.0020 | | mg/L | 1 | 4/8/2021 10:42:44 AM | A76547 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/8/2021 10:42:44 AM | A76547 |
| Manganese | 0.0093 | 0.0020 | | mg/L | 1 | 4/8/2021 10:42:44 AM | A76547 |
| Silver | ND | 0.0050 | | mg/L | 1 | 4/12/2021 9:09:42 AM | B76619 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.0091 | 0.0030 | | mg/L | 1 | 4/9/2021 9:23:58 AM | 59306 |
| Iron | 0.060 | 0.050 | | mg/L | 1 | 4/9/2021 9:23:58 AM | 59306 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-50
**Project:** 2021 Giant Former Refinery
**Collection Date:** 4/6/2021 10:15:00 AM
**Lab ID:** 2104244-002
**Matrix:** AQUEOUS
**Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Manganese | 0.018 | 0.0020 | | mg/L | 1 | 4/9/2021 9:23:58 AM | 59306 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 4/12/2021 2:40:05 PM | 59342 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-32
**Project:** 2021 Giant Former Refinery **Collection Date:** 4/6/2021 11:30:00 AM
**Lab ID:** 2104244-003 **Matrix:** AQUEOUS **Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: DISSOLVED METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| Chromium | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| Lead | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| Nickel | 0.034 | 0.0010 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| Selenium | 0.0014 | 0.0010 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| Thallium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:05:39 PM | A76553 |
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | 0.0013 | 0.0010 | | mg/L | 1 | 4/12/2021 11:20:33 AM | 59306 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/12/2021 11:20:33 AM | 59306 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/12/2021 11:20:33 AM | 59306 |
| Chromium | 0.13 | 0.0050 | * | mg/L | 5 | 4/12/2021 11:39:44 AM | 59306 |
| Lead | 0.0025 | 0.00050 | | mg/L | 1 | 4/12/2021 11:20:33 AM | 59306 |
| Nickel | 0.059 | 0.0050 | | mg/L | 5 | 4/12/2021 11:39:44 AM | 59306 |
| Selenium | 0.0025 | 0.0010 | | mg/L | 1 | 4/12/2021 11:20:33 AM | 59306 |
| Silver | ND | 0.00050 | | mg/L | 1 | 4/12/2021 11:20:33 AM | 59306 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 4/12/2021 11:20:33 AM | 59306 |
| **SM 5310B: DOC** | | | | | | Analyst: **AG** | |
| Organic Carbon, Dissolved | 1.9 | 1.0 | | mg/L | 1 | 4/13/2021 12:48:55 AM | A76640 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | ND | 0.50 | | mg/L | 5 | 4/7/2021 4:49:46 PM | R76513 |
| Chloride | 160 | 10 | | mg/L | 20 | 4/7/2021 5:02:38 PM | R76513 |
| Nitrogen, Nitrite (As N) | ND | 0.50 | | mg/L | 5 | 4/7/2021 4:49:46 PM | R76513 |
| Nitrogen, Nitrate (As N) | 1.6 | 0.50 | | mg/L | 5 | 4/7/2021 4:49:46 PM | R76513 |
| Sulfate | 1800 | 25 | * | mg/L | 50 | 4/9/2021 8:43:14 PM | R76591 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 3240 | 40.0 | *D | mg/L | 1 | 4/9/2021 2:30:00 PM | 59292 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.012 | 0.0020 | | mg/L | 1 | 4/8/2021 10:51:51 AM | A76547 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/8/2021 10:51:51 AM | A76547 |
| Manganese | 1.4 | 0.010 | * | mg/L | 5 | 4/8/2021 10:53:28 AM | A76547 |
| Silver | ND | 0.0050 | | mg/L | 1 | 4/12/2021 9:11:06 AM | B76619 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.054 | 0.0030 | | mg/L | 1 | 4/9/2021 9:30:20 AM | 59306 |
| Iron | 6.0 | 0.50 | * | mg/L | 10 | 4/9/2021 9:34:59 AM | 59306 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-32
**Project:** 2021 Giant Former Refinery
**Collection Date:** 4/6/2021 11:30:00 AM
**Lab ID:** 2104244-003 **Matrix:** AQUEOUS **Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Manganese | 2.0 | 0.020 | * | mg/L | 10 | 4/9/2021 9:34:59 AM | 59306 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 4/12/2021 2:42:28 PM | 59342 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc. **Client Sample ID:** GBR-17
**Project:** 2021 Giant Former Refinery **Collection Date:** 4/6/2021 12:30:00 PM
**Lab ID:** 2104244-004 **Matrix:** AQUEOUS **Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA 200.8: DISSOLVED METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| Chromium | 0.0018 | 0.0010 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| Lead | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| Nickel | ND | 0.0010 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| Selenium | 0.0032 | 0.0010 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| Thallium | ND | 0.00050 | | mg/L | 1 | 4/8/2021 3:08:21 PM | A76553 |
| **EPA 200.8: METALS** | | | | | | Analyst: **bcv** | |
| Arsenic | ND | 0.0010 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Beryllium | ND | 0.0010 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Cadmium | ND | 0.00050 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Chromium | 0.0033 | 0.0010 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Lead | ND | 0.00050 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Nickel | 0.0014 | 0.0010 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Selenium | 0.0038 | 0.0010 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Silver | ND | 0.00050 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| Thallium | ND | 0.00025 | | mg/L | 1 | 4/15/2021 11:17:35 AM | 59406 |
| **SM 5310B: DOC** | | | | | | Analyst: **AG** | |
| Organic Carbon, Dissolved | ND | 1.0 | | mg/L | 1 | 4/13/2021 1:05:39 AM | A76640 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Fluoride | 0.33 | 0.10 | | mg/L | 1 | 4/7/2021 5:41:17 PM | R76513 |
| Chloride | 59 | 10 | | mg/L | 20 | 4/7/2021 5:54:09 PM | R76513 |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | mg/L | 1 | 4/7/2021 5:41:17 PM | R76513 |
| Nitrogen, Nitrate (As N) | 7.1 | 2.0 | | mg/L | 20 | 4/7/2021 5:54:09 PM | R76513 |
| Sulfate | 1300 | 25 | * | mg/L | 50 | 4/9/2021 8:55:39 PM | R76591 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 2330 | 20.0 | * | mg/L | 1 | 4/9/2021 2:30:00 PM | 59292 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.0090 | 0.0020 | | mg/L | 1 | 4/8/2021 10:55:03 AM | A76547 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/8/2021 10:55:03 AM | A76547 |
| Manganese | ND | 0.0020 | | mg/L | 1 | 4/8/2021 10:55:03 AM | A76547 |
| Silver | ND | 0.0050 | | mg/L | 1 | 4/12/2021 9:12:31 AM | B76619 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Barium | 0.011 | 0.0030 | | mg/L | 1 | 4/12/2021 8:29:56 AM | B76619 |
| Iron | ND | 0.050 | | mg/L | 1 | 4/12/2021 8:29:56 AM | B76619 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Western Refining Southwest, Inc.
**Client Sample ID:** GBR-17
**Project:** 2021 Giant Former Refinery
**Collection Date:** 4/6/2021 12:30:00 PM
**Lab ID:** 2104244-004
**Matrix:** AQUEOUS
**Received Date:** 4/7/2021 8:42:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **ELS** | |
| Manganese | 0.015 | 0.0020 | | mg/L | 1 | 4/12/2021 8:29:56 AM | B76619 |
| **EPA METHOD 245.1: MERCURY** | | | | | | Analyst: **ags** | |
| Mercury | ND | 0.00020 | | mg/L | 1 | 4/12/2021 2:44:51 PM | 59342 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# ANALYTICAL REPORT

April 14, 2021



## Hall Environmental Analysis Laboratory

| | |
|---|---|
| Sample Delivery Group: | L1335990 |
| Samples Received: | 04/08/2021 |
| Project Number: | |
| Description: | |

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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## 2104244-001E GBR-48 L1335990-01 WW

| Collected by | Collected date/time | Received date/time |
|---|---|---|
| | 04/06/21 09:15 | 04/08/21 10:00 |

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Wet Chemistry by Method 4500S2 D-2011 | WG1650836 | 1 | 04/13/21 19:00 | 04/13/21 19:00 | CO | Mt. Juliet, TN |

## 2104244-002E GBR-50 L1335990-02 WW

| Collected by | Collected date/time | Received date/time |
|---|---|---|
| | 04/06/21 10:15 | 04/08/21 10:00 |

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Wet Chemistry by Method 4500S2 D-2011 | WG1650836 | 1 | 04/13/21 19:00 | 04/13/21 19:00 | CO | Mt. Juliet, TN |

## 2104244-003E GBR-32 L1335990-03 WW

| Collected by | Collected date/time | Received date/time |
|---|---|---|
| | 04/06/21 11:30 | 04/08/21 10:00 |

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Wet Chemistry by Method 4500S2 D-2011 | WG1650244 | 1 | 04/13/21 17:45 | 04/13/21 17:45 | CO | Mt. Juliet, TN |

## 2104244-004E GBR-17 L1335990-04 WW

| Collected by | Collected date/time | Received date/time |
|---|---|---|
| | 04/06/21 12:30 | 04/08/21 10:00 |

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Wet Chemistry by Method 4500S2 D-2011 | WG1650244 | 1 | 04/13/21 17:45 | 04/13/21 17:45 | CO | Mt. Juliet, TN |

# CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



John Hawkins
Project Manager

## Wet Chemistry by Method 4500S2 D-2011

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/l | | mg/l | | date / time | |
| Sulfide | ND | | 0.0500 | 1 | 04/13/2021 19:00 | WG1650836 |

## Wet Chemistry by Method 4500S2 D-2011

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/l | | mg/l | | date / time | |
| Sulfide | ND | | 0.0500 | 1 | 04/13/2021 19:00 | WG1650836 |

## Wet Chemistry by Method 4500S2 D-2011

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/l | | mg/l | | date / time | |
| Sulfide | ND | | 0.0500 | 1 | 04/13/2021 17:45 | WG1650244 |

## Wet Chemistry by Method 4500S2 D-2011

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/l | | mg/l | | date / time | |
| Sulfide | ND | | 0.0500 | 1 | 04/13/2021 17:45 | WG1650244 |

## Method Blank (MB)

(MB) R3641421-1 04/13/21 17:29

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|---|---|---|---|---|
| Sulfide | U | | 0.0250 | 0.0500 |

## L1336060-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1336060-02 04/13/21 17:46 • (DUP) R3641421-3 04/13/21 17:46

| Analyte | Original Result mg/l | DUP Result mg/l | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Sulfide | ND | ND | 1 | 0.000 | | 20 |

## L1337071-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1337071-02 04/13/21 17:46 • (DUP) R3641421-4 04/13/21 17:46

| Analyte | Original Result mg/l | DUP Result mg/l | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Sulfide | ND | ND | 1 | 0.000 | | 20 |

## Laboratory Control Sample (LCS)

(LCS) R3641421-2 04/13/21 17:30

| Analyte | Spike Amount mg/l | LCS Result mg/l | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Sulfide | 0.500 | 0.570 | 114 | 85.0-115 | |

## L1337071-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1337071-04 04/13/21 17:47 • (MS) R3641421-5 04/13/21 17:47 • (MSD) R3641421-6 04/13/21 17:47

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MSD Result mg/l | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfide | 1.00 | ND | 0.887 | 0.804 | 88.7 | 80.4 | 1 | 80.0-120 | | | 9.82 | 20 |

## Method Blank (MB)

(MB) R3641423-1 04/13/21 18:56

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|---|---|---|---|---|
| Sulfide | U | | 0.0250 | 0.0500 |

## L1335990-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1335990-01 04/13/21 19:00 • (DUP) R3641423-3 04/13/21 19:00

| Analyte | Original Result mg/l | DUP Result mg/l | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Sulfide | ND | ND | 1 | 0.000 | | 20 |

## Laboratory Control Sample (LCS)

(LCS) R3641423-2 04/13/21 18:57

| Analyte | Spike Amount mg/l | LCS Result mg/l | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Sulfide | 0.500 | 0.554 | 111 | 85.0-115 | |

## L1335990-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335990-02 04/13/21 19:00 • (MS) R3641423-4 04/13/21 19:00 • (MSD) R3641423-5 04/13/21 19:00

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MSD Result mg/l | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfide | 1.00 | ND | 0.917 | 0.947 | 91.7 | 94.7 | 1 | 80.0-120 | | | 3.22 | 20 |

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

## Abbreviations and Definitions

| | |
|---|---|
| MDL | Method Detection Limit. |
| ND | Not detected at the Reporting Limit (or MDL where applicable). |
| RDL | Reported Detection Limit. |
| Rec. | Recovery. |
| RPD | Relative Percent Difference. |
| SDG | Sample Delivery Group. |
| U | Not detected at the Reporting Limit (or MDL where applicable). |
| Analyte | The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported. |
| Dilution | If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor. |
| Limits | These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges. |
| Original Sample | The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG. |
| Qualifier | This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable. |
| Result | The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte. |
| Uncertainty (Radiochemistry) | Confidence level of 2 sigma. |
| Case Narrative (Cn) | A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report. |
| Quality Control Summary (Qc) | This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material. |
| Sample Chain of Custody (Sc) | This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis. |
| Sample Results (Sr) | This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported. |
| Sample Summary (Ss) | This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis. |

| Qualifier | Description |
|---|---|

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

# ACCREDITATIONS & LOCATIONS

## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

| | | | |
|---|---|---|---|
| Alabama | 40660 | Nebraska | NE-OS-15-05 |
| Alaska | 17-026 | Nevada | TN000032021-1 |
| Arizona | AZ0612 | New Hampshire | 2975 |
| Arkansas | 88-0469 | New Jersey–NELAP | TN002 |
| California | 2932 | New Mexico [1] | TN00003 |
| Colorado | TN00003 | New York | 11742 |
| Connecticut | PH-0197 | North Carolina | Env375 |
| Florida | E87487 | North Carolina [1] | DW21704 |
| Georgia | NELAP | North Carolina [3] | 41 |
| Georgia [1] | 923 | North Dakota | R-140 |
| Idaho | TN00003 | Ohio–VAP | CL0069 |
| Illinois | 200008 | Oklahoma | 9915 |
| Indiana | C-TN-01 | Oregon | TN200002 |
| Iowa | 364 | Pennsylvania | 68-02979 |
| Kansas | E-10277 | Rhode Island | LAO000356 |
| Kentucky [1 6] | KY90010 | South Carolina | 84004002 |
| Kentucky [2] | 16 | South Dakota | n/a |
| Louisiana | AI30792 | Tennessee [1 4] | 2006 |
| Louisiana | LA018 | Texas | T104704245-20-18 |
| Maine | TN00003 | Texas [5] | LAB0152 |
| Maryland | 324 | Utah | TN000032021-11 |
| Massachusetts | M-TN003 | Vermont | VT2006 |
| Michigan | 9958 | Virginia | 110033 |
| Minnesota | 047-999-395 | Washington | C847 |
| Mississippi | TN00003 | West Virginia | 233 |
| Missouri | 340 | Wisconsin | 998093910 |
| Montana | CERT0086 | Wyoming | A2LA |
| A2LA – ISO 17025 | 1461.01 | AIHA-LAP,LLC EMLAP | 100789 |
| A2LA – ISO 17025 [5] | 1461.02 | DOD | 1461.01 |
| Canada | 1461.01 | USDA | P330-15-00234 |
| EPA–Crypto | TN00003 | | |

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

# CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

E039

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975*
*FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

| | | | | | |
|---|---|---|---|---|---|
| SUB CONTRATOR: Pace TN | COMPANY: PACE TN | | PHONE: (800) 767-5859 | FAX: (615) 758-5859 | |
| ADDRESS: 12065 Lebanon Rd | | | ACCOUNT #: | EMAIL: | |
| CITY, STATE, ZIP: Mt. Juliet, TN 37122 | | | | | |

L1335990

| ITEM | SAMPLE | CLIENT SAMPLE ID | BOTTLE TYPE | MATRIX | COLLECTION DATE | # CONTAINERS | ANALYTICAL COMMENTS | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2104244-001E | GBR-48 | 500PLNAOH ZNAC | Aqueous | 4/6/2021 9:15:00 AM | 1 | Sulfide | >12 | -01 |
| 2 | 2104244-002E | GBR-50 | 500PLNAOH ZNAC | Aqueous | 4/6/2021 10:15:00 AM | 1 | Sulfide | >12 | -02 |
| 3 | 2104244-003E | GBR-32 | 500PLNAOH ZNAC | Aqueous | 4/6/2021 11:30:00 AM | 1 | Sulfide | >12 | -03 |
| 4 | 2104244-004E | GBR-17 | 500PLNAOH ZNAC | Aqueous | 4/6/2021 12:30:00 AM | 1 | Sulfide | >12 | -04 |

Sample Receipt Checklist

| | | | |
|---|---|---|---|
| COC Seal Present/Intact: | Y N | If Applicable | |
| COC Signed/Accurate: | Y N | VOA Zero Headspace: | Y N |
| Bottles arrive intact: | Y N | Pres.Correct/Check: | Y N |
| Correct bottles used: | Y N | | |
| Sufficient volume sent: | Y N | | |
| RAD Screen <0.5 mR/hr: | Y N | | |

**SPECIAL INSTRUCTIONS / COMMENTS:** 1749 9998 3977

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

| | | | | | |
|---|---|---|---|---|---|
| Relinquished By: | Date: 4/7/2021 | Time: 10:21 AM | Received By: | Date: | Time: |
| Relinquished By: | Date: | Time: | Received By: | Date: | Time: |
| Relinquished By: | Date: | Time: | Received By: | Date: 4-8-21 | Time: 10:00 |

TAT: Standard X RUSH Next BD 2nd BD 3rd BD

REPORT TRANSMITTAL DESIRED:

HARDCOPY (extra cost) FAX EMAIL ONLINE

A20T FOR LAB USE ONLY

Temp of samples 1.1, 1.2 °C Attempt to Cool ?

Comments:

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**

***20-Apr-21***

**Client:** Western Refining Southwest, Inc.

**Project:** 2021 Giant Former Refinery

| Sample ID: **MB** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A76547** | RunNo: **76547** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2711919** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | | | | | | | | |
| Iron | ND | 0.050 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |

| Sample ID: **LLLCS** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **A76547** | RunNo: **76547** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2711921** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | 0.002000 | 0 | 56.3 | 50 | 150 | | | |
| Iron | ND | 0.050 | 0.02000 | 0 | 121 | 50 | 150 | | | |
| Manganese | 0.0020 | 0.0020 | 0.002000 | 0 | 102 | 50 | 150 | | | |

| Sample ID: **LCS** | SampType: **LCS** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **A76547** | RunNo: **76547** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2711945** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.52 | 0.0030 | 0.5000 | 0 | 104 | 85 | 115 | | | |
| Iron | 0.51 | 0.050 | 0.5000 | 0 | 102 | 85 | 115 | | | |
| Manganese | 0.51 | 0.0020 | 0.5000 | 0 | 102 | 85 | 115 | | | |

| Sample ID: **MB-59306** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **59306** | RunNo: **76575** |
| Prep Date: **4/8/2021** | Analysis Date: **4/9/2021** | SeqNo: **2713081** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | | | | | | | | |
| Iron | ND | 0.050 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |

| Sample ID: **LLLCS-59306** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **59306** | RunNo: **76575** |
| Prep Date: **4/8/2021** | Analysis Date: **4/9/2021** | SeqNo: **2713082** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0030 | 0.002000 | 0 | 115 | 50 | 150 | | | |
| Iron | ND | 0.050 | 0.02000 | 0 | 124 | 50 | 150 | | | |
| Manganese | 0.0023 | 0.0020 | 0.002000 | 0 | 115 | 50 | 150 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**
***20-Apr-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **LCS-59306** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW** Batch ID: **59306** RunNo: **76575**
Prep Date: **4/8/2021** Analysis Date: **4/9/2021** SeqNo: **2713083** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.50 | 0.0030 | 0.5000 | 0 | 101 | 85 | 115 | | | |
| Iron | 0.49 | 0.050 | 0.5000 | 0 | 97.4 | 85 | 115 | | | |
| Manganese | 0.48 | 0.0020 | 0.5000 | 0 | 96.8 | 85 | 115 | | | |

Sample ID: **2104244-004CMS** SampType: **MS** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-17** Batch ID: **B76619** RunNo: **76619**
Prep Date: Analysis Date: **4/12/2021** SeqNo: **2714660** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.51 | 0.0030 | 0.5000 | 0.01079 | 100 | 70 | 130 | | | |
| Manganese | 0.50 | 0.0020 | 0.5000 | 0.01501 | 97.8 | 70 | 130 | | | |

Sample ID: **2104244-004CMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Metals**
Client ID: **GBR-17** Batch ID: **B76619** RunNo: **76619**
Prep Date: Analysis Date: **4/12/2021** SeqNo: **2714664** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.52 | 0.0030 | 0.5000 | 0.01079 | 102 | 70 | 130 | 1.62 | 20 | |
| Manganese | 0.51 | 0.0020 | 0.5000 | 0.01501 | 98.2 | 70 | 130 | 0.361 | 20 | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**
***20-Apr-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A76547** | RunNo: **76547** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2711920** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0020 | | | | | | | | |
| Iron | ND | 0.020 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |

| Sample ID: **LLLCS** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **A76547** | RunNo: **76547** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2711922** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0020 | 0.002000 | 0 | 56.3 | 50 | 150 | | | |
| Iron | 0.024 | 0.020 | 0.02000 | 0 | 121 | 50 | 150 | | | |
| Manganese | 0.0020 | 0.0020 | 0.002000 | 0 | 102 | 50 | 150 | | | |

| Sample ID: **LCS** | SampType: **LCS** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **A76547** | RunNo: **76547** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2711946** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.52 | 0.0020 | 0.5000 | 0 | 104 | 85 | 115 | | | |
| Iron | 0.51 | 0.020 | 0.5000 | 0 | 102 | 85 | 115 | | | |
| Manganese | 0.51 | 0.0020 | 0.5000 | 0 | 102 | 85 | 115 | | | |

| Sample ID: **MB** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **B76619** | RunNo: **76619** |
| Prep Date: | Analysis Date: **4/12/2021** | SeqNo: **2716980** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 0.0020 | | | | | | | | |
| Iron | ND | 0.020 | | | | | | | | |
| Manganese | ND | 0.0020 | | | | | | | | |
| Silver | ND | 0.0050 | | | | | | | | |

| Sample ID: **LLLCS** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **B76619** | RunNo: **76619** |
| Prep Date: | Analysis Date: **4/12/2021** | SeqNo: **2716981** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.0028 | 0.0020 | 0.002000 | 0 | 138 | 50 | 150 | | | |
| Iron | 0.030 | 0.020 | 0.02000 | 0 | 150 | 50 | 150 | | | S |
| Manganese | ND | 0.0020 | 0.002000 | 0 | 98.4 | 50 | 150 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**

***20-Apr-21***

**Client:** Western Refining Southwest, Inc.

**Project:** 2021 Giant Former Refinery

| Sample ID: **LLLCS** | SampType: **LCSLL** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **B76619** | RunNo: **76619** |
| Prep Date: | Analysis Date: **4/12/2021** | SeqNo: **2716981** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver | ND | 0.0050 | 0.005000 | 0 | 97.6 | 50 | 150 | | | |

| Sample ID: **LCS** | SampType: **LCS** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **B76619** | RunNo: **76619** |
| Prep Date: | Analysis Date: **4/12/2021** | SeqNo: **2716982** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.52 | 0.0020 | 0.5000 | 0 | 104 | 85 | 115 | | | |
| Iron | 0.51 | 0.020 | 0.5000 | 0 | 102 | 85 | 115 | | | |
| Manganese | 0.50 | 0.0020 | 0.5000 | 0 | 99.2 | 85 | 115 | | | |
| Silver | 0.11 | 0.0050 | 0.1000 | 0 | 106 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**
***20-Apr-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB-59306** SampType: **MBLK** TestCode: **EPA 200.8: Metals**
Client ID: **PBW** Batch ID: **59306** RunNo: **76609**
Prep Date: **4/8/2021** Analysis Date: **4/12/2021** SeqNo: **2714337** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | | | | | | | | |
| Beryllium | ND | 0.0010 | | | | | | | | |
| Cadmium | ND | 0.00050 | | | | | | | | |
| Chromium | ND | 0.0010 | | | | | | | | |
| Lead | ND | 0.00050 | | | | | | | | |
| Nickel | ND | 0.0010 | | | | | | | | |
| Selenium | ND | 0.0010 | | | | | | | | |
| Silver | ND | 0.00050 | | | | | | | | |
| Thallium | ND | 0.00025 | | | | | | | | |

Sample ID: **MSLLLCS-59306** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **59306** RunNo: **76609**
Prep Date: **4/8/2021** Analysis Date: **4/12/2021** SeqNo: **2714338** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0010 | 0.0010 | 0.001000 | 0 | 102 | 50 | 150 | | | |
| Beryllium | ND | 0.0010 | 0.001000 | 0 | 88.7 | 50 | 150 | | | |
| Cadmium | ND | 0.00050 | 0.0005000 | 0 | 86.8 | 50 | 150 | | | |
| Chromium | 0.0010 | 0.0010 | 0.001000 | 0 | 105 | 50 | 150 | | | |
| Lead | ND | 0.00050 | 0.0005000 | 0 | 98.8 | 50 | 150 | | | |
| Nickel | ND | 0.0010 | 0.001000 | 0 | 99.1 | 50 | 150 | | | |
| Selenium | 0.0010 | 0.0010 | 0.001000 | 0 | 104 | 50 | 150 | | | |
| Silver | 0.00051 | 0.00050 | 0.0005000 | 0 | 101 | 50 | 150 | | | |

Sample ID: **MSLLLCS-TL-59306** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **59306** RunNo: **76609**
Prep Date: **4/8/2021** Analysis Date: **4/12/2021** SeqNo: **2714340** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 0.00025 | 0.00025 | 0.0002500 | 0 | 102 | 50 | 150 | | | |

Sample ID: **MSLCS-59306** SampType: **LCS** TestCode: **EPA 200.8: Metals**
Client ID: **LCSW** Batch ID: **59306** RunNo: **76609**
Prep Date: **4/8/2021** Analysis Date: **4/12/2021** SeqNo: **2714357** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.024 | 0.0010 | 0.02500 | 0 | 95.6 | 85 | 115 | | | |
| Beryllium | 0.026 | 0.0010 | 0.02500 | 0 | 103 | 85 | 115 | | | |
| Cadmium | 0.011 | 0.00050 | 0.01250 | 0 | 91.4 | 85 | 115 | | | |
| Chromium | 0.025 | 0.0010 | 0.02500 | 0 | 99.8 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**

***20-Apr-21***

**Client:** Western Refining Southwest, Inc.

**Project:** 2021 Giant Former Refinery

Sample ID: **MSLCS-59306** SampType: **LCS** TestCode: **EPA 200.8: Metals**

Client ID: **LCSW** Batch ID: **59306** RunNo: **76609**

Prep Date: **4/8/2021** Analysis Date: **4/12/2021** SeqNo: **2714357** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.012 | 0.00050 | 0.01250 | 0 | 99.5 | 85 | 115 | | | |
| Nickel | 0.025 | 0.0010 | 0.02500 | 0 | 98.1 | 85 | 115 | | | |
| Selenium | 0.024 | 0.0010 | 0.02500 | 0 | 95.4 | 85 | 115 | | | |
| Silver | 0.012 | 0.00050 | 0.01250 | 0 | 98.3 | 85 | 115 | | | |
| Thallium | 0.012 | 0.00025 | 0.01250 | 0 | 99.7 | 85 | 115 | | | |

Sample ID: **MB-59406** SampType: **MBLK** TestCode: **EPA 200.8: Metals**

Client ID: **PBW** Batch ID: **59406** RunNo: **76689**

Prep Date: **4/14/2021** Analysis Date: **4/15/2021** SeqNo: **2717606** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | | | | | | | | |
| Beryllium | ND | 0.0010 | | | | | | | | |
| Cadmium | ND | 0.00050 | | | | | | | | |
| Chromium | ND | 0.0010 | | | | | | | | |
| Lead | ND | 0.00050 | | | | | | | | |
| Nickel | ND | 0.0010 | | | | | | | | |
| Selenium | ND | 0.0010 | | | | | | | | |
| Silver | ND | 0.00050 | | | | | | | | |
| Thallium | ND | 0.00025 | | | | | | | | |

Sample ID: **MSLLLCS-59406** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**

Client ID: **BatchQC** Batch ID: **59406** RunNo: **76689**

Prep Date: **4/14/2021** Analysis Date: **4/15/2021** SeqNo: **2717607** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | 0.001000 | 0 | 93.4 | 50 | 150 | | | |
| Beryllium | ND | 0.0010 | 0.001000 | 0 | 87.8 | 50 | 150 | | | |
| Cadmium | 0.00051 | 0.00050 | 0.0005000 | 0 | 101 | 50 | 150 | | | |
| Chromium | 0.0011 | 0.0010 | 0.001000 | 0 | 114 | 50 | 150 | | | |
| Lead | 0.00050 | 0.00050 | 0.0005000 | 0 | 101 | 50 | 150 | | | |
| Nickel | ND | 0.0010 | 0.001000 | 0 | 97.6 | 50 | 150 | | | |
| Selenium | ND | 0.0010 | 0.001000 | 0 | 80.7 | 50 | 150 | | | |
| Silver | ND | 0.00050 | 0.0005000 | 0 | 98.4 | 50 | 150 | | | |

Sample ID: **MSLCS-59406** SampType: **LCS** TestCode: **EPA 200.8: Metals**

Client ID: **LCSW** Batch ID: **59406** RunNo: **76689**

Prep Date: **4/14/2021** Analysis Date: **4/15/2021** SeqNo: **2717608** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**
***20-Apr-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MSLCS-59406** SampType: **LCS** TestCode: **EPA 200.8: Metals**
Client ID: **LCSW** Batch ID: **59406** RunNo: **76689**
Prep Date: **4/14/2021** Analysis Date: **4/15/2021** SeqNo: **2717608** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.025 | 0.0010 | 0.02500 | 0 | 101 | 85 | 115 | | | |
| Beryllium | 0.027 | 0.0010 | 0.02500 | 0 | 107 | 85 | 115 | | | |
| Cadmium | 0.012 | 0.00050 | 0.01250 | 0 | 97.8 | 85 | 115 | | | |
| Chromium | 0.025 | 0.0010 | 0.02500 | 0 | 99.5 | 85 | 115 | | | |
| Lead | 0.013 | 0.00050 | 0.01250 | 0 | 101 | 85 | 115 | | | |
| Nickel | 0.025 | 0.0010 | 0.02500 | 0 | 102 | 85 | 115 | | | |
| Selenium | 0.023 | 0.0010 | 0.02500 | 0 | 93.0 | 85 | 115 | | | |
| Silver | 0.012 | 0.00050 | 0.01250 | 0 | 99.2 | 85 | 115 | | | |
| Thallium | 0.013 | 0.00025 | 0.01250 | 0 | 101 | 85 | 115 | | | |

Sample ID: **MSLLLCS-TL-59406** SampType: **LCSLL** TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC** Batch ID: **59406** RunNo: **76689**
Prep Date: **4/14/2021** Analysis Date: **4/15/2021** SeqNo: **2717609** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 0.00025 | 0.00025 | 0.0002500 | 0 | 102 | 50 | 150 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**
***20-Apr-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB** | SampType: **MBLK** | TestCode: **EPA 200.8: Dissolved Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A76553** | RunNo: **76553** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2712149** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.0010 | | | | | | | | |
| Beryllium | ND | 0.0010 | | | | | | | | |
| Cadmium | ND | 0.00050 | | | | | | | | |
| Chromium | ND | 0.0010 | | | | | | | | |
| Lead | ND | 0.00050 | | | | | | | | |
| Nickel | ND | 0.0010 | | | | | | | | |
| Selenium | ND | 0.0010 | | | | | | | | |
| Thallium | ND | 0.00050 | | | | | | | | |

| Sample ID: **LCSLL** | SampType: **LCSLL** | TestCode: **EPA 200.8: Dissolved Metals** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **A76553** | RunNo: **76553** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2712150** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0010 | 0.0010 | 0.001000 | 0 | 103 | 50 | 150 | | | |
| Beryllium | ND | 0.0010 | 0.001000 | 0 | 98.5 | 50 | 150 | | | |
| Cadmium | ND | 0.00050 | 0.0005000 | 0 | 95.4 | 50 | 150 | | | |
| Chromium | ND | 0.0010 | 0.001000 | 0 | 97.5 | 50 | 150 | | | |
| Lead | ND | 0.00050 | 0.0005000 | 0 | 96.8 | 50 | 150 | | | |
| Nickel | ND | 0.0010 | 0.001000 | 0 | 95.3 | 50 | 150 | | | |
| Selenium | 0.0012 | 0.0010 | 0.001000 | 0 | 120 | 50 | 150 | | | |
| Thallium | ND | 0.00050 | 0.0005000 | 0 | 98.4 | 50 | 150 | | | |

| Sample ID: **LCS** | SampType: **LCS** | TestCode: **EPA 200.8: Dissolved Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **A76553** | RunNo: **76553** |
| Prep Date: | Analysis Date: **4/8/2021** | SeqNo: **2712151** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.024 | 0.0010 | 0.02500 | 0 | 95.1 | 85 | 115 | | | |
| Beryllium | 0.024 | 0.0010 | 0.02500 | 0 | 95.8 | 85 | 115 | | | |
| Cadmium | 0.012 | 0.00050 | 0.01250 | 0 | 96.2 | 85 | 115 | | | |
| Chromium | 0.024 | 0.0010 | 0.02500 | 0 | 95.3 | 85 | 115 | | | |
| Lead | 0.012 | 0.00050 | 0.01250 | 0 | 96.2 | 85 | 115 | | | |
| Nickel | 0.024 | 0.0010 | 0.02500 | 0 | 97.4 | 85 | 115 | | | |
| Selenium | 0.024 | 0.0010 | 0.02500 | 0 | 96.8 | 85 | 115 | | | |
| Thallium | 0.012 | 0.00050 | 0.01250 | 0 | 96.5 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**
***20-Apr-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-59342** | SampType: **MBLK** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **59342** | RunNo: **76611** |
| Prep Date: **4/12/2021** | Analysis Date: **4/12/2021** | SeqNo: **2714436** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | | | | | | | | |

| Sample ID: **LLLCS-59342** | SampType: **LCSLL** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **59342** | RunNo: **76611** |
| Prep Date: **4/12/2021** | Analysis Date: **4/12/2021** | SeqNo: **2714437** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00020 | 0.0001500 | 0 | 114 | 50 | 150 | | | |

| Sample ID: **LCS-59342** | SampType: **LCS** | TestCode: **EPA Method 245.1: Mercury** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **59342** | RunNo: **76611** |
| Prep Date: **4/12/2021** | Analysis Date: **4/12/2021** | SeqNo: **2714438** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0050 | 0.00020 | 0.005000 | 0 | 101 | 85 | 115 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**
***20-Apr-21***

**Client:** Western Refining Southwest, Inc.
**Project:** 2021 Giant Former Refinery

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R76513** RunNo: **76513**
Prep Date: Analysis Date: **4/7/2021** SeqNo: **2711531** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 0.10 | | | | | | | | |
| Chloride | ND | 0.50 | | | | | | | | |
| Nitrogen, Nitrite (As N) | ND | 0.10 | | | | | | | | |
| Nitrogen, Nitrate (As N) | ND | 0.10 | | | | | | | | |

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R76513** RunNo: **76513**
Prep Date: Analysis Date: **4/7/2021** SeqNo: **2711532** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 0.50 | 0.10 | 0.5000 | 0 | 99.0 | 90 | 110 | | | |
| Chloride | 4.7 | 0.50 | 5.000 | 0 | 94.3 | 90 | 110 | | | |
| Nitrogen, Nitrite (As N) | 0.93 | 0.10 | 1.000 | 0 | 93.3 | 90 | 110 | | | |
| Nitrogen, Nitrate (As N) | 2.4 | 0.10 | 2.500 | 0 | 97.3 | 90 | 110 | | | |

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R76591** RunNo: **76591**
Prep Date: Analysis Date: **4/9/2021** SeqNo: **2713709** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | ND | 0.50 | | | | | | | | |

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R76591** RunNo: **76591**
Prep Date: Analysis Date: **4/9/2021** SeqNo: **2713710** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 9.7 | 0.50 | 10.00 | 0 | 97.0 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**

***20-Apr-21***

**Client:** Western Refining Southwest, Inc.

**Project:** 2021 Giant Former Refinery

| Sample ID: **MB-DOC** | SampType: **MBLK** | TestCode: **SM 5310B: DOC** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A76640** | RunNo: **76640** |
| Prep Date: | Analysis Date: **4/12/2021** | SeqNo: **2715741** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Organic Carbon, Dissolved | ND | 1.0 | | | | | | | | |

| Sample ID: **LCS-DOC** | SampType: **LCS** | TestCode: **SM 5310B: DOC** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **A76640** | RunNo: **76640** |
| Prep Date: | Analysis Date: **4/12/2021** | SeqNo: **2715742** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Organic Carbon, Dissolved | 4.9 | 1.0 | 4.850 | 0 | 101 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2104244**

***20-Apr-21***

**Client:** Western Refining Southwest, Inc.

**Project:** 2021 Giant Former Refinery

Sample ID: **MB-59292** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **PBW** Batch ID: **59292** RunNo: **76579**

Prep Date: **4/8/2021** Analysis Date: **4/9/2021** SeqNo: **2713211** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | ND | 20.0 | | | | | | | | |

Sample ID: **LCS-59292** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **LCSW** Batch ID: **59292** RunNo: **76579**

Prep Date: **4/8/2021** Analysis Date: **4/9/2021** SeqNo: **2713212** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1010 | 20.0 | 1000 | 0 | 101 | 80 | 120 | | | |

Sample ID: **2104244-002BDUP** SampType: **DUP** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **GBR-50** Batch ID: **59292** RunNo: **76579**

Prep Date: **4/8/2021** Analysis Date: **4/9/2021** SeqNo: **2713232** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 3090 | 20.0 | | | | | | 0.388 | 10 | * |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: clients.hallenvironmental.com*

# Sample Log-In Check List

Client Name: Western Refining Southwest, Inc.

Work Order Number: 2104244

RcptNo: 1

Received By: **Cheyenne Cason** 4/7/2021 8:42:00 AM

Completed By: **Erin Melendrez** 4/7/2021 9:41:06 AM

Reviewed By: JR 4/7/21

## Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

## Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 12 (<2 or >12 unless noted)

Adjusted? NO

Checked by: CM 4/7/21

## Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 4.2 | Good | | | | |

# Chain-of-Custody Record

Client: Western Refining
Greg McCartney
Mailing Address:

Phone #:
email or Fax#:
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☑ EDD (Type)

Turn-Around Time:
☐ Standard ☐ **Rush**
Project Name: 2021 Giant Former Refinery (GBR)
Project #:
Project Manager: Stuart Hyde - WSP
Sampler: E. Carroll
On Ice: ☑ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 4.1+0.1=4.2 (°C)


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107


**Analysis Request**

| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2104244 | BTEX / MTBE / TMB's (8021) | TPH:8015D(GRO / DRO / MRO) | 8081 Pesticides/8082 PCB's | EDB (Method 504.1) | PAHs by 8310 or 8270SIMS | RCRA 8 Metals | Cl, F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) | See Attached |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/6 | 9:15 | Gw | GBR-48 | various | various | -001 | | | | | | | | | | | X |
| | 10:15 | | GBR-50 | | | -002 | | | | | | | | | | | X |
| | 11:30 | | GBR-32 | | | -003 | | | | | | | | | | | X |
| | 12:30 | | GBR-17 | | | -004 | | | | | | | | | | | X |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 4/6 | 1350 | Eric Carroll | Christine Walls | | 4/6/21 | 1350 |
| 4/6/21 | 1816 | Christine Walls | | courier | 4/7/21 | 0812 |

Remarks:
Please CC: eric.carroll@wsp.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

## Andy Freeman

**From:** Hyde, Stuart <Stuart.Hyde@wsp.com>
**Sent:** Tuesday, April 6, 2021 11:57 AM
**To:** Andy Freeman
**Cc:** Michelle Garcia; Hencmann, Devin
**Subject:** GBR Samples
**Attachments:** 4500248904.PDF

Andy,

We have five more groundwater samples coming in for GBR today/tomorrow. Western provided Hall with the attached PO. I want to make sure we have enough budget for these additional samples for the analyses below. And if we have extra budget, I would like to get options for rush analysis, something around 3 to 5 day TAT. Let me know. Thanks.

| METHOD NUMBER(S) | DESCRIPTION OF ITEM |
|---|---|
| 6020/ 200.8 | Total and Dissolved metals by ICP/MS: As, Ba, Be, Cd, Cr, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl |
| 3500-Fe D | Ferrous Iron |
| 3500-Fe D | Ferric Iron |
| 9056/ 300.0 | Anions by IC |
| 9034/376.2 | Sulfide |
| 2540C | TDS |
| 9060/ 415.1 | DOC |

Ba, Fe, Mn (200.7)

(F, Cl, $SO_4$, $NO_2$/$NO_3$)

**Stuart Hyde, L.G.**
Environmental Geologist
*Please note the new email address*

T+ 1 970-385-1096
M+ 1 970-903-1607
Email : stuart.hyde@wsp.com

WSP USA
848 East 2nd Avenue
Durango, Colorado 81301

wsp.com

| METHOD NUMBER(S) | DESCRIPTION OF ITEM |
|---|---|
| 6020/ 200.8 | Dissolved metals by ICP/MS |
| 3500-Fe D | Ferrous Iron |
| 3500-Fe D | Ferric Iron |
| 9056/ 300.0 | Anions by IC |
| 9034/376.2 | Sulfide |
| 2540C | TDS |
| 9060/ 415.1 | DOC |
| 6020/ 200.8 | Total Metals |

# APPENDIX C – BACKGROUND TRESHOLD VALUE STATISTICAL ANALYSIS

**Background Statistics for Data Sets with Non-Detects**

**User Selected Options**

| | |
|---|---|
| Date/Time of Computation | ProUCL 5.14/15/2021 11:13:43 AM |
| From File | 2021 Upgradient_Results for statistical analysis_b.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Coverage | 95% |
| Different or Future K Observations | 1 |
| Number of Bootstrap Operations | 2000 |

**Result (Chloride)**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 48 | Number of Distinct Observations | 40 |
| Minimum | 43 | First Quartile | 62.25 |
| Second Largest | 530 | Median | 200 |
| Maximum | 560 | Third Quartile | 325 |
| Mean | 218.4 | SD | 148 |
| Coefficient of Variation | 0.678 | Skewness | 0.47 |
| Mean of logged Data | 5.092 | SD of logged Data | 0.839 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.069 | d2max (for USL) | 2.941 |

**Normal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.909 | **Shapiro Wilk GOF Test** | |
| 5% Shapiro Wilk Critical Value | 0.947 | Data Not Normal at 5% Significance Level | |
| Lilliefors Test Statistic | 0.135 | **Lilliefors GOF Test** | |
| 5% Lilliefors Critical Value | 0.127 | Data Not Normal at 5% Significance Level | |

**Data Not Normal at 5% Significance Level**

**Background Statistics Assuming Normal Distribution**

| | | | | | |
|---|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 524.6 | 90% Percentile (z) | 408.1 |
| | 95% UPL (t) | 469.3 | 95% Percentile (z) | 461.8 |
| | 95% USL | 653.7 | 99% Percentile (z) | 562.7 |

**Gamma GOF Test**

| | | | |
|---|---|---|---|
| A-D Test Statistic | 1.33 | **Anderson-Darling Gamma GOF Test** | |
| 5% A-D Critical Value | 0.764 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.145 | **Kolmogorov-Smirnov Gamma GOF Test** | |
| 5% K-S Critical Value | 0.13 | Data Not Gamma Distributed at 5% Significance Level | |

**Data Not Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.85 | k star (bias corrected MLE) | 1.749 |
| Theta hat (MLE) | 118 | Theta star (bias corrected MLE) | 124.9 |
| nu hat (MLE) | 177.6 | nu star (bias corrected) | 167.9 |
| MLE Mean (bias corrected) | 218.4 | MLE Sd (bias corrected) | 165.1 |

**Background Statistics Assuming Gamma Distribution**

| | | | | | |
|---|---|---|---|---|---|
| 95% Wilson Hilferty (WH) Approx. Gamma UPL | | 549.9 | 90% Percentile | 438.5 |
| 95% Hawkins Wixley (HW) Approx. Gamma UPL | | 571.4 | 95% Percentile | 540.8 |
| 95% WH Approx. Gamma UTL with | 95% Coverage | 669.8 | 99% Percentile | 769.6 |
| 95% HW Approx. Gamma UTL with | 95% Coverage | 710.4 | | |
| | 95% WH USL | 1015 | 95% HW USL | 1133 |

**Lognormal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.881 | **Shapiro Wilk Lognormal GOF Test** | |
| 5% Shapiro Wilk Critical Value | 0.947 | Data Not Lognormal at 5% Significance Level | |
| Lilliefors Test Statistic | 0.142 | **Lilliefors Lognormal GOF Test** | |
| 5% Lilliefors Critical Value | 0.127 | Data Not Lognormal at 5% Significance Level | |

**Data Not Lognormal at 5% Significance Level**

**Background Statistics assuming Lognormal Distribution**

| | | | | | |
|---|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 923.1 | 90% Percentile (z) | 477 |
| | 95% UPL (t) | 674.9 | 95% Percentile (z) | 647 |
| | 95% USL | 1919 | 99% Percentile (z) | 1146 |

**Nonparametric Distribution Free Background Statistics**

**Data do not follow a Discernible Distribution (0.05)**

**Nonparametric Upper Limits for Background Threshold Values**

| | | | | | |
|---|---|---|---|---|---|
| Order of Statistic, r | 47 | 95% UTL with | 95% Coverage | 530 |
| Approx, f used to compute achieved CC | 1.237 | Approximate Actual Confidence Coefficient achieved by UTL | | 0.699 |
| | | Approximate Sample Size needed to achieve specified CC | | 93 |
| 95% Percentile Bootstrap UTL with | 95% Coverage | 549.5 | 95% BCA Bootstrap UTL with | 95% Coverage | 530 |
| 95% UPL | 516.5 | 90% Percentile | 406 |
| 90% Chebyshev UPL | 667 | 95% Percentile | 472 |
| 95% Chebyshev UPL | 870.3 | 99% Percentile | 545.9 |
| 95% USL | 560 | | |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

## Result (Chromium)

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 40 | Number of Missing Observations | 0 |
| Number of Distinct Observations | 34 | | |
| Number of Detects | 39 | Number of Non-Detects | 1 |
| Number of Distinct Detects | 33 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 0.0069 | Minimum Non-Detect | 0.006 |
| Maximum Detect | 1.4 | Maximum Non-Detect | 0.006 |
| Variance Detected | 0.124 | Percent Non-Detects | 2.5% |
| Mean Detected | 0.284 | SD Detected | 0.353 |
| Mean of Detected Logged Data | -2.084 | SD of Detected Logged Data | 1.442 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.117 | d2max (for USL) | 2.868 |

**Normal GOF Test on Detects Only**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.752 | **Shapiro Wilk GOF Test** | |
| 5% Shapiro Wilk Critical Value | 0.939 | Data Not Normal at 5% Significance Level | |
| Lilliefors Test Statistic | 0.227 | **Lilliefors GOF Test** | |
| 5% Lilliefors Critical Value | 0.14 | Data Not Normal at 5% Significance Level | |

**Data Not Normal at 5% Significance Level**

**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**

| | | | |
|---|---|---|---|
| KM Mean | 0.277 | KM SD | 0.346 |
| 95% UTL95% Coverage | 1.01 | 95% KM UPL (t) | 0.868 |
| 90% KM Percentile (z) | 0.721 | 95% KM Percentile (z) | 0.846 |

| | | | |
|---|---|---|---|
| 99% KM Percentile (z) | 1.082 | 95% KM USL | 1.27 |

**DL/2 Substitution Background Statistics Assuming Normal Distribution**

| | | | |
|---|---|---|---|
| Mean | 0.277 | SD | 0.351 |
| 95% UTL95% Coverage | 1.019 | 95% UPL (t) | 0.875 |
| 90% Percentile (z) | 0.726 | 95% Percentile (z) | 0.854 |
| 99% Percentile (z) | 1.093 | 95% USL | 1.283 |

**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**

**Gamma GOF Tests on Detected Observations Only**

| | | |
|---|---|---|
| A-D Test Statistic | 0.388 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.791 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.0836 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.147 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

**Gamma Statistics on Detected Data Only**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.729 | k star (bias corrected MLE) | 0.69 |
| Theta hat (MLE) | 0.389 | Theta star (bias corrected MLE) | 0.411 |
| nu hat (MLE) | 56.88 | nu star (bias corrected) | 53.83 |
| MLE Mean (bias corrected) | 0.284 | | |
| MLE Sd (bias corrected) | 0.341 | 95% Percentile of Chisquare (2kstar) | 4.722 |

**Gamma ROS Statistics using Imputed Non-Detects**

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

| | | | |
|---|---|---|---|
| Minimum | 0.0069 | Mean | 0.277 |
| Maximum | 1.4 | Median | 0.13 |
| SD | 0.351 | CV | 1.267 |
| k hat (MLE) | 0.7 | k star (bias corrected MLE) | 0.665 |
| Theta hat (MLE) | 0.395 | Theta star (bias corrected MLE) | 0.417 |
| nu hat (MLE) | 56.03 | nu star (bias corrected) | 53.16 |
| MLE Mean (bias corrected) | 0.277 | MLE Sd (bias corrected) | 0.34 |
| 95% Percentile of Chisquare (2kstar) | 4.61 | 90% Percentile | 0.703 |
| 95% Percentile | 0.96 | 99% Percentile | 1.575 |

**The following statistics are computed using Gamma ROS Statistics on Imputed Data**

**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**

| | WH | HW | | WH | HW |
|---|---|---|---|---|---|
| 95% Approx. Gamma UTL with 95% Coverage | 1.288 | 1.424 | 95% Approx. Gamma UPL | 0.95 | 1.005 |
| 95% Gamma USL | 2.096 | 2.508 | | | |

**Estimates of Gamma Parameters using KM Estimates**

| | | | |
|---|---|---|---|
| Mean (KM) | 0.277 | SD (KM) | 0.346 |
| Variance (KM) | 0.12 | SE of Mean (KM) | 0.0555 |
| k hat (KM) | 0.638 | k star (KM) | 0.607 |
| nu hat (KM) | 51.06 | nu star (KM) | 48.56 |
| theta hat (KM) | 0.434 | theta star (KM) | 0.456 |
| 80% gamma percentile (KM) | 0.456 | 90% gamma percentile (KM) | 0.718 |
| 95% gamma percentile (KM) | 0.991 | 99% gamma percentile (KM) | 1.653 |

**The following statistics are computed using gamma distribution and KM estimates**

**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**

| | WH | HW | | WH | HW |
|---|---|---|---|---|---|
| 95% Approx. Gamma UTL with 95% Coverage | 1.27 | 1.404 | 95% Approx. Gamma UPL | 0.937 | 0.992 |

| | | | | | |
|---|---|---|---|---|---|
| 95% KM Gamma Percentile | 0.893 | 0.939 | 95% Gamma USL | 2.063 | 2.47 |

**Lognormal GOF Test on Detected Observations Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.962 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.939 | Detected Data appear Lognormal at 5% Significance Level |
| Lilliefors Test Statistic | 0.0839 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.14 | Detected Data appear Lognormal at 5% Significance Level |

**Detected Data appear Lognormal at 5% Significance Level**

**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 0.277 | Mean in Log Scale | -2.177 |
| SD in Original Scale | 0.351 | SD in Log Scale | 1.539 |
| 95% UTL95% Coverage | 2.95 | 95% BCA UTL95% Coverage | 1.4 |
| 95% Bootstrap (%) UTL95% Coverage | 1.4 | 95% UPL (t) | 1.566 |
| 90% Percentile (z) | 0.815 | 95% Percentile (z) | 1.426 |
| 99% Percentile (z) | 4.07 | 95% USL | 9.36 |

**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| KM Mean of Logged Data | -2.16 | 95% KM UTL (Lognormal)95% Coverage | 2.666 |
| KM SD of Logged Data | 1.483 | 95% KM UPL (Lognormal) | 1.448 |
| 95% KM Percentile Lognormal (z) | 1.323 | 95% KM USL (Lognormal) | 8.113 |

**Background DL/2 Statistics Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 0.277 | Mean in Log Scale | -2.177 |
| SD in Original Scale | 0.351 | SD in Log Scale | 1.541 |
| 95% UTL95% Coverage | 2.958 | 95% UPL (t) | 1.57 |
| 90% Percentile (z) | 0.816 | 95% Percentile (z) | 1.429 |
| 99% Percentile (z) | 4.083 | 95% USL | 9.399 |

**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**

**Nonparametric Distribution Free Background Statistics**

**Data appear to follow a Discernible Distribution at 5% Significance Level**

**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**

| | | | |
|---|---|---|---|
| Order of Statistic, r | 40 | 95% UTL with95% Coverage | 1.4 |
| Approx, f used to compute achieved CC | 2.105 | Approximate Actual Confidence Coefficient achieved by UTL | 0.871 |
| Approximate Sample Size needed to achieve specified CC | 59 | 95% UPL | 1.302 |
| 95% USL | 1.4 | 95% KM Chebyshev UPL | 1.805 |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.
The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

## Result (Iron)

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 41 | Number of Missing Observations | 0 |
| Number of Distinct Observations | 36 | | |
| Number of Detects | 39 | Number of Non-Detects | 2 |
| Number of Distinct Detects | 35 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 0.23 | Minimum Non-Detect | 0.1 |
| Maximum Detect | 170 | Maximum Non-Detect | 0.1 |
| Variance Detected | 1043 | Percent Non-Detects | 4.878% |
| Mean Detected | 18.23 | SD Detected | 32.3 |
| Mean of Detected Logged Data | 1.705 | SD of Detected Logged Data | 1.668 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.11 | d2max (for USL) | 2.878 |

**Normal GOF Test on Detects Only**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.593 | **Shapiro Wilk GOF Test** | |
| 5% Shapiro Wilk Critical Value | 0.939 | Data Not Normal at 5% Significance Level | |
| Lilliefors Test Statistic | 0.289 | **Lilliefors GOF Test** | |
| 5% Lilliefors Critical Value | 0.14 | Data Not Normal at 5% Significance Level | |

**Data Not Normal at 5% Significance Level**

**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**

| | | | |
|---|---|---|---|
| KM Mean | 17.35 | KM SD | 31.34 |
| 95% UTL95% Coverage | 83.48 | 95% KM UPL (t) | 70.76 |
| 90% KM Percentile (z) | 57.51 | 95% KM Percentile (z) | 68.9 |
| 99% KM Percentile (z) | 90.25 | 95% KM USL | 107.5 |

**DL/2 Substitution Background Statistics Assuming Normal Distribution**

| | | | |
|---|---|---|---|
| Mean | 17.35 | SD | 31.73 |
| 95% UTL95% Coverage | 84.3 | 95% UPL (t) | 71.42 |
| 90% Percentile (z) | 58.01 | 95% Percentile (z) | 69.54 |
| 99% Percentile (z) | 91.16 | 95% USL | 108.7 |

**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**

**Gamma GOF Tests on Detected Observations Only**

| | | | |
|---|---|---|---|
| A-D Test Statistic | 0.95 | **Anderson-Darling GOF Test** | |
| 5% A-D Critical Value | 0.81 | Data Not Gamma Distributed at 5% Significance Level | |
| K-S Test Statistic | 0.137 | **Kolmogorov-Smirnov GOF** | |
| 5% K-S Critical Value | 0.149 | Detected data appear Gamma Distributed at 5% Significance Level | |

**Detected data follow Appr. Gamma Distribution at 5% Significance Level**

**Gamma Statistics on Detected Data Only**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.526 | k star (bias corrected MLE) | 0.502 |
| Theta hat (MLE) | 34.68 | Theta star (bias corrected MLE) | 36.29 |
| nu hat (MLE) | 41.01 | nu star (bias corrected) | 39.19 |
| MLE Mean (bias corrected) | 18.23 | | |
| MLE Sd (bias corrected) | 25.72 | 95% Percentile of Chisquare (2kstar) | 3.854 |

**Gamma ROS Statistics using Imputed Non-Detects**

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

| | | | |
|---|---|---|---|
| Minimum | 0.01 | Mean | 17.35 |
| Maximum | 170 | Median | 4.6 |
| SD | 31.73 | CV | 1.829 |
| k hat (MLE) | 0.444 | k star (bias corrected MLE) | 0.428 |
| Theta hat (MLE) | 39.04 | Theta star (bias corrected MLE) | 40.52 |
| nu hat (MLE) | 36.43 | nu star (bias corrected) | 35.1 |
| MLE Mean (bias corrected) | 17.35 | MLE Sd (bias corrected) | 26.51 |
| 95% Percentile of Chisquare (2kstar) | 3.474 | 90% Percentile | 48.39 |
| 95% Percentile | 70.39 | 99% Percentile | 125.3 |

**The following statistics are computed using Gamma ROS Statistics on Imputed Data**

**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**

| | WH | HW | | WH | HW |
|---|---|---|---|---|---|
| 95% Approx. Gamma UTL with 95% Coverage | 90.35 | 101.4 | 95% Approx. Gamma UPL | 64.03 | 67.92 |

| | | |
|---|---|---|
| 95% Gamma USL | 158 | 196.9 |

**Estimates of Gamma Parameters using KM Estimates**

| | | | |
|---|---|---|---|
| Mean (KM) | 17.35 | SD (KM) | 31.34 |
| Variance (KM) | 982 | SE of Mean (KM) | 4.958 |
| k hat (KM) | 0.307 | k star (KM) | 0.3 |
| nu hat (KM) | 25.13 | nu star (KM) | 24.63 |
| theta hat (KM) | 56.6 | theta star (KM) | 57.76 |
| 80% gamma percentile (KM) | 26.61 | 90% gamma percentile (KM) | 51.16 |
| 95% gamma percentile (KM) | 79.34 | 99% gamma percentile (KM) | 152.5 |

**The following statistics are computed using gamma distribution and KM estimates**

**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**

| | WH | HW | | WH | HW |
|---|---|---|---|---|---|
| 95% Approx. Gamma UTL with 95% Coverage | 87.1 | 95.44 | 95% Approx. Gamma UPL | 62.06 | 64.54 |
| 95% KM Gamma Percentile | 58.86 | 60.75 | 95% Gamma USL | 151.3 | 182.6 |

**Lognormal GOF Test on Detected Observations Only**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.98 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.939 | Detected Data appear Lognormal at 5% Significance Level |
| Lilliefors Test Statistic | 0.0623 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.14 | Detected Data appear Lognormal at 5% Significance Level |

**Detected Data appear Lognormal at 5% Significance Level**

**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 17.35 | Mean in Log Scale | 1.506 |
| SD in Original Scale | 31.73 | SD in Log Scale | 1.853 |
| 95% UTL95% Coverage | 225.2 | 95% BCA UTL95% Coverage | 89 |
| 95% Bootstrap (%) UTL95% Coverage | 170 | 95% UPL (t) | 106.1 |
| 90% Percentile (z) | 48.49 | 95% Percentile (z) | 95.06 |
| 99% Percentile (z) | 336.1 | 95% USL | 933.6 |

**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| KM Mean of Logged Data | 1.509 | 95% KM UTL (Lognormal)95% Coverage | 212.1 |
| KM SD of Logged Data | 1.824 | 95% KM UPL (Lognormal) | 101.2 |
| 95% KM Percentile Lognormal (z) | 90.79 | 95% KM USL (Lognormal) | 859.7 |

**Background DL/2 Statistics Assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| Mean in Original Scale | 17.35 | Mean in Log Scale | 1.475 |
| SD in Original Scale | 31.73 | SD in Log Scale | 1.922 |
| 95% UTL95% Coverage | 252.6 | 95% UPL (t) | 115.8 |
| 90% Percentile (z) | 51.36 | 95% Percentile (z) | 103.3 |
| 99% Percentile (z) | 382.8 | 95% USL | 1105 |

**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**

**Nonparametric Distribution Free Background Statistics**

**Data appear to follow a Discernible Distribution at 5% Significance Level**

**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**

| | | | |
|---|---|---|---|
| Order of Statistic, r | 41 | 95% UTL with95% Coverage | 170 |
| Approx, f used to compute achieved CC | 2.158 | Approximate Actual Confidence Coefficient achieved by UTL | 0.878 |
| Approximate Sample Size needed to achieve specified CC | 59 | 95% UPL | 86.9 |
| 95% USL | 170 | 95% KM Chebyshev UPL | 155.6 |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

## Result (Manganese)

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 32 | Number of Distinct Observations | 29 |
| Minimum | 0.041 | First Quartile | 0.315 |
| Second Largest | 4.8 | Median | 0.765 |
| Maximum | 6.4 | Third Quartile | 1.3 |
| Mean | 1.187 | SD | 1.416 |
| Coefficient of Variation | 1.192 | Skewness | 2.415 |
| Mean of logged Data | -0.395 | SD of logged Data | 1.134 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.186 | d2max (for USL) | 2.773 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.708 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.93 | Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.25 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.154 | Data Not Normal at 5% Significance Level |

**Data Not Normal at 5% Significance Level**

**Background Statistics Assuming Normal Distribution**

| | | | | |
|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 4.282 | 90% Percentile (z) | 3.001 |
| | 95% UPL (t) | 3.625 | 95% Percentile (z) | 3.516 |
| | 95% USL | 5.113 | 99% Percentile (z) | 4.481 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.41 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.775 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.117 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.16 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.017 | k star (bias corrected MLE) | 0.943 |
| Theta hat (MLE) | 1.167 | Theta star (bias corrected MLE) | 1.259 |
| nu hat (MLE) | 65.11 | nu star (bias corrected) | 60.34 |
| MLE Mean (bias corrected) | 1.187 | MLE Sd (bias corrected) | 1.223 |

**Background Statistics Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Wilson Hilferty (WH) Approx. Gamma UPL | | 3.645 | 90% Percentile 2.774 |
| 95% Hawkins Wixley (HW) Approx. Gamma UPL | | 3.771 | 95% Percentile 3.632 |
| 95% WH Approx. Gamma UTL with | 95% Coverage | 4.924 | 99% Percentile 5.633 |
| 95% HW Approx. Gamma UTL with | 95% Coverage | 5.275 | |
| 95% WH USL | | 6.927 | 95% HW USL 7.773 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.987 | **Shapiro Wilk Lognormal GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.93 | Data appear Lognormal at 5% Significance Level |
| Lilliefors Test Statistic | 0.0734 | **Lilliefors Lognormal GOF Test** |
| 5% Lilliefors Critical Value | 0.154 | Data appear Lognormal at 5% Significance Level |

**Data appear Lognormal at 5% Significance Level**

**Background Statistics assuming Lognormal Distribution**

| | | | | | |
|---|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 8.036 | 90% Percentile (z) | | 2.881 |
| | 95% UPL (t) | 4.747 | 95% Percentile (z) | | 4.35 |
| | 95% USL | 15.64 | 99% Percentile (z) | | 9.42 |

**Nonparametric Distribution Free Background Statistics**

**Data appear Gamma Distributed at 5% Significance Level**

**Nonparametric Upper Limits for Background Threshold Values**

| | | | | | |
|---|---|---|---|---|---|
| Order of Statistic, r | | 32 | 95% UTL with | 95% Coverage | 6.4 |
| Approx, f used to compute achieved CC | | 1.684 | Approximate Actual Confidence Coefficient achieved by UTL | | 0.806 |
| | | | Approximate Sample Size needed to achieve specified CC | | 59 |
| 95% Percentile Bootstrap UTL with | 95% Coverage | 6.4 | 95% BCA Bootstrap UTL with | 95% Coverage | 6.4 |
| | 95% UPL | 5.36 | | 90% Percentile | 2.09 |
| | 90% Chebyshev UPL | 5.5 | | 95% Percentile | 4.305 |
| | 95% Chebyshev UPL | 7.454 | | 99% Percentile | 5.904 |
| | 95% USL | 6.4 | | | |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.
The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

## Result (Sulfate)

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 48 | Number of Distinct Observations | 17 |
| Minimum | 190 | First Quartile | 1600 |
| Second Largest | 2300 | Median | 1800 |
| Maximum | 2800 | Third Quartile | 2000 |
| Mean | 1776 | SD | 405.6 |
| Coefficient of Variation | 0.228 | Skewness | -1.313 |
| Mean of logged Data | 7.435 | SD of logged Data | 0.384 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.069 | d2max (for USL) | 2.941 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.901 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.947 | Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.155 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.127 | Data Not Normal at 5% Significance Level |

**Data Not Normal at 5% Significance Level**

**Background Statistics Assuming Normal Distribution**

| | | | | | |
|---|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 2615 | 90% Percentile (z) | | 2296 |
| | 95% UPL (t) | 2463 | 95% Percentile (z) | | 2443 |
| | 95% USL | 2969 | 99% Percentile (z) | | 2719 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 3.502 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.749 | Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.213 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.128 | Data Not Gamma Distributed at 5% Significance Level |

**Data Not Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 10.76 | k star (bias corrected MLE) | 10.1 |
| Theta hat (MLE) | 165 | Theta star (bias corrected MLE) | 175.8 |
| nu hat (MLE) | 1033 | nu star (bias corrected) | 969.7 |
| MLE Mean (bias corrected) | 1776 | MLE Sd (bias corrected) | 558.7 |

**Background Statistics Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Wilson Hilferty (WH) Approx. Gamma UPL | 2784 | 90% Percentile | 2519 |
| 95% Hawkins Wixley (HW) Approx. Gamma UPL | 2866 | 95% Percentile | 2783 |
| 95% WH Approx. Gamma UTL with 95% Coverage | 3063 | 99% Percentile | 3326 |
| 95% HW Approx. Gamma UTL with 95% Coverage | 3180 | | |
| 95% WH USL | 3786 | 95% HW USL | 4015 |

**Lognormal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.596 | **Shapiro Wilk Lognormal GOF Test** | |
| 5% Shapiro Wilk Critical Value | 0.947 | Data Not Lognormal at 5% Significance Level | |
| Lilliefors Test Statistic | 0.251 | **Lilliefors Lognormal GOF Test** | |
| 5% Lilliefors Critical Value | 0.127 | Data Not Lognormal at 5% Significance Level | |

**Data Not Lognormal at 5% Significance Level**

**Background Statistics assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% UTL with 95% Coverage | 3747 | 90% Percentile (z) | 2770 |
| 95% UPL (t) | 3247 | 95% Percentile (z) | 3185 |
| 95% USL | 5237 | 99% Percentile (z) | 4137 |

**Nonparametric Distribution Free Background Statistics**

**Data do not follow a Discernible Distribution (0.05)**

**Nonparametric Upper Limits for Background Threshold Values**

| | | | |
|---|---|---|---|
| Order of Statistic, r | 47 | 95% UTL with 95% Coverage | 2300 |
| Approx, f used to compute achieved CC | 1.237 | Approximate Actual Confidence Coefficient achieved by UTL | 0.699 |
| | | Approximate Sample Size needed to achieve specified CC | 93 |
| 95% Percentile Bootstrap UTL with 95% Coverage | 2625 | 95% BCA Bootstrap UTL with 95% Coverage | 2200 |
| 95% UPL | 2255 | 90% Percentile | 2130 |
| 90% Chebyshev UPL | 3005 | 95% Percentile | 2200 |
| 95% Chebyshev UPL | 3562 | 99% Percentile | 2565 |
| 95% USL | 2800 | | |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.
The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

**Result (Total Dissolved Solids)**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 48 | Number of Distinct Observations | 46 |
| Minimum | 1460 | First Quartile | 2793 |
| Second Largest | 4320 | Median | 3220 |
| Maximum | 5100 | Third Quartile | 3698 |
| Mean | 3265 | SD | 645.2 |
| Coefficient of Variation | 0.198 | Skewness | 0.204 |
| Mean of logged Data | 8.071 | SD of logged Data | 0.208 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.069 | d2max (for USL) | 2.941 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.981 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.947 | Data appear Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.0818 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.127 | Data appear Normal at 5% Significance Level |

**Data appear Normal at 5% Significance Level**

**Background Statistics Assuming Normal Distribution**

| | | | | |
|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 4599 | 90% Percentile (z) | 4091 |
| | 95% UPL (t) | 4358 | 95% Percentile (z) | 4326 |
| | 95% USL | 5162 | 99% Percentile (z) | 4765 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.35 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.748 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.0816 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.128 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 24.9 | k star (bias corrected MLE) | 23.35 |
| Theta hat (MLE) | 131.1 | Theta star (bias corrected MLE) | 139.8 |
| nu hat (MLE) | 2390 | nu star (bias corrected) | 2242 |
| MLE Mean (bias corrected) | 3265 | MLE Sd (bias corrected) | 675.5 |

**Background Statistics Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Wilson Hilferty (WH) Approx. Gamma UPL | 4464 | 90% Percentile | 4155 |
| 95% Hawkins Wixley (HW) Approx. Gamma UPL | 4483 | 95% Percentile | 4449 |
| 95% WH Approx. Gamma UTL with 95% Coverage | 4775 | 99% Percentile | 5038 |
| 95% HW Approx. Gamma UTL with 95% Coverage | 4807 | | |
| 95% WH USL | 5557 | 95% HW USL | 5630 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.953 | **Shapiro Wilk Lognormal GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.947 | Data appear Lognormal at 5% Significance Level |
| Lilliefors Test Statistic | 0.0883 | **Lilliefors Lognormal GOF Test** |
| 5% Lilliefors Critical Value | 0.127 | Data appear Lognormal at 5% Significance Level |

**Data appear Lognormal at 5% Significance Level**

**Background Statistics assuming Lognormal Distribution**

| | | | | |
|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 4922 | 90% Percentile (z) | 4178 |
| | 95% UPL (t) | 4554 | 95% Percentile (z) | 4506 |
| | 95% USL | 5902 | 99% Percentile (z) | 5193 |

**Nonparametric Distribution Free Background Statistics**

**Data appear Normal at 5% Significance Level**

**Nonparametric Upper Limits for Background Threshold Values**

| | | | |
|---|---|---|---|
| Order of Statistic, r | 47 | 95% UTL with 95% Coverage | 4320 |
| Approx, f used to compute achieved CC | 1.237 | Approximate Actual Confidence Coefficient achieved by UTL | 0.699 |
| | | Approximate Sample Size needed to achieve specified CC | 93 |
| 95% Percentile Bootstrap UTL with 95% Coverage | 4827 | 95% BCA Bootstrap UTL with 95% Coverage | 4827 |
| 95% UPL | 4307 | 90% Percentile | 4051 |
| 90% Chebyshev UPL | 5220 | 95% Percentile | 4283 |
| 95% Chebyshev UPL | 6106 | 99% Percentile | 4733 |
| 95% USL | 5100 | | |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

**Background Statistics for Uncensored Full Data Sets**

**User Selected Options**

| | |
|---|---|
| Date/Time of Computation | ProUCL 5.14/16/2021 12:32:19 AM |
| From File | P:\Western Refining\Giant Former Refinery\Background Statistics and EPA 5-Year Review\Background Statist |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Coverage | 95% |
| New or Future K Observations | 1 |
| Number of Bootstrap Operations | 2000 |

**Result (Chromium)**

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 40 | Number of Distinct Observations | 34 |
| Minimum | 0.006 | First Quartile | 0.038 |
| Second Largest | 1.32 | Median | 0.13 |
| Maximum | 1.4 | Third Quartile | 0.365 |
| Mean | 0.277 | SD | 0.351 |
| Coefficient of Variation | 1.268 | Skewness | 1.886 |
| Mean of logged Data | -2.16 | SD of logged Data | 1.502 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.117 | d2max (for USL) | 2.868 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.747 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.94 | Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.228 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.139 | Data Not Normal at 5% Significance Level |

**Data Not Normal at 5% Significance Level**

**Background Statistics Assuming Normal Distribution**

| | | | |
|---|---|---|---|
| 95% UTL with 95% Coverage | 1.019 | 90% Percentile (z) | 0.726 |
| 95% UPL (t) | 0.875 | 95% Percentile (z) | 0.854 |
| 95% USL | 1.283 | 99% Percentile (z) | 1.093 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.378 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.795 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.0812 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.146 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.692 | k star (bias corrected MLE) | 0.656 |
| Theta hat (MLE) | 0.4 | Theta star (bias corrected MLE) | 0.421 |
| nu hat (MLE) | 55.34 | nu star (bias corrected) | 52.52 |
| MLE Mean (bias corrected) | 0.277 | MLE Sd (bias corrected) | 0.341 |

**Background Statistics Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Wilson Hilferty (WH) Approx. Gamma UPL | 0.953 | 90% Percentile | 0.705 |
| 95% Hawkins Wixley (HW) Approx. Gamma UPL | 1.011 | 95% Percentile | 0.964 |
| 95% WH Approx. Gamma UTL with 95% Coverage | 1.294 | 99% Percentile | 1.585 |
| 95% HW Approx. Gamma UTL with 95% Coverage | 1.435 | | |
| 95% WH USL | 2.108 | 95% HW USL | 2.534 |

**Lognormal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.959 | **Shapiro Wilk Lognormal GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.94 | Data appear Lognormal at 5% Significance Level |
| Lilliefors Test Statistic | 0.083 | **Lilliefors Lognormal GOF Test** |

| | | | |
|---|---|---|---|
| 5% Lilliefors Critical Value | 0.139 | Data appear Lognormal at 5% Significance Level | |

**Data appear Lognormal at 5% Significance Level**

**Background Statistics assuming Lognormal Distribution**

| | | | | | |
|---|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 2.775 | 90% Percentile (z) | 0.791 |
| | 95% UPL (t) | 1.496 | 95% Percentile (z) | 1.365 |
| | 95% USL | 8.565 | 99% Percentile (z) | 3.799 |

**Nonparametric Distribution Free Background Statistics**

**Data appear Gamma Distributed at 5% Significance Level**

**Nonparametric Upper Limits for Background Threshold Values**

| | | | | | |
|---|---|---|---|---|---|
| Order of Statistic, r | 40 | | 95% UTL with | 95% Coverage | 1.4 |
| Approx, f used to compute achieved CC | 2.105 | | Approximate Actual Confidence Coefficient achieved by UTL | | 0.871 |
| | | | Approximate Sample Size needed to achieve specified CC | | 59 |
| 95% Percentile Bootstrap UTL with | 95% Coverage | 1.4 | 95% BCA Bootstrap UTL with | 95% Coverage | 1.4 |
| | 95% UPL | 1.302 | | 90% Percentile | 0.731 |
| | 90% Chebyshev UPL | 1.342 | | 95% Percentile | 0.968 |
| | 95% Chebyshev UPL | 1.825 | | 99% Percentile | 1.369 |
| | 95% USL | 1.4 | | | |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.
The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

## Result (Iron)

**General Statistics**

| | | | |
|---|---|---|---|
| Total Number of Observations | 41 | Number of Distinct Observations | 36 |
| Minimum | 0.1 | First Quartile | 1.4 |
| Second Largest | 89 | Median | 4.6 |
| Maximum | 170 | Third Quartile | 17 |
| Mean | 17.35 | SD | 31.73 |
| Coefficient of Variation | 1.829 | Skewness | 3.344 |
| Mean of logged Data | 1.509 | SD of logged Data | 1.846 |

**Critical Values for Background Threshold Values (BTVs)**

| | | | |
|---|---|---|---|
| Tolerance Factor K (For UTL) | 2.11 | d2max (for USL) | 2.878 |

**Normal GOF Test**

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.583 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.941 | Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.293 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.137 | Data Not Normal at 5% Significance Level |

**Data Not Normal at 5% Significance Level**

**Background Statistics Assuming Normal Distribution**

| | | | | | |
|---|---|---|---|---|---|
| 95% UTL with | 95% Coverage | 84.3 | 90% Percentile (z) | 58.01 |
| | 95% UPL (t) | 71.42 | 95% Percentile (z) | 69.54 |
| | 95% USL | 108.6 | 99% Percentile (z) | 91.16 |

**Gamma GOF Test**

| | | |
|---|---|---|
| A-D Test Statistic | 0.796 | **Anderson-Darling Gamma GOF Test** |
| 5% A-D Critical Value | 0.819 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.126 | **Kolmogorov-Smirnov Gamma GOF Test** |
| 5% K-S Critical Value | 0.146 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

**Gamma Statistics**

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.476 | k star (bias corrected MLE) | 0.458 |
| Theta hat (MLE) | 36.44 | Theta star (bias corrected MLE) | 37.92 |
| nu hat (MLE) | 39.04 | nu star (bias corrected) | 37.52 |
| MLE Mean (bias corrected) | 17.35 | MLE Sd (bias corrected) | 25.65 |

**Background Statistics Assuming Gamma Distribution**

| | | | |
|---|---|---|---|
| 95% Wilson Hilferty (WH) Approx. Gamma UPL | 63.23 | 90% Percentile | 47.79 |
| 95% Hawkins Wixley (HW) Approx. Gamma UPL | 65.94 | 95% Percentile | 68.78 |
| 95% WH Approx. Gamma UTL with 95% Coverage | 88.92 | 99% Percentile | 120.8 |
| 95% HW Approx. Gamma UTL with 95% Coverage | 97.75 | | |
| 95% WH USL | 154.8 | 95% HW USL | 187.7 |

**Lognormal GOF Test**

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.979 | **Shapiro Wilk Lognormal GOF Test** | |
| 5% Shapiro Wilk Critical Value | 0.941 | Data appear Lognormal at 5% Significance Level | |
| Lilliefors Test Statistic | 0.0554 | **Lilliefors Lognormal GOF Test** | |
| 5% Lilliefors Critical Value | 0.137 | Data appear Lognormal at 5% Significance Level | |

**Data appear Lognormal at 5% Significance Level**

**Background Statistics assuming Lognormal Distribution**

| | | | |
|---|---|---|---|
| 95% UTL with 95% Coverage | 222.5 | 90% Percentile (z) | 48.19 |
| 95% UPL (t) | 105.2 | 95% Percentile (z) | 94.24 |
| 95% USL | 917.7 | 99% Percentile (z) | 331.6 |

**Nonparametric Distribution Free Background Statistics**

**Data appear Gamma Distributed at 5% Significance Level**

**Nonparametric Upper Limits for Background Threshold Values**

| | | | |
|---|---|---|---|
| Order of Statistic, r | 41 | 95% UTL with 95% Coverage | 170 |
| Approx, f used to compute achieved CC | 2.158 | Approximate Actual Confidence Coefficient achieved by UTL | 0.878 |
| | | Approximate Sample Size needed to achieve specified CC | 59 |
| 95% Percentile Bootstrap UTL with 95% Coverage | 170 | 95% BCA Bootstrap UTL with 95% Coverage | 89 |
| 95% UPL | 86.9 | 90% Percentile | 48 |
| 90% Chebyshev UPL | 113.7 | 95% Percentile | 68 |
| 95% Chebyshev UPL | 157.3 | 99% Percentile | 137.6 |
| 95% USL | 170 | | |

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.