AP - 111

SMW-2 AREA BOUNDARY WELL INSTALLATION REPORT



September 25, 2019

Mr. John E. Kieling, Chief New Mexico Environmental Department 2905 Rodeo Park Drive East, Bldg. 1 Santa Fe, NM 87505-6303

RE: Response to Disapproval SMW-2 Area and Boundary Well Installation Report Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.) EPA ID# NMD000333211 HWB-WRG-19-008

Dear Mr. Kieling:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting the enclosed responses to your comments dated May 21, 2019 on the referenced Report. The Report has been revised per your comments and enclosed for your review. If there are any questions, please call Brian Moore at 505-726-9745.

Certification

Icertify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely, Marathon Petroleum Company LP, Gallup Refinery

Robert S. Hanks

Robert S. Hanks Refinery General Manager

Enclosure

cc K. Van Horn NMED C. Chavez NMOCD B. Moore Marathon Gallup Refinery

92 Giant Crossing Road Jamestown, NM 87347

RESPONSE TO COMMENTS May 21, 2019 Disapproval – SMW-2 Area and Boundary Well Installation Report (April 2019)

NMED Comment 1:

The cover letter states, " [t]his report was prepared in response to New Mexico Environmental Department (NMED) comments in the 2013 and 2014 Annual Facility-Wide Ground Water Monitoring Reports." More accurately, the Report was submitted based on the Permittee's Investigation Work Plan and NMED's comments. No response is necessary.

MPC Response 1:

Acknowledged.

NMED Comment 2:

The Executive Summary, page E-i, states, "[t]he sample was very turbid and dissolved metals analyses were not performed." A turbid groundwater sample should have been filtered to remove excessive suspended solids. Turbidity in groundwater should not prevent collection of groundwater samples for dissolved metals analysis. Provide a more detailed explanation in a response letter.

MPC Response 2:

Well BW-4B was developed on June 27, 2017 at approximately 1330. The predevelopment depth to water was 30.92 ft btoc. Approximately 12 gallons of turbid water were removed from the well before the well dried up. The depth to water post-development was 63.88 ftbtoc. On June, 28, 2017 the sampler mobbed back to BW-4B at 1000. The depth to water was 51.65 ft btoc. The well had not fully recovered. The sampler collected a water sample for water quality parameters. The sampler then collected enough water to fill up 5 voa vials (VOCs), one 250-ml amber (TPH), and one 1-liter amber (SVOCs) per the sampling order required during groundwater sampling. At that point, the groundwater had become too turbid to collect a filtered sample. The water was so turbid that when the syringe was filled and evacuated thru the filter into the sample container only about 5 drops of water were yielded into the sample container before the filter became unusable. The water that was yielded into the container was not clear and was obviously not being filtered properly due to the turbidity. It would take a minimum of forty filters to collect that one sample of questionable quality. The sampler chose not to collect that sample and collected the remainder of the required analytical suite.

NMED Comment 3:

The Executive Summary, page E-i, states, "[c]hloride was detected at a concentration (1,400 Mg/L) above the screening level (250 mg/L) in one sample collected from well BW-5C. Diesel range organics (DRO) were detected at low concentrations of 0.47 mg/L and 0.74 mg/L in groundwater samples collected at wells BW-4B and BW-5B, respectively, in comparison to the screening level of 0.086 mg/L." There are currently no other groundwater monitoring wells west of these boundary wells. The extent of groundwater contamination west of pond EP-9 is not delineated. Comment 1 in NMED's *Disapproval Annual Groundwater Monitoring Report: Gallup Refinery - 2017*, dated March 21, 2019, requires installation of more wells west of these boundary wells. These new wells are intended to delineate the contaminant plumes west of Pond EP-9. In addition, other organic constituents (e.g., MTBE, EDC) were detected in the groundwater sample collected from well BW-5C according to Appendix E (Groundwater Analytical Reports). Revise the Report for accuracy.

MPC Response 3:

NMED references the following statement from the Executive Summary "[c]hloride was detected at a concentration (1,400 Mg/L) above the screening level (250 mg/L) in one sample collected from well BW-5C. Diesel range organics (DRO) were detected at low concentrations of 0.47 mg/L and 0.74 mg/L in groundwater samples collected at wells BW-4B and BW-5B, respectively, in comparison to the screening level of 0.086 mg/L." and then directs that the Report be revised for accuracy. We checked this statement and find it to be accurate. Also, the detection of MTBE and EDC are shown in Table 3 and discussed on page 6-5 of the report. We do not attempt to discuss every detection in the Executive Summary of the investigation reports. No change is made to the Report.

NMED Comment 4:

In Section 2.1 (SMW-2 Area), page 2-1, the Permittee states, "MTBE has been detected in groundwater samples collected at SMW-2, but has remained below the screening level." According to the 2017 Annual Groundwater Monitoring Report, the MTBE concentration in the groundwater sample collected from well SMW-2 exceeded the screening level in August 2015. Revise the Report for accuracy.

MPC Response 4:

The quoted discussion in Section 2.1 is referring to the historical analyses that were presented in Table 1 of the referenced Work Plan. We reviewed Table 1 and have confirmed that MTBE was not detected above the screening level in the referenced Table 1. The text is revised in Section 2.1 (page 2-1) to note the detection of MTBE above the screening level in August 2015.

NMED Comment 5:

In Section 2.2 (OW-1 Area), page 2-2, the Permittee states, "[o]ther organic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-1 include benzene, toluene, and total xylenes." According to the 2017 Annual Groundwater Monitoring Report, the MTBE, ethylbenzene, and EDC concentrations in groundwater samples collected from well OW-1 were also detected (below the screening levels). The detection of MTBE in the groundwater samples collected from well OW-1 (see Comment 3). Revise the Report for accuracy.

MPC Response 5:

The text in Section 2.2 has been revised to reference additional detections of constituents included in the 2017 Annual Report.

NMED Comment 6:

In Section 2.2 (OW-1 Area), page 2-2, the Permittee states, "[o]rganic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-10 include 1, 1-dichloroethane, 1,2-dichloroethane, 1, 1-dichloroethene." According to the 2017 Annual Groundwater Monitoring Report, the cis-1, 2-DCE, 1, 2, 4-trimethylbenzene, toluene, ethylbenzene, and xylenes were also detected at concentrations below the screening levels in groundwater samples collected from well OW-10. Revise the Report for accuracy.

MPC Response 6:

The text in Section 2.2 has been revised to reference additional detections of constituents included in the 2017 Annual Report.

NMED Comment 7:

Section 3.1.1 (Boundary Wells), page 3-1, states, "[n]o discrete soil samples were retained for laboratory analysis since the field screening methods did not indicate any potential contamination." As stated numerous times in previous NMED's comments, it is necessary to collect soil samples for laboratory analysis even though field screening did not indicate any potential contamination. At a minimum of three soil samples should have been collected from each boring (e.g., from the bottom of boring, at the water table, and from vadose zone at the depth with the highest PID readings). Include the provision for all future work plans. No revision required.

MPC Response 7:

The comment is acknowledged.

NMED Comment 8:

Section 3.1.2 (SMW-2 Area), page 3-2, states, "[o]ne discrete soil sample was collected from each soil boring. The samples were from the interval exhibiting the highest soil vapor reading," Soil samples should have been collected from each boring to delineate the extent of chloride exceedance. In addition, one discrete sample per boring is not adequate (see Comment 7). NMED's *Approval, Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report]*, dated May 16, 2019 requires the Permittee to submit a work plan to install soil borings to investigate the extent of chloride exceedances. If soil data had been collected from the borings, it could be used to guide the investigation. It is important to collect soil data to provide characterization data for the site.

MPC Response 8:

NMED refers to defining the "extent of chloride exceedances." We do not find any screening levels for chloride in NMED's *Risk Assessment Guidance for Investigations and Remediation* (March 2019), nor is chloride a hazardous constituent, so possibly this comment is coming from the Oil Conservation Division (OCD). The OCD Permitted Landfarm is being evaluated for closure separately and we have not attempted to pursue that action during the installation of OW-59 and OW-60.

NMED Comment 9:

Section 4.3.1 (Well Installation and Groundwater Sample Collection) includes two subsections titled as "Boundary Wells" and "SMW-2 Areas". The section numbers of "Boundary Wells" and "SMW-2 Areas" are presented incorrectly. The sections regarding "Boundary Wells" and "SMW-2 Areas" are numbered as Section 3.3.1.1 and 3.3.1.2, respectively. These sections should be numbered as Section 4.3.1.1 and 4.3.1.2. Correct the typographical errors in the revised Report.

MPC Response 9:

The subsection numbers have been corrected to 4.3.1.1 and 4.3.1.2, as correctly identified by NMED.

NMED Comment 10:

Section 3.3.1.1 (sic) (Boundary Wells), page 4-7, states, "[t]he well [BW-5A] was installed with the screened interval ranging from 10 feet bgl to 20 feet bgl. The screen was set to intercept possible groundwater that may exist in the gravel and sand encountered from 12 feet bgl to 14 feet bgl and the very fine grain sands encountered within the silty clay from 14 feet bgl to 20.50 feet bgl." The screened interval of well BW-5A should have been set deeper with longer screen. The lithology description for the boring (page 4-6) indicates that the targeted sandy layers were

dry. Potential water presence is first recorded at the depth of 30 feet bgs in nearby boring BW-5B. Therefore, groundwater production is unlikely at the depth shallower than 30 feet bgs at the location. In addition, the depth-to-water (DTW) measurements in the closest upgradient groundwater monitoring well MKTF-44 ranged from 22.85 to 31.16 feet bgs in 2017. Since the upper sandy layer and Chinle/Alluvial Interface are unlikely to be different water bearing zones, the groundwater elevation at the location of BW-5A is expected to be comparable to that of well MKTF-44. The DTW data in MKTF-44 should have been used to guide the decision regarding the placement of the well screen. In the future, in order to make appropriate decisions regarding the placement of screened intervals in unconfined or semi-confined aquifers, review the boring logs for nearby wells for the depths where water is potentially present and historic groundwater elevation data in nearby wells. Also, a longer screen (e.g., 20 feet) is acceptable to intercept the water table and to accommodate the trend of decreasing groundwater levels in recent years. Include the measure to appropriately select screened intervals in future work plans. No revision is required.

MPC Response 10:

MPC acknowledges NMED's comment and welcomes the flexibility to use 20 feet long screens were appropriate. We'll not attempt to revisit or explain here the past reasons and requirements from NMED and OCD regarding the installation of the boundary monitoring wells dating back to 2003. However, we note that BW-1A and BW-3A are also dry, but do serve to help detect any potential releases from the nearby evaporation ponds.

NMED Comment 11:

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, "[t]he sampling was terminated at 58.5 feet bgl." The statement is misleading. No soil samples were collected from the boring. The statement "[t]he sampling was terminated at ... " appears multiple times in the Report. Revise this statement as well as all similar statements that appear in the Report for clarity.

MPC Response 11:

The term "sampling" is replaced with "drilling" on pages 4-3, 4-5, 4-7, 4-8, 4-9, 4-10, 4-12, and 4-13.

NMED Comment 12:

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, "[n]o apparent saturated sediments were encountered [at boring BW-5B]." Although no apparent saturated sediments are encountered, groundwater is produced from well BW-5B. Indications of saturation are not always obvious in tight clay characteristic of the Chinle formation. A 24-hour delay prior to well construction to allow water to enter the boring could aid in appropriate screened interval selection. No response required.

MPC Response 12:

We acknowledge the comment.

NMED Comment 13:

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, "[t]he screen [for well BW-5B) was set to intercept possible groundwater that may exist in the sandstone encountered within the silty clays from 48 feet bgl to 54 feet bgl." Well BW-5B is screened across the Chinle/Alluvial Interface according to Table 7 (Fluid Levels). However, since the sandstone describes the Sonsela formation, well BW-5B is likely screened across Sonsela/Chinle rather than Chinle/Alluvial Interface. Additionally, the DTW measurements for well BW-5B ranged from 8.65 to 10.57 feet bgs according to Table 7. The higher groundwater elevation in well BW-5B in comparison to that of up gradient well MKTF-44 is indicative of confined conditions, typically seen in the Sonsela formation. Revise the Report accordingly or provide explanation for why the Permittee believes well BW-5B is screened to Chinle/Alluvial Interface.

MPC Response 13:

First, we do not agree that the "sandstone describes the Sonsela Formation." The sandstone encountered in well BW-5B is first noted in the 48 to 50 foot below ground level (bgl) interval and is described as "trace pink sandstone at base." Sandstone is then noting as being present within a silty clay from 50 to 54 feet bgl. This is in contrast to the massive dense sandstone layer logged in nearby well BW-5C starting at a depth of 64 feet bgl and extending to the termination depth of the boring at 76 feet with an intervening layer of sand and siltstone from 68 to 69.5 feet bgl. The sandstone logged in well BW-5B is only a minor fraction in a predominantly silty clay matrix, which is clearly unlike the deeper sandstone layers observed in BW-5C, which is consistent with other logs that have drilled into the Sonsela Sandstone. We also note that "thin sandstone interbeds" were logged in the Petrified Forest Formation, which lies above the Sonsela Sandstone in well OW-1. Last, the lithology of the Petrified Forest Formation, while commonly observed to be a claystone/siltstone has also been logged as a sandstone at the site in other locations. The Petrified Forest Formation has been described in published research papers for the Four Corners Area as a "mostly bentonitic mudstone with variegated hues of purple, blue, gray, and red. They contain lenses of trough-crossbedded, biotite rich sandstones and numerous calcrete nodules indicate of extensive pedogenesis."¹

NMED Comment 14:

In Section 5 (Regulatory Criteria), page 5-2, the Permittee states, "[o]nly one constituent (di-n-octylphthalate) was detected in groundwater that does not have a screening level." Table 8.2.3 (OW-59 and OW-60 Semi-Volatile and Volatile Organic Compounds, Analytical Results Summary) does not present the detection of di-n-octyl-phthalate. Include all detections of SVOCs and VOCs regardless of presence or absence of screening levels in the table. Revise the Report accordingly.

MPC Response 14:

The text is revised on page 5-2 to reference Table 3 for this discussion. The subject detection of di-noctyl-phthalate is provided in Table 3.

NMED Comment 15:

In Section 6.2 (Groundwater Analytical Results), page 6-3, the Permittee states, "[g]roundwater samples were also analyzed for the following total metals using the indicated analytical methods," Cyanide and mercury are listed following the statement. However, cyanide is not a RCRA metal. Revise the Report accordingly.

MPC Response 15:

The reference to "total metals" has been revised on page 6-3.

NMED Comment 16:

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, "[d]etectable concentrations of acetone and benzoic acid were reported in the sample collected from BW-4B.

¹ Lucas and Others, 1997, "Stratigraphy of the Upper Triassic Chinle Group." New Mexico Geological Society Guidebook, 48th Field Conference, Mesozoic Geology and Paleontology of the Four Corners Region.

The concentrations were below the screening levels." The tables presenting the analytical results for groundwater samples collected from well BW-4B are not included in the Report. Provide these tables in the revised Report.

MPC Response 16:

The groundwater samples were collected on June 28, 2017 after the new wells were developed. The analytical results are included in Table 3. We checked on NMED's website and confirmed that Table 3 is included in the copy of the Report that NMED has posted.

NMED Comment 17:

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, "[i]n the sample collected from BW-5B acetone, toluene and benzoic acid were reported at concentrations below the screening levels. Detectable concentrations of 1,1-dichloroethane, 1,2-dichloroethane, acetone, MTBE, benzoic acid, di-n-octyl phthalate, and GRO were reported in the sample collected from BW-5C." According to Table 8.1 (BW-5B and BW-5C BTEX and MTBE Analytical Result Summary) and Table 8.1.1 (BW-5B and BW-5C General Chemistry and DRO/GRO/MRO Analytical Result Summary), MTBE and GRO are detected below the screening level in the groundwater sample collected from well BW-5B; however, these detections are not included in the statement. In addition, the detections of acetone and benzoic acid in the groundwater samples collected from well BW-5B are not presented in any tables included in the Report. Similarly, the detections of 1,1-dichloroethane, 1,2-dichloroethane, acetone, benzoic acid, and di-n-octyl phthalate are not presented in any tables included in the Report. Revise the Report for accuracy and include the analytical data tables pertinent to the discussion in the revised Report.

MPC Response 17:

The detections of acetone and benzoic acid in the groundwater samples collected from well BW-5B and the detections of 1,1-dichloroethane, 1,2-dichloroethane, acetone, benzoic acid, and di-n-octyl phthalate are presented in Table 3. The text on page 6-5 is revised to note the detections of MTBE and GRO presented in Table 8.1, which occurred in a later sampling effort that was not part of the initial well installation effort that is the focus of the *SMW-2 Area and Boundary Well Installation Report*. Additional discussion has been added to Section 6.5 (page 6-8) noting the additional detections of MTBE and GRO in a later sampling event.

NMED Comment 18:

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, "[d]etectable concentrations of 1,2,4-trimethybenzene, acetone, MTBE, and benzoic acid, were reported in the groundwater sample collected from OW-59." The tables presenting the detection of 1,2,4-trimethybenzene and benzoic acid are not included in the Report. Include the analytical data tables pertinent to the discussion in the revised Report.

MPC Response 18:

The referenced detections are included in Table 3.

NMED Comment 19:

In Section 6.2 (Groundwater Analytical Results), page 6-6, the Permittee states, "[d]etectable concentrations of 4-isopropyltoluene, acetone, MTBE, toluene, benzoic acid, and bis(2-ethylhexyl) phthalate were reported in the groundwater sample collected from OW-60." The

tables presenting the detection of 4-isopropyltoluene and benzoic acid are not included in the Report. Include the analytical data tables pertinent to the discussion in the revised Report. In addition, toluene is not detected from well OW-60 according to Table 8.2 (OW-59 and OW-60 BTEX, MTBE, General Chemistry and DRO/GRO/MRO Analytical Result Summary). Revise the Report for accuracy.

MPC Response 19:

Table 3 presents the detections of 4-isopropyltoluene, acetone, MTBE, toluene, benzoic acid, and bis(2-ethyhexyl)phthalate in the groundwater sample collected at OW-60.

NMED Comment 20:

In Section 6.3 (SMW-2 Area - Additional Sampling), page 6-7, the Permittee states, "[b)ased on the flow direction of groundwater and the reported concentrations, the elevated chloride concentrations in SMW-2 maybe originating from a source located in the area of the OCD Central landfarm, or further up-gradient." The laboratory reports included in the Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report} indicate that the chloride concentrations in the soil samples collected from the OCD Central Landfarm range from 170 mg/kg to 570 mg/kg. With exception of one sample, the chloride concentrations in soil samples collected from the landfarm did not exceed the screening level of 500 mg/kg. Although the chloride concentrations in the excavation confirmation samples, collected from depths of approximately six feet bgs, exceed the screening level in multiple locations, these soil samples were likely collected within the footprint of Evaporation Pond (EP)-10 or native soils below the pond, rather than shallow soils within the OCD Landfarm. Therefore, the landfarm is not the likely source of chloride in groundwater. Since the landfarm overlies former Pond EP-10 and Pond EP-10 may be the source of the chloride contamination in groundwater, the depth of Pond EP-10 must be identified and the soils below the landfarm must be investigated (see Comment 8). Note that the OCD has regulatory authority regarding the chloride and sulfate exceedances in groundwater. Ensure that OCD is included on all correspondence related to this issue.

MPC Response 20:

MPC is currently working with the OCD to close the OCD Landfarm and any related releases will be addressed with OCD. We acknowledge that chloride is not a hazardous constituent and therefore not regulated by NMED Hazardous Waste Bureau, but rather the OCD.

NMED Comment 21:

In Section 6.3 (SMW-2 Area - Additional Sampling), page 6-7, the Permittee states, "[t]he sulfate concentrations increase across the OCD Central landfarm moving down-gradient, with the highest reported concentrations in the area in the groundwater sample collected in OW-59. This could suggest the OCD Central landfarm is a source of the sulfate." The laboratory reports included in the *Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report]* indicate that the sulfate concentrations in the soil samples collected from the OCD Central Landfarm range from 400 mg/kg to 770 mg/kg. Since the sulfate concentration in groundwater sample collected from well OW-59 is recorded as 3,000 mg/L, the landfarm is not the likely source of sulfate in groundwater. Pond EP-10 that underlies the landfarm also must be investigated for sulfate contamination (see Comment 20).

MPC Response 21:

Similarly, to the response to Comment 20, as sulfate is not a hazardous constituent and not regulated by NMED Hazardous Waste Bureau, MPC will work with OCD to address sulfate.

NMED Comment 22:

In Section 7 (Conclusions and Recommendations), page 7-1, the Permittee states, "[i]t is recommended to install additional monitoring wells to better determine if a local source of chloride and/or sulfate is present. An Investigation Work Plan for additional monitoring wells was submitted in August, 2018 pursuant to NMED's request." NMED issued a disapproval for the work plan on February 20, 2019 and required a revised work plan by August 9, 2019. This comment serves as a reminder. No response is required.

MPC Response 22:

The comment is acknowledged.

NMED Comment 23:

The groundwater elevation data collected from well SMW-2 is not included in Figure 5 (Chinle/Alluvium Interface Potentiometric Map September 2017). Although well SMW-2 is screened to the Chinle/Alluvial Interface, the groundwater elevation in well SMW-2 is significantly higher compared to the rest of the wells screened within the same formation in the area. Provide an explanation for the higher groundwater elevation in well SMW-2 in the revised Report.

MPC Response 23:

We note that the groundwater elevation data for SMW-2 is included on Figure 5, but as noted on the Figure, neither SWM-2 nor MW-4 were used to prepare the contours, as they not believed to be screened at the contact of the Alluvium / Chinle Formation as are the other wells on Figure 5. MW-4 is screened in the deeper in the Sonsela aquifer and SMW-2 is screened in upper sands as described in the LTA Subsurface Conditions evaluation completed by Precision Engineering, Inc. in 1996. A copy of this document has been added as Appendix G.

SMW-2 Area and Boundary Well Installation Report



Gallup Refinery Marathon Petroleum Company Gallup, New Mexico

EPA ID# NMD000333211

APRIL 2019

(Revised September 2019)

hours

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List of Acronyms

API	American Petroleum Institute
bgl	below ground level (bgl)
btoc	below top of casing
DRO	diesel range organics
EPA	Environmental Protection Agency
HSA	hollow-stem auger
IDW	investigation derived waste
MCL	maximum contaminant level
msl	mean sea level
MW	monitor well
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
PID	photoionization detector
PPM	parts per million
PVC	polyvinyl chloride
SPH	separate phase hydrocarbon
SVOC	semi volatile organic compound
SWMUs	Solid Waste Management Units
ТРН	total petroleum hydrocarbon
TCLP	toxicity characteristic leaching procedure
USCS	unified soil classification system
VOC	volatile organic compound
wocc	Water Ouality Control Commission

Executive Summary

The Gallup Refinery, which is located 17 miles east of Gallup, New Mexico, has been in operation since the 1950s. Pursuant to the terms and conditions of the facility Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit and 20.4.1.500 New Mexico Administrative Code, this report documents installation of boundary wells west of the on-site evaporation ponds and installation of wells in the area of well SMW-2. This area was identified by the New Mexico Environment Department (NMED) in comment letters regarding the 2013 and 2014 Annual Facility-Wide Ground Water Monitoring Reports as requiring additional groundwater monitoring wells.

The activities completed include the installation of five permanent monitoring wells (BW-4A, BW-4B, BW-5A, BW-5B, and BW-5C) and groundwater sampling along the western property boundary in an area approximately 500 feet west of Pond 9 and 780 feet south of existing monitor well OW-1. The activities also included the installation of two permanent monitoring wells (OW-59 and OW-60) in the area of SMW-2. Water samples were also collected at monitoring wells SMW-2 and SMW-4 and evaporation ponds EP-2 and EP-3. The field activities began on June 6, 2017 and continued through June 29, 2017.

Boundary Wells

Five permanent well completions were installed, although two of the wells were dry. Three groundwater samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, total petroleum hydrocarbons (TPH), metals, and inorganic/general water quality parameters) at wells BW-4B, BW-5B and BW-5C.

Total metals concentrations exceeded the respective screening levels for arsenic, barium, beryllium, chromium, cobalt, iron, lead, manganese, nickel, and vanadium in one groundwater sample collected from well BW-4B. The sample was very turbid and dissolved metals analyses were not performed. Chloride was detected at a concentration (1,400 mg/L) above the screening level (250 mg/L) in one sample collected from well BW-5C. Diesel range organics (DRO) were detected at low concentrations of 0.47 mg/L and 0.74 mg/L in groundwater samples collected at wells BW-4B and BW-5B, respectively, in comparison to the screening level of 0.086 mg/L.

Detectable concentrations of acetone and benzoic acid were reported in the sample collected from BW-4B. The concentrations were below the screening levels. In the sample collected from BW-5B acetone, toluene and benzoic acid were reported at concentrations below the screening levels.

SMW-2 Area Wells

Two permanent well completions were installed. Two soil samples (excluding additional quality assurance samples) were collected during the advancement of the soil borings for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, TPH, and metals).

In the soil sample collected from OW-59 the lead concentration exceeded the screening level for the leachate DAF of 20. In the soil sample collected from OW-60 the iron and lead concentrations exceeded the screening level for the leachate DAF of 20. The manganese concentration exceeded non-residential soil screening level. Detectable concentrations of volatile and semi-volatile organics were reported in both soil samples but did not exceed the screening levels.

Two groundwater samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, TPH, metals, inorganic/general water quality parameters and major cations/anions) at wells OW-59 and OW-60.

Total metals concentrations exceeded the respective screening levels for iron and manganese in both wells. Arsenic exceeded the screening level in OW-59. Beryllium exceeded the screening level in OW-60. Chloride and sulfate exceeded the respective screening levels in both wells. Dissolved metals concentrations exceeded the screening level for manganese in both wells. GRO and DRO concentrations exceeded the screening levels in the sample collected from OW-59. Detectable concentrations of volatile and semi-volatile organics were reported in both groundwater samples but did not exceed the screening levels.

SMW-2 Area – Additional Sampling

Water samples collected from Monitoring wells SMW-2 and SMW-4 and evaporation ponds EP-2 and EP-3 were analyzed for major cations/anions. The chloride concentrations reported from the surface water samples collected from evaporation ponds EP-2 and EP-3 were the highest concentrations reported during the sampling event. The chloride concentrations decreased moving up-gradient from SMW-2 to OW-59 and OW-60. The highest sulfate concentrations were observed in the groundwater

sample collected from OW-59, located on the down-gradient end of the OCD Central landfarm. The sulfate concentrations decreased down-gradient at SMW-2 and were significantly lower up-gradient in the groundwater sample collected from OW-60. Based on the existing information, the source(s) of the elevated concentrations of chloride and sulfate observed in SWMU-2 are not conclusive. It is possible that there may be separate sources for sulfate and chloride.

Section 1 Introduction

The Gallup Refinery is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County. The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Gallup Refinery property covers approximately 810 acres. Figure 1 presents the refinery location and the regional vicinity, which is characterized as high desert plain comprised primarily of public lands used for grazing by cattle and sheep.

The Gallup Refinery generally processes crude oil from the Four Corners area transported to the facility by pipeline or tanker truck. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, isomerization, sulfur recovery, merox treater, and hydrotreating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

The location of the new boundary wells is shown on Figure 2. The purpose of these wells is to provide additional groundwater monitoring down-gradient of Evaporation Ponds 6 and 9. To accomplish this objective, two additional shallower monitoring wells (BW-4A and BW-4B) were installed near existing monitor well OW-1 to create three clustered wells similar to what was installed earlier at the boundary well locations (BW-1, BW-2, and BW-3). Three additional clustered wells (BW-5B and BW-5C) were installed approximately 500 feet west of Pond 9.

The location of the new wells in the area of SMW-2 is shown on Figure 3. The purposed of these wells (OW-59 and OW-60) is to determine the source of the elevated chloride and sulfated detected at monitoring well SMW-2. Groundwater samples were also collected from SMW-2 and SMW-4. Surface water samples were collected from Evaporation Ponds EP-2 and EP-3.

Section 2 describes the scope of work completed, including completion of soil borings, installation of permanent monitoring wells, soil sample collection, groundwater sample collection and surface water sample collection. Section 3 explains the results of the field investigation, including the general surface and subsurface conditions and detailed site-specific information acquired during subsurface investigations. Section 4 presents the analytical results of soil samples, groundwater samples, and surface water samples. The results of these analyses are compared to applicable State or federal screening levels.

Section 2 Background

This section presents background information for the area of the refinery property near monitoring wells SMW-2 and OW-1, including a review of historical waste management activities to identity the following:

Type and characteristics of all waste and all contaminants handled in the subject areas; Known and possible sources of contamination;

History of operations; and

Prior investigations.

2.1 SMW-2 Area

Monitoring well SMW-2 is located immediately south of the closed Land Treatment Unit (LTU). This well is not included in the RCRA Permit as part of the detection or shallow monitoring well networks, but groundwater samples are routinely collected and analyzed per the Facility-Wide Ground Water Monitoring Plan. Well SMW-2 is located on the up-gradient end of the LTU. Historical analytical results for groundwater samples collected since 2010 are included in Table 1 of the *Work Plan SWM-2 Area Investigation and Boundary Wells Installations* (DiSorbo, 2016). Also included in Table 1 of the work plan are the analytical results for groundwater samples collected in SMW-4, which is located on the north (down-gradient) end of the LTU. These historical analyses indicate the detection of chloride, sulfate, manganese, and uranium at concentrations above the applicable screening levels per the RCRA Permit. Uranium was also detected in groundwater samples collected from SMW-4 at concentrations above the screening level. MTBE has been detected in groundwater samples collected at SMW-2, but had remained below the screening level throughout the time period presented in Table 1 of the Work Plan. MTBE was reported above the screening level in August 2015 (Western, 2017)

Well SMW-2 is located down-gradient of the Central Landfarm, which is permitted by the New Mexico Oil Conservation Division (NMOCD) and also potentially down-gradient of the evaporation ponds (Figure 3). It is noted that the area where the NMOCD Central Landfarm is currently located may overlie former Evaporation Pond #10. According to information provided in the *Inventory of Solid Waste Management Units,* cell or Evaporation Pond #10 was used for wastewater from the boiler house and water softener regeneration wastes, but did not receive process wastewater discharges through the API Separator. The process of discharging directly to Evaporation Pond #10 was replaced with the addition of a neutralization tank in 1980 (Geoscience Consultants, Ltd., 1985a). Evaporation Pond #10 was no longer in service in 1985 based on information provided in the 1985 *Discharge Plan Application* (Geoscience Consultants, Ltd., 1985b).

2.2 OW-1 Area

Monitoring well OW-1 was installed in November 1980 as part of the initial site investigations conducted pursuant to RCRA (Figure 2). The well was drilled to depth of 100 feet and is screened in the Sonsela Sandstone aquifer. Well OW-10, which is also screened in the Sonsela Sandstone aquifer, is located to the east and up-gradient of OW-1. The only site operations known to have been conducted in the area are the evaporation ponds located to the east and hydraulically up-gradient of OW-1.

Analytical results for groundwater samples collected from OW-1 and OW-10 are included in Table 2 in the Work Plan SWM-2 Area Investigation and Boundary Wells Installations (DiSorbo, 2016.) MTBE was detected in groundwater samples collected at OW-10 in 2012 and 2013 at concentrations above the screening level, but has since shown concentrations below the screening level. There have been a few detections of nitrate above screening levels in OW-1 and OW-10. Chloride has consistently been detected above the screening level in groundwater samples collected at OW-10. Total metals analyses of water samples collected at OW-1 have shown sporadic occurrences of arsenic, chromium, iron, lead, and manganese above screening levels. Total analyses of uranium have consistently exceeded screening levels in samples collected at both OW-1 and OW-10. Dissolved metals analyses of water samples collected at OW-1 have shown sporadic occurrences of iron, lead, and manganese above screening levels. Dissolved analyses of uranium have consistently exceeded screening levels in samples collected at both OW-1 and OW-10. Other organic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-1 include benzene, ethylbenzene, toluene, 1,2-dichloroethane, MTBE, and total xylenes (Western, 2017). Organic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-10 include 1,1dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, and cis-1,2-dichloroethene. 1, 2, 4trimethylbenzene, toluene, ethylbenzene, and xylenes (Western, 2017).

Section 3 Scope of Activities

3.1 Monitor Well Installation and Sample Collection

Pursuant to the approved SWMU-2 Area Investigation and Boundary Well Installations Work Plan, five permanent monitoring wells were installed west of Evaporation Ponds 6 and 9 (Figure 2). Two permanent monitoring wells were installed in the area of the OCD Landfarm (Figure 3).

3.1.1 Boundary Wells

Two new wells were installed near OW-1. Well BW-4A was installed with the screen interval set in the zone designated as the Upper Sand. Well BW-4B was installed with the screen interval set just above the Chinle bedrock in the Chinle/Alluvial Interface zone. Copies of the well logs are included in Appendix A.

Three clustered wells were drilled approximately 500 feet west of Pond 9 and 780 feet south of existing monitor well OW-1. Monitor well BW-5A was installed with screened interval set in the zone designated as the Upper Sand. Monitor well BW-5B was installed with screened interval set just above the Chinle bedrock in the Chinle/Alluvial Interface zone. Monitor well BW-5C was installed with the screened interval set in the Sonsela Sandstone aquifer. Copies of the well logs are included in Appendix A.

Soil samples obtained from the soil borings were screened in the field on 2.0 foot intervals for evidence of contaminants. The screening methods included, (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds. No discrete soil samples were retained for laboratory analysis since the field screening methods did not indicate any potential contamination.

The following list provides a summary of the five permanent wells advanced using hollow stem augers:

- BW-4A; screened from 21 feet below ground level (bgl) to 36 feet bgl;
- BW-4B; screened from 41 feet bgl to 61 feet bgl;
- BW-5A; screened from 10 feet bgl to 20 feet bgl;

- BW-5B; screened from 48 feet bgl to 58 feet bgl; and
- BW-5C; screened from 64.3 feet bgl to 74.3 feet bgl.

Groundwater samples were collected from three of the five permanent monitoring wells. The groundwater samples were analyzed for volatile and semi-volatile organics, TPH (GRO, DRO, and MRO), Skinner List metals, cyanide, iron, manganese, chloride, fluoride, and sulfate. The following list provides a brief summary of the groundwater sample collection:

- BW-4A; dry; well did not yield enough water to sample;
- BW-4B; developed and sampled; yielded enough water for a full analytical suite, the groundwater was too turbid to collect a filtered sample for dissolved metals analyses;
- BW-5A; dry; well did not yield enough water to sample;
- BW-5B; developed and sampled; yielded enough water for a full analytical suite; and
- BW-5C; developed and sampled; yielded enough water for a full analytical suite.

3.1.2 SMW-2 Area

Two new wells were installed adjacent to the OCD Landfarm, which is located north of evaporation ponds EP-2 and EP-3 and up-gradient of SMW-2. Well OW-59 was installed adjacent to the northwest (down-gradient) corner of the OCD Landfarm. Well OW-60 was installed adjacent to the southeast (up-gradient) corner of the OCD Landfarm. OW-59 and OW-60 are located outside of the bermed area for the OCD Landfarm. The wells are screened in the Chinle/Alluvial Interface zone. Copies of the well logs are included in Appendix A.

Soil samples obtained from the soil borings were screened in the field on 2.0 foot intervals for evidence of contaminants. The screening methods included, (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds. One discrete soil sample was collected from each soil boring. The samples were from the interval exhibiting the highest soil vapor reading.

The following list provides a summary of the two permanent wells advanced using hollow stem augers:

- OW-59; screened from 20 feet bgl to 35 feet bgl; and
- OW-60; screened from 25 feet bgl to 45 feet bgl.

3.2 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with the installation of the permanent wells were contained and characterized using methods based on the boring locations and type of contaminants suspected or encountered. All drill cuttings generated during the boundary well installations were collected and placed into 55-gallon drums. A composite sample of the drums generated during the June 2017 well installation event was collected using a decontaminated stainless steel spoon and sent to Hall Environmental Laboratory for waste characterization analysis. The sample was analyzed for the following:

- Reactivity Cyanide (SW846 CH7);
- Reactivity Sulfide (SW846 CH7);
- Ignitability (Method 1030);
- Corrosivity pH (Method 9045);
- RCRA 8 (TCLP) Metals (Method 6010B);
- Diesel Range Organics (Method 8015B);
- Motor Oil Range Organics (Method 8015B);
- Gasoline Range Organics (Method 8015B); and
- TCLP Volatiles (Method 1311/8260B).

The Hall analytical report (#1708D66) is included in Appendix B. Based on the analyses, 28 non-hazardous/non-DOT regulated drums (16,380 pounds) were shipped off-site to Advanced Chemical Treatment in Albuquerque, NM for disposal on 8/30/2017.

Copies of the waste manifests are included in Appendix B. All purge water and decontamination water was disposed in the refinery wastewater system upstream of the API Separator.

3.3 Surveys

A global positioning system receiver was used to record the coordinates of each permanent monitor well. These coordinates were recorded on the field boring logs. Surveys were completed by a registered land surveyor for the seven permanent wells to include geographic position and land surface elevation.

Section 4 Field Investigation Results

This section provides a summary of the surface and subsurface conditions at the refinery, including the area west of Evaporation Ponds 6 and 9 and the SMW-2 area. A discussion is included on the installation of soil borings and field screening of soils. This is followed by a description of the installation of permanent monitoring wells and the collection of groundwater samples.

4.1 Surface Conditions

Site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Elevations on the refinery property range from 6,860 feet to 7,040 feet above mean sea level (msl). The area near monitor well OW-1 is at an approximate elevation of 6,866 feet msl. The elevation in the area of SMW-2 is approximately 6,887 feet msl.

Surface soils within most of the area of investigation are primarily Rehobeth silty clay loam. Rehobeth soil properties include a pH ranging from 8 to 9 standard units and salinity (naturally occurring and typically measuring up to approximately 8 mmhos/cm).

Regional surface water features include the refinery evaporation ponds and a number of small ponds (one cattle water pond and two small unnamed spring fed ponds). The site is located in the Puerco River Valley, north of the Zuni Uplift with overland flows directed northward to the tributaries of the Puerco River. The Puerco River continues to the west to the confluence with the Little Colorado River. The South Fork of the Puerco River is intermittent and retains flow only during and immediately following precipitation events.

4.2 Subsurface Conditions

The shallow subsurface soils consist of fluvial and alluvial deposits comprised of clay and silt with minor inter-bedded sand layers. The diverse properties and complex, irregular stratigraphy of the surface soils across the site cause a wide range of hydraulic conductivity ranging from less than 10⁻² cm/sec for gravelly sands immediately overlying the Petrified Forest Formation to 10⁻⁸ cm/sec in the clay soils located near the surface (Western Refining, 2009). Generally, shallow groundwater at the refinery follows the upper contact of the Chinle Group (i.e., Chinle/Alluvial Interface zone) with prevailing flow from the southeast to the northwest, with some flow potentially to the northeast on

the northeastern portion of the refinery property. In the northwestern portion of the facility there are thin intermittent sand layers above the Chinle/Alluvial Interface zone, which may be saturated. These intervals are referred to as the Upper Sands with groundwater flow directions downdip to the northwest.

The Quaternary alluvium, which occurs at the land surface in the area of the refinery is mapped regionally as a narrow band trending west-northwest and running just north of I-40 (Figure 4). The Quaternary alluvium is thought to be the parent material of the Rehobeth soils, which are present at the facility.

Subcropping beneath the Quaternary alluvium is the Triassic Chinle Group (Figure 4). The stratigraphy of the Chinle Group was described in detail for the nearby Fort Wingate quadrangle by Lucas et al, 1997. The Painted Desert Member of the Petrified Forest Formation is the uppermost member of the Chinle Group present in the area of the refinery. The Painted Desert Member is described as reddish-brown and greyish red mudstone with minor beds of resistant, laminated or crossbedded, litharenite. This is consistent with the bedrock encountered at the refinery. Beneath the Painted Desert Member is the Sonsela Member, which is described by Lucas et al (1997) as grey to yellowish-brown, fine-grained to conglomeratic, crossbedded sandstone. The Sonsela Member forms an artesian aquifer across most of the facility. The base of the Sonsela Member is recognized as a basin wide unconformity, which was termed the Tr-4 unconformity (Heckert and Lucas, 1996). The Blue Mesa Member, which underlies the Sonsela Member, is the lowest member of the Petrified Forest Formation. The Blue Mesa Member is described as mostly purple and greenish-grey mudstone.

4.3 Subsurface Investigations

No underground pipelines were detected during clearance of utilities in the area of the well installations. This subsection provides a detailed description of subsurface soil and groundwater investigations conducted during the installation of the seven permanent monitoring wells.

A description of the field screening procedures are presented in Appendix C – Field Methods. Copies of the boring logs/well construction logs are provided in Appendix A. In addition to being included on the soil boring logs, the soil vapor (i.e., headspace) screening results are summarized in Table 1. The locations of the soil borings/monitor wells appear on Figure 2 and Figure 3.

4.3.1 Well Installation and Groundwater Sample Collection

Seven soil borings were advanced using the hollow-stem auger (HSA) method. The drilling equipment was decontaminated between each borehole, as described in Appendix C. The well development and purging is also discussed in Appendix C. Detailed soil boring logs are included in Appendix A. The soil boring logs describe the subsurface lithology, the presence of saturation, the field screening results, and permanent well construction details. The drilling of the soil borings, well installation, and groundwater sampling is discussed below in numerical order.

4.3.1.1 Boundary Wells

<u>BW-4A</u>

On June 14, 2017 the drilling rig was set up on location BW-4A. Well BW-4A is located approximately 10 feet north of monitor well OW-1. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 2 feet below ground level (bgl) (low plasticity, firm, dry to damp, brown, no odor);
- Clay: 2 feet bgl 18 feet bgl (high plasticity, stiff to very stiff, damp, brown, no odor);
- Clayey Silt/Silty Clay: 18 feet bgl 26 feet bgl (low plasticity, firm/crumbly, damp, light brown/tan, no odor, interbedded);
- Clay: 26 feet bgl 32 feet bgl (high plasticity, very stiff, damp, brown to darker brown, no odor); and
- Silty Clay: 32 feet bgl 34 feet bgl (low plasticity, very stiff, damp, light reddish brown, trace very fine grain sand, no odor).
- Clayey Silt/Silty Clay: 34 feet bgl 36 feet bgl (low plasticity, firm to stiff, damp, reddish brown and grey, alternating silt/clay, no odor)
- Silty Clay: 36 feet bgl 44 feet bgl (low plasticity, stiff, damp, reddish brown and grey, no odor).

The drilling was terminated at 44 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. On June 15, 2017 an interface probe was lowered inside the augers. No groundwater was detected. A permanent monitor well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 21 feet bgl to 36 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the clayey silt (22 feet bgl to 24 feet bgl) and the silty clay (32 feet bgl to 34 feet bgl) that exhibited traces of very fine grain sands. A sand filter pack was installed to approximately 18 feet bgl. A bentonite seal was installed to approximately 14.5 feet bgl. The top of the well casing is approximately 3 feet above ground level.

On June 15, 2017, June 16, 2017, June 19, 2017, and June 26, 2017 the well was gauged. No groundwater was detected during the gauging events, thus no water sample was collected.

The annular seal (bentonite grout) was installed on June 27, 2017. The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-4B</u>

On June 15, 2017 the drilling rig was set up on location BW-4B. Well BW-4B is located approximately 10 feet south of monitor well OW-1. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 2 feet bgl (low plasticity, firm, dry to damp, brown, no odor);
- Clay: 2 feet bgl 18 feet bgl (high plasticity, stiff to very stiff, damp, brown, no odor);
- Clayey Silt/Silty Clay: 18 feet bgl 25 feet bgl (low plasticity, firm/crumbly, damp, light brown/tan, no odor, interbedded);
- Clay: 25 feet bgl 28 feet bgl (high plasticity, very stiff, damp, brown to darker brown, no odor);
- Silty Clay: 28 feet bgl 31 feet bgl (moderate to low plasticity, very stiff, damp, dark brown grading to light reddish brown, trace fine grain sand at base, no odor);
- Sandy Gravelly Clay: 31 feet bgl 31.75 feet bgl (low plasticity, stiff, dry to damp, light grey and brown, no odor);
- Silty Clay: 31.75 feet bgl 32 feet bgl (low plasticity, stiff, damp, reddish brown, no odor);

- Clayey Silt/Silty Clay: 32 feet bgl 34 feet bgl (low plasticity, firm/crumbly, damp, reddish brown and grey);
- Silty Clay: 34 feet bgl 44.75 feet bgl (low plasticity, firm/crumbly, damp, reddish brown and grey, no odor);
- Gravelly Silty Clay: 44.75 feet bgl 45.50 feet bgl (low plasticity, firm/crumbly, dry, grey and reddish brown, no odor, calcium carbonate nodules present);
- Sandy Clay: 45.50 feet bgl 46 feet bgl (low plasticity, firm/crumbly, dry, grey and reddish brown, very fine grain sand present, no odor);
- Silty Clay: 46 feet bgl 54 feet bgl (low plasticity, very stiff, dry to damp, reddish brown, no odor, trace grey clay at base with occasional gravel);
- Silty Clay: 54 feet bgl 60 feet bgl (low plasticity, very stiff, dry to damp, reddish brown, no odor, trace grey clay); and
- Silty Clay: 60 feet bgl 68 feet bgl (low plasticity, very stiff, dry to damp, reddish brown and grey, no odor).

The drilling was terminated at 68 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. On July 16, 2017 the drilling resumed. The lithology encountered consisted of the following:

- Silty Clay: 68 feet bgl 70 feet bgl (low plasticity, very stiff, dry to damp, reddish brown and bluish grey, no odor, calcareous);
- Silty Clay: 70 feet bgl 84 feet bgl (low plasticity, firm/crumbly, damp, reddish brown, no odor);
- Silty Clay: 84 feet bgl 88 feet bgl (low plasticity, very stiff, damp, reddish brown and trace of grey clay, no odor); and
- Silty Clay: 88 feet bgl 90 feet bgl (low plasticity, very stiff, damp, reddish brown and trace of grey clay, no odor, interbedded with fine grain sandstone white, hard/dense).

The drilling was terminated at 90 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. At 0926 on June 19, 2017 an interface probe was lowered inside the augers. The depth to groundwater was approximately 71 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole and the rig was mobilized to a different location. At 1730 an interface probe was lowered inside the augers. The depth to groundwater y 69.50 feet bgl.

On June 20, 2017 the rig was mobilized to the location for BW-4B. Bentonite pellets were installed in the bottom of the borehole from a depth of 64.5 feet bgl to 90 feet bgl. The pellets were allowed to hydrate. A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 41 feet bgl to 61 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the gravelly silty clay encountered from 44.75 to 45.50 feet bgl. A sand filter pack was installed to approximately 39 feet bgl. A bentonite seal was installed to approximately 36 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 27, 2017 the well was gauged. The depth to groundwater was 30.92 feet btoc (27.92 feet bgl). The well was developed on June 27, 2017. The depth to groundwater after well development was 63.88 feet btoc. The water sample was collected on June 28, 2017. The depth to groundwater prior to sampling was 51.65 feet btoc (48.65 feet bgl).

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-5A</u>

On June 23, 2017 the drilling rig was set up on location BW-5A. Well BW-5A is the southernmost well in the BW-5A, 5B, and 5C well cluster. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 6 feet bgl (low plasticity, firm, dry, brown, no odor);
- Clay: 6 feet bgl 10 feet bgl (high plasticity, very stiff, dry, brown, no odor);
- Clay: 10 feet bgl 12 feet bgl (moderate plasticity, very stiff, dry, brown, no odor, gravel at base);
- Gravelly Silt/Sand: 12 feet bgl 14 feet bgl (very fine grain sand, dry, tan, no odor, 5-10 mm sized gravel was present, a stiff clay was at the base of this interval);
- Silty Clay: 14 feet bgl 18 feet bgl (low plasticity, stiff, dry, light reddish brown, tan and grey, trace very fine grain sand, no odor); and

• Sandy Silty Clay: 18 feet bgl – 20.50 feet bgl (low plasticity, very stiff, dry, light reddish brown with occasional grey, no odor, very fine grain sand present).

The drilling was terminated at 20.50 feet bgl. No apparent saturated sediments were encountered. A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 10 feet bgl to 20 feet bgl. The screen was set to intercept possible groundwater that may exist in the gravel and sand encountered from 12 feet bgl to 14 feet bgl and the very fine grain sands encountered within the silty clay from 14 feet bgl to 20.50 feet bgl. A sand filter pack was installed to approximately 8 feet bgl. A bentonite seal was installed to approximately 4 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 26, 2017 the well was gauged. The depth to groundwater was 22.80 feet btoc (19.80 feet bgl) and the total depth was gauged at 23.28 feet btoc (20.28 feet bgl). The well was developed on June 26, 2017. BW-5A was bailed dry with the depth to groundwater at 23.20 feet after bailing was completed.

On June 27, 2017 the well was gauged. The depth to groundwater was 23.21 feet btoc. A water sample was not collected since there was an insufficient amount of groundwater in the well for a water sample.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-5B</u>

On June 23, 2017 the drilling rig was set up on location BW-5B. Well BW-5B is the middle well in the BW-5A, 5B, and 5C well cluster. The well is located approximately 10 feet from BW-5A and 10 feet from BW-5C. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening methods did not indicate potential contamination. The lithology encountered consisted of the following:

• Silty Clay: 0 – 6 feet bgl (low plasticity, firm, dry, brown, no odor);

- Clay: 6 feet bgl 11 feet bgl (high plasticity, very stiff, dry, brown, no odor);
- Silty Clay: 11 feet bgl 12 feet bgl (low plasticity, very stiff, dry, tan to light brown, no odor, calcareous);
- Gravelly Silt/Sand: 12 feet bgl 14 feet bgl (very fine grain sand, very dense, dry, tan, no odor, sandstone and chert gravel);
- Silty Clay: 14 feet bgl 16 feet bgl (low plasticity, firm to stiff/crumbly, dry to damp, reddish brown and grey, trace gravel and very fine grain sand, no odor);
- Clayey Silt/Sand: 16 feet bgl 20 feet bgl (very fine grain sand, firm/crumbly, dry, light brown and grey to light reddish brown, no odor);
- Sandy Silty Clay: 20 feet bgl 30 feet bgl (low plasticity, very stiff, dry, light reddish brown and light grey, no odor, very fine grain sand present);
- Silty Clay: 30 feet bgl 48 feet bgl (low plasticity, firm to stiff, damp, reddish brown, no odor, softer than above, trace grey clay);
- Silty Clay: 48 feet bgl 54 feet bgl (low plasticity, very stiff, damp, light reddish brown, no odor, pink sandstone present); and
- Silty Clay: 54 feet bgl 58.5 feet bgl (low plasticity, very stiff, damp/dry, reddish brown, and grey, bluish grey from 56 feet bgl to 58 feet bgl, no odor).

The drilling was terminated at 58.5 feet bgl. No apparent saturated sediments were encountered. A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 48 feet bgl to 58 feet bgl. The screen was set to intercept possible groundwater that may exist in the sandstone encountered within the silty clays from 48 feet bgl to 54 feet bgl. A sand filter pack was installed to approximately 46 feet bgl. A bentonite seal was installed to approximately 44 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 26, 2017 the well was gauged. The depth to groundwater was 29.80 feet btoc (26.80 feet bgl). On June 27, 2017 the well was gauged. The depth to groundwater was 13.50 feet btoc (10.50 feet bgl). The well was developed on June 26, 2017. BW-5B was bailed down with the depth to groundwater at 61.10 feet btoc after bailing was completed. A water sample was collected on June 28, 2017. The depth to water prior to sampling was 20.60 feet btoc (17.60 feet bgl).

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-5C</u>

On June 19, 2017 the drilling rig was set up on location BW-5C. Well BW-5C is the northernmost well in the BW-5A, 5B, and 5C well cluster. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 6 feet bgl (low plasticity, firm, dry, brown, no odor);
- Clay: 6 feet bgl 11 feet bgl (high plasticity, very stiff, dry, brown, no odor);
- Silty Clay: 11 feet bgl 12 feet bgl (low plasticity, very stiff, dry, tan to light brown, no odor, calcareous);
- Gravelly Silt/Sand: 12 feet bgl 14 feet bgl (very fine grain sand, very dense, dry, tan, no odor, sandstone and chert gravel);
- Silty Clay: 14 feet bgl 16 feet bgl (low plasticity, firm to stiff/crumbly, dry to damp, reddish brown and grey, trace gravel and very fine grain sand, no odor);
- Clayey Silt/Sand: 16 feet bgl 20 feet bgl (very fine grain sand, firm/crumbly, dry, light brown and grey to light reddish brown, no odor);
- Sandy Silty Clay: 20 feet bgl 30 feet bgl (low plasticity, very stiff, dry, light reddish brown and light grey, no odor, very fine grain sand present);
- Silty Clay: 30 feet bgl 38 feet bgl (low plasticity, firm to stiff, damp, reddish brown, no odor, softer than above, trace grey clay); and
- Silty Clay: 38 feet bgl 50 feet bgl (low plasticity, stiff to very stiff, damp, reddish brown, no odor, calcareous, pink sandstone at base very dense, dry, no odor).

The drilling was terminated at 50 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. At 0840 on June 20, 2017 an interface probe was lowered inside the augers. No groundwater was detected. Activities at this location were then shut down for the day. The augers were left in the borehole and the rig was mobilized to a different location. On June 21, 2017 the rig was mobilized back to the location for BW-5C and drilling continued. The lithology encountered consisted of the following:

- Silty Clay: 50 feet bgl 54 feet bgl (low plasticity, stiff, dry, reddish brown and grey, calcareous, no odor, sandstone present white and very dense);
- Silty Clay: 54 feet bgl 58 feet bgl (low plasticity, very stiff, dry, reddish brown, occasional grey clay that increases with depth, no odor);
- Shale: 58 feet bgl 64 feet bgl (very dense, light brown and grey, damp to saturated in cracks, no odor, fissile, becomes dry from 60 feet bgl to 64 feet bgl, very fine grain sand present and increases with interbedded clays present, no odor);
- Sandstone: 64 feet bgl 66 feet bgl (very dense, fine grain sand, dry, brown, interbedded with clay lenses, no odor);
- Sandstone: 66 feet bgl 68 feet bgl (very dense, fine grain sand, damp in fractures, light purplish brown, interbedded with clay lenses, weathered, soft, micaceous, no odor);
- Sand: 68 feet bgl 69 feet bgl (fine to medium grain, loose, saturated, brown, no odor)
- Siltstone: 69 feet bgl 69.5 feet bgl (dense, dry to damp, brown, no odor); and
- Sandstone: 69.5 feet bgl 76 feet bgl (firm to dense, damp to moist, grey, no odor dark grey to black shale at base, damp, stiff).

The drilling was terminated at 76 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. At 0950 on June 22, 2017 an interface probe was lowered inside the augers. The depth to groundwater was approximately 11.40 feet bgl.

A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 64.30 feet bgl to 74.30 feet bgl. The top of the screen was set approximately 4 foot above the occurrence of saturated sand (68 feet bgl to 69 feet bgl). The screen was extended to a depth of 74.3 feet bgl which allowed for the screening across additional moist intervals encountered within a sandstone (69.5 feet bgl to 74 feet bgl). A sand filter pack was installed to approximately 60 feet bgl. A bentonite seal was installed to approximately 56.90 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 22, 2017.

On June 23 and 26, 2017 the well was gauged. The depth to groundwater readings were 2.30 ft btoc and 2.42 ft btoc, respectively.

On June 27, 2017 the well was gauged. The depth to groundwater was 2.44 feet btoc. The well was developed on June 27, 2017. The depth to water after development was 47.90 feet btoc. A water sample was collected on June 28, 2017. The depth to water prior to sampling was 2.70 feet btoc.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

4.3.1.2 SMW-2 Area

Monitoring wells OW-59 and OW-60 were installed, developed and groundwater samples collected during the June 2017 field activities. The wells yielded enough water for a full analytical suite. The soil borings and subsequent wells are located adjacent to the OCD Landfarm.

<u>0W-59</u>

On June 12, 2017 the drilling rig was set up on location OW-59. Well OW-59 is located adjacent to the northwest (down-gradient) corner of the OCD Landfarm. Sample collection was accomplished using the HSA drilling method and split spoon samplers. One discrete soil sample was retained for laboratory analysis. The lithology encountered consisted of the following:

- Silty Clay: 0 6 feet bgl (low plasticity, firm, damp, brown, no odor);
- Clay: 6 feet bgl 8 feet bgl (high plasticity, stiff, damp, brown, no odor);
- Silty Clay: 8 feet bgl 10 feet bgl (low plasticity, stiff, damp, light brown, no odor, sandy at the base);
- Silt: 10 feet bgl 12 feet bgl (low plasticity, compact, damp, brown, no odor);
- Silty Clay: 12 feet bgl 14 feet bgl (low plasticity, very stiff, damp, brown, no odor, trace sand);
- Silty Clay: 14 feet bgl 18 feet bgl (high plasticity, very stiff, damp, brown, no odor);
- Silty Clay: 18 feet bgl 20 feet bgl (low to moderate plasticity, stiff, damp, brown, no odor);
- Sandy Silty Clay: 20 feet bgl 22 feet bgl (low plasticity, firm to soft, damp, brown, no odor);
- Sandy Clay: 22 feet bgl 24 feet bgl (low plasticity, soft, damp, brown, no odor);
- Silty Clay: 24 feet bgl 26 feet bgl (low plasticity, soft, damp, brown, no odor);
- Sandy Silt: 26 feet bgl 30 feet bgl (very fine grain, very moist, brown, no odor);
- Silty Clay: 30 feet bgl 33 feet bgl (low plasticity, firm, damp, brown, no odor);

- Silty Sand: 33 feet bgl 34 feet bgl (very fine grain, compact, saturated, brown, no odor);
- Silty Clay: 34 feet bgl 38 feet bgl (low plasticity, firm, damp, brown, no odor);
- Clay: 38 feet bgl 39 feet bgl (high plasticity, firm, damp, brown, no odor); and
- Silty Clay: 39 feet bgl 40 feet bgl (low plasticity, firm to soft, damp, grey and white, no odor, trace sand and white nodules).

The drilling was terminated at 40 feet bgl. One soil sample was collected for laboratory analysis from the soil boring for OW-59. The sample was collected from the interval 33 to 34 feet bgl, which exhibited the highest soil vapor reading of 16.3 ppm.

Activities at this location were then shut down for the day. The augers were left in the borehole. On June 13, 2017 an interface probe was lowered inside the augers. The depth to groundwater was 24 feet bgl. A permanent monitor well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 20 feet bgl to 35 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the sandy silt (26 feet bgl to 30 feet bgl) and the silty sand (33 feet bgl to 34 feet bgl). A sand filter pack was installed to approximately 18 feet bgl. A bentonite seal was installed to approximately 15.75 feet bgl. The top of the well casing is approximately 2.67 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 14, 2017 the well was gauged and the depth to groundwater was 24.44 feet btoc. On June 19, 2017 the well was gauged and the depth to groundwater was 24.75 feet btoc. On June 27, 2017 the well was gauged and the depth to groundwater was 25.00 feet btoc. The well was developed on June 27, 2017 using a disposable bailer. The well was bailed dry after approximately 8 gallons of groundwater was removed. On June 28, 2017 the well was gauged and the depth to groundwater was 26.15 feet btoc. The well was sampled and yielded enough groundwater for a full analytical suite.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>0W-60</u>

On June 13, 2017 the drilling rig was set up on location OW-60. Well OW-60 is located adjacent to the southeast (up-gradient) corner of the OCD Landfarm. Sample collection was accomplished using the HSA drilling method and split spoon samplers. One discrete soil sample was retained for laboratory analysis. The lithology encountered consisted of the following:

- Silty Clay: 0 2 feet bgl (low plasticity, firm, damp, brown, no odor);
- Clay: 2 feet bgl 10 feet bgl (high plasticity, firm to stiff, damp, brown, no odor);
- Silty Clay: 10 feet bgl 28 feet bgl (moderate plasticity, firm to soft, damp, brown, no odor, traces of gravel from 24 to 26 feet and pockets of tan silt from 26 to 28 feet);
- Clayey Silt: 28 feet bgl 30 feet bgl (low plasticity, soft/crumbly, damp, light brown and grey, no odor);
- Silty Clay: 30 feet bgl 36 feet bgl (low plasticity, firm to crumbly, damp, light reddish brown with a trace of grey);
- Silty Clay: 36 feet bgl 38 feet bgl (low plasticity, very stiff, crumbly, damp, light reddish brown and grey, no odor); and
- Silt: 38 feet bgl 48 feet bgl (low plasticity, compact to dense/stiff, crumbly, damp, light grey, no odor, trace reddish brown clay from 46 to 48 feet).

The drilling was terminated at 48 feet bgl. One soil sample was collected for laboratory analysis from the soil boring for OW-60. The sample was collected from the interval 20 to 22 feet bgl, which exhibited the highest soil vapor reading of 15.3 ppm.

Activities at this location were then shut down for the day. The augers were left in the borehole. On June 14, 2017 an interface probe was lowered inside the augers. No groundwater was detected. A monitor well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 25 feet bgl to 45 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the silt (38 feet bgl to 48 feet bgl). A sand filter pack was installed to approximately 22.5 feet bgl. A bentonite seal was not installed in order to adjust the well setting if necessary. The top of the well casing was approximately 3.00 feet above ground level. Water was present with the soil cuttings that were removed from the augers as they were removed from the wellbore. The well was gauged after the installation of the well materials. No groundwater was encountered. Additional gauging was conducted on OW-60 with the following results:
- June 15, 2017 24.68 feet below top of casing (btoc);
- June 16, 2017 17.74 feet btoc; and
- June 19, 2017 17.45 feet btoc.

It was determined that the sidewalls of the wellbore had caved off into the wellbore onto the top of the sand filter pack. On June 26, 2017 the well materials were removed from the wellbore and the borehole was reamed. New well materials were installed in the borehole. A permanent monitor well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 25 feet bgl to 45 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the silt (38 feet bgl to 48 feet bgl). A sand filter pack was installed to approximately 21.70 feet bgl. A bentonite seal was installed to approximately 19.40 feet bgl. The annular seal (bentonite grout) was installed on June 27, 2017.

On June 27, 2017 the well was gauged and the depth to groundwater was 10.25 feet btoc. The well was developed on June 27, 2017 using a disposable bailer. The well was bailed down after approximately 12 gallons of groundwater was removed. The depth to water was 44.65 feet btoc. On June 28, 2017 the well was gauged and the depth to groundwater was 33.15 feet btoc. The well was sampled and yielded enough groundwater for a full analytical suite.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

4.4 SMW-2 Area – Additional Sampling

On June 27, 2017 monitoring well SMW-2 was purged. On June 28, 2017 SMW-2 was sampled. Monitoring well SWM-4 was purged and groundwater samples collected on June 28, 2017. SMW-2 and SMW-4 yielded enough water for a full analytical suite. The measurement of field purging parameters included measurement of groundwater pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. The groundwater field parameters collected during the sampling event are included in Table 5. Groundwater gauging measurements collected during the field activities are presented in Table 6. In addition to collecting groundwater samples at SMW-2 and SMW-4, surface water samples were collected from Evaporation Ponds EP-2 and EP-3. The field parameters collected during the collection of the samples are included in Table 5.

Section 5 Regulatory Criteria

The applicable screening and potential cleanup levels are specified in NMED's *Risk* Assessment *Guidance for Site Investigations and Remediation* dated March 2019 and in the Environmental Protection Agency's (EPA) Regional Screening Levels dated November 2018.

For non-residential properties (e.g., the Gallup Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper ten feet based on NMED criteria. NMED residential soil screening levels are applied to the upper ten feet and soil screening levels for protection of groundwater apply throughout the vadose zone. EPA soil screening levels for direct contact exposure apply to the upper two feet of the vadose zone. The soil screening levels are included in Table 2 for comparison to concentrations of constituents reported for soil samples. The sample results are not segregated based on the aforementioned depths for this initial comparison.

The groundwater cleanup levels are based on New Mexico Water Quality Control Commission (WQCC) standards (20.6.2.7 WW NMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal maximum contaminant level (MCL), in which case the lower of the two values is selected as the cleanup level. If neither a WCQQ standard nor an MCL is available, then the cleanup level is based on a NMED Tap Water Screening Level. If a NMED Tap Water Screening Level is not available for a constituent, then an EPA Regional Screening Level is used. If an EPA Regional Screening Level is for a carcinogenic compound, then the screening level is multiplied by 10 to bring the risk level to 1E-05 to be consistent with the NMED screening levels. Table 3 presents the groundwater cleanup levels used for comparison to reported groundwater concentrations. The same screening levels are also used in Tables 4 and 8.

The aforementioned Table 2 has soil screening levels for the soil-to-groundwater pathway that are based on a dilution/attenuation factor (DAF) of 20. Pursuant the discussion in Section 4.9 of NMED's most recent Risk Assessment Guidance, the highest soil leachate-based soil screening level based on a DAF of 20 has been provided in Table A-1 of the guidance and is to be applied for initial screening. If an MCL based value is available, then it is used, if not, then NMED's Cw soil screening

level from Table A-1 is used. If neither of these screening levels is available for a particular constituent, then an EPA screening level is used.

The applicable TPH screening levels for comparison to the individual soil samples are selected from Tables 6-2 and 6-4 of the NMED guidance (NMED, 2019). The groundwater screening levels for TPH are taken from Table 6-4. Both soil and groundwater TPH screening levels for "unknown oil" are used for comparison to site concentrations.

As shown in Table 3, only one constituent (di-n-octyl-phthalate) was detected in groundwater that does not have a screening level. It is not classified as a known carcinogen.

Section 6 Site Impacts

This section discusses the chemical analyses performed and presents the analytical results that were obtained through the analysis of soil, groundwater and surface water samples.

6.1 Soil Analytical Results

One soil sample was collected from each of the soil borings for OW-59 and OW-60. The samples were collected from the interval with the highest soil vapor reading. In the boring for OW-59 a sample was collected from the interval 33 to 34 feet bgl, which exhibited the highest soil vapor reading of 16.3 ppm. In the boring for OW-60 a sample was collected from the interval 20 to 22 feet bgl, which exhibited the highest soil vapor reading of 15.3 ppm.

The soil samples were analyzed for organic constituents by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds;
- SW-846 Method 8015D gasoline range organics; and
- SW-846 Method 8015M/D diesel and motor oil range organics.

Soil samples were analyzed for the following metals using the indicated analytical methods:

- SW-846 Method 6010B
 - o Antimony
 - o Arsenic
 - o Barium
 - o Beryllium
 - Cadmium
 - Chromium
 - Cobalt
 - o Iron
 - Manganese
 - o Nickel
 - o Selenium
 - o Silver
 - \circ Vanadium
 - o Zinc

- SW-846 Method 7471
 - o Mercury
- SW-846 Method 9012
 - o Cyanide

The analytical results and the applicable screening levels are presented in Table 2. The laboratory analytical reports are included in Appendix D. The individual results that exceed the applicable cleanup levels are highlighted. The constituents with reported concentrations that exceed screening levels are discussed below.

The following soil samples exceeded the screening levels for the listed constituents. The screening level is included in the parenthesis:

<u>OW-59 (33-34')</u>

• Lead (0.052 mg/kg – Leachate DAF of 20) – 0.72 mg/kg

<u>OW-60 (20-22')</u>

- Iron (6,958.86 mg/kg Leachate DAF of 20) 10,000 mg/kg
- Lead (0.052 mg/kg Leachate DAF of 20) 1.6 mg/kg
- Manganese (463.84 mg/kg Non-Residential Soil Screening Level) 470 mg/kg

Detectable concentrations of 1-methylnaphthalene, 2-methylnaphthalene, acetone, benzene, ethylbenzene, toluene, xylenes, bis(2-ethylhexyl)phthalate, diethyl phthalate, and di-n-butyl phthalate were detected in the soil samples from OW-59 and OW-60. MTBE and naphthalene were also detected in the soil sample from OW-59. None of the volatile or semi-volatile constituents detected in the soil samples from OW-59 and OW-60 exceeded the screening levels.

6.2 Groundwater Analytical Results

The groundwater samples collected from the boundary wells (BW-4B, BW-5B and BW-5C) and the SMW-2 area wells (OW-59 and OW-60) were analyzed for organic constituents by the following methods:

• SW-846 Method 8260 volatile organic compounds;

- SW-846 Method 8270 semi-volatile organic compounds;
- SW-846 Method 8015D gasoline range organics; and
- SW-846 Method 8015M/D diesel and motor oil range organics.

Groundwater samples were analyzed for the following total and dissolved metals using the indicated analytical methods.

Analyte	Analytical Method
Antimony	SW-846 Method 200.8
Arsenic	SW-846 Method 200.8
Barium	SW-846 Method 200.7
Beryllium	SW-846 Method 200.7
Cadmium	SW-846 Method 200.7
Chromium	SW-846 Method 200.7
Cobalt	SW-846 Method 200.7
Iron	SW-846 Method 200.7
Lead	SW-846 Method 200.8
Manganese	SW-846 Method 200.7
Nickel	SW-846 Method 200.7
Selenium	SW-846 Method 200.8
Silver	SW-846 Method 200.7
Vanadium	SW-846 Method 200.7
Zinc	SW-846 Method 200.7

Groundwater samples were also analyzed for the following constituents using the indicated analytical methods.

Analyte	Analytical Method
Cyanide	SW-846 Method 9012B

Analyte	Analytical Method
Mercury	SW-846 Method 245.1

In addition, groundwater samples were analyzed for chloride, fluoride, bromide, phosphorus, sulfate and nitrate+nitrite as N using EPA method 300.

The analytical results and the applicable screening levels are presented in Table 3. The laboratory analytical reports are included in Appendix E. The individual results that exceed the applicable cleanup levels are highlighted. The constituents with reported concentrations that exceed screening levels are discussed below.

The following boundary wells exceeded the screening levels for the listed constituents. The screening level is included in the parenthesis:

<u>BW-4B</u>

- Arsenic (10 ug/L) 12 ug/L;
- Barium (2,000 ug/L) 4,700 ug/L;
- Beryllium (4 ug/L) 48 ug/L;
- Chromium (50 ug/L) 170 ug/L;
- Cobalt (50 ug/L) 79 ug/L;
- Iron (1,000 ug/L) 82,000 ug/L;
- Lead (15 ug/L) 200 ug/L;
- Manganese (200 ug/L) 5,600 ug/L;
- Nickel (372 ug/L) 540 ug/L;
- Vanadium (63.1 ug/L) 140 ug/L; and
- DRO (0.04 mg/L) 0.47 mg/L.

<u>BW-5B</u>

• DRO (0.04 mg/L) – 0.74 mg/L.

<u>BW-5C</u>

• Chloride (250,000 ug/L) - 1,400,000 ug/L.

Detectable concentrations of acetone and benzoic acid were reported in the sample collected from BW-4B. The concentrations were below the screening levels. In the sample collected from BW-5B acetone, toluene and benzoic acid were reported at concentrations below the screening levels. Detectable concentrations of 1,1-dichloroethane, 1,2-dichloroethane, acetone, MTBE, benzoic acid, di-n-octyl phthalate, and GRO were reported in the sample collected from BW-5C. The concentrations were below the screening levels.

The following groundwater results from the SMW-2 area exceeded the screening levels for the listed constituents. The screening level is included in the parenthesis.

<u>0W-59</u>

- Arsenic (10 ug/L) 11 ug/L;
- Iron (1,000 ug/L) 9,700 ug/L;
- Manganese (200 ug/L) 1,200 ug/L;
- Manganese Dissolved (200 ug/L) 670 ug/L;
- Chloride (250,000 ug/L) 2,000,000 ug/L;
- Sulfate (600,000 ug/L) 3,000,000 ug/L;
- GRO (0.04 mg/L) 0.23 mg/L; and
- DRO (0.04 mg/L) 0.56 mg/L.

Detectable concentrations of 1,2,4-trimethybenzene, acetone, MTBE, and benzoic acid, were reported in the groundwater sample collected from OW-59. None of the constituents exceeded the screening levels.

<u>0W-60</u>

- Beryllium (4 ug/L) 4.6 ug/L;
- Iron (1,000 ug/L) 28,000 ug/L;
- Manganese (200 ug/L) 2,200 ug/L;
- Manganese Dissolved (200 ug/L) 550 ug/L;
- Chloride (250,000 ug/L) 1,600,000 ug/L; and

• Sulfate (600,000 ug/L) - 740,000 ug/L.

Detectable concentrations of 4-lsopropyltoluene, acetone, MTBE, toluene, benzoic acid, and bis(2ethyhexyl)phthalate were reported in the groundwater sample collected from OW-60. None of the concentrations exceeded the screening levels.

6.3 SMW-2 Area – Additional Sampling

Groundwater samples from SMW-2 and SWM-4 and surface water samples collected from Evaporation Ponds EP-2 and EP-3 were analyzed for chloride, fluoride, bromide, phosphorus, sulfate and nitrate+nitrite as N using EPA method 300. The samples were also analyzed for calcium, magnesium, potassium, and sodium using EPA method 200.7.

The analytical results and the applicable screening levels are presented in Table 4. The laboratory analytical reports are included in Appendix F. The analytical results for the aforementioned constituents reported for OW-59 and OW-60 are also included in Table 4 for a direct comparison to the nearby sampling locations. The individual results that exceed the applicable cleanup levels are bolded. The constituents with reported concentrations that exceed screening levels are discussed below. The screening level is included in the parenthesis:

<u>0W-59</u>

- Chloride (250 mg/L) 2,000 mg/L; and
- Sulfate (600 mg/L) 3,000 mg/L.

<u>0W-60</u>

- Chloride (250 mg/L) 1,600 mg/L; and
- Sulfate (600 mg/L) 740 mg/L.

<u>SMW-2</u>

- Chloride (250 mg/L) 2,600 mg/L; and
- Sulfate (600 mg/L) 1,500 mg/L.

Evaporation Pond #2 (Surface Water Sample)

• Chloride (250 mg/L) – 5,000 mg/L;

- Sulfate (600 mg/L) 1,400 mg/L; and
- Fluoride (1.6 mg/L) 18 mg/L.

Evaporation Pond #3 (Surface Water Sample)

- Chloride (250 mg/L) 7,100 mg/L;
- Sulfate (600 mg/L) 1,800 mg/L; and
- Fluoride (1.6 mg/L) 16 mg/L.

Included as Figure 5 is a potentiometric map developed from groundwater elevations collected in September 2017 in the SMW-2 area. As shown on Figure 5 the groundwater flow direction is from the east-southeast to the west-northwest. OW-60 is an up-gradient well located near the southeast corner of the OCD Central Landfarm. OW-59 is located approximately 440 feet downgradient to OW-60 and 230 feet upgradient to SMW-2. Monitoring well SMW-4 is located approximately 780 feet downgradient of SMW-2. Neither SWM-2 nor MW-4 are used to prepare the contours, as they not believed to be screened at the contact of the Alluvium/Chinle Formation as are the other wells on Figure 5. MW-4 is screened deeper in the Sonsela aquifer and SMW-2 is screened in upper sands as described in the LTA Subsurface Conditions evaluation completed by Precision Engineering, Inc. in 1996 (Appendix G).

Figure 6 presents sulfate and chloride concentrations reported from groundwater and surface water samples collected in the SWM-2 area. The chloride concentrations reported from the surface water samples collected from EP-2 and EP-3 were the highest concentrations reported during the sampling event, 5,000 mg/l and 7,100 mg/l, respectively. The chloride concentrations increased downgradient from OW-60 (1,600 mg/L) to OW-59 (2,000 mg/L) and increase in SMW-2 (2,600 mg/L). The chloride concentrations decreased from 2,600 mg/L in SMW-2 to 63 mg/L in the sample from SMW-4.

The sulfate concentrations in samples collected from EP-2 and EP-3 were elevated, but were not the highest concentrations reported in the sampling area. The highest reported concentration reported was from OW-59 (3,000 mg/L). Figure 6 indicates that the sulfate concentration increased from OW-60 (740 mg/L) to OW-59 (3,000 mg/L) and then decreased in SMW-2 (1,500 mg/L). The sulfate concentration in the sample from SMW-4 (downgradient well) was the lowest reported at 180 mg/L.

Based on the flow direction of groundwater and the reported concentrations, the elevated chloride concentrations in SMW-2 may be originating from a source located in the area of the OCD Central

landfarm, or further up-gradient. The sulfate concentrations increase across the OCD Central landfarm moving down-gradient, with the highest reported concentrations in the area in the groundwater sample collected in OW-59. This could suggest the OCD Central landfarm is a source of the sulfate.

6.4 General Groundwater Chemistry

The measurement of field purging parameters included measurement of groundwater pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. The groundwater field parameters collected during the sampling event are included in Table 5. Groundwater gauging measurements collected during the field activities are presented in Table 6.

6.5 Subsequent Data

Additional groundwater data has been collected from the five monitoring wells installed and sampled in June 2017. Included as Table 7 are the fluid level measurements of the five wells through the 2018 fourth quarter gauging event. Table 8 presents the analytical data collected during the 2017 fourth quarter sampling event.

In addition to the detections discussed above in Section 6.2, MTBE and GRO were detected at concentrations below the screening levels in a groundwater sample collected at BW-5B.

Section 7 Conclusions and Recommendations

The analytical results from groundwater samples collected at new wells OW-59 and OW-60, along with groundwater samples collected at existing well SMW-2 and surface water samples collected from Evaporation Ponds EP-2 and EP-3 provide a better understanding of the distribution of chloride and sulfate in the immediate vicinity. However, the data is not conclusive as to a particular source of either constituent. The highest sulfate concentrations appear at the down-gradient end of the OCD Central landfarm, which could be the primary source of sulfate affecting groundwater at SMW-2. An obvious source of the chloride was not identified in the immediate area.

It is recommended to install additional monitoring wells to better determine if a local source of chloride and/or sulfate is present. An Investigation Work Plan for additional monitoring wells was submitted in August, 2018 pursuant to NMED's request.

Section 8 References

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Figures

- Figure 1 Site Location Map
- Figure 2 Well Location Map Boundary Wells
- Figure 3 Well Location Map SMW-2 Area
- Figure 4 Geologic Map of New Mexico
- Figure 5 Chinle/Alluvium Interface Potentiometric Map September 2017
- Figure 6 Sulfate and Chloride Concentrations

















Tables

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Table 1Soil Vapor Screening ResultsMarathon Petroleum Company - Gallup RefineryGallup, New Mexico

Sample							
Interval Depth	BW-4A	BW-4B	BW-5A	BW-5B	BW-5C	OW-59	0W-60
(ftbgl)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
0 - 2	7.7	1.3	NR	NR	0.0	0.0	6.5
2 - 4	9.5	1.2	NR	NR	0.1	0.0	5.8
4 - 6	9.0	1.3	NR	NR	0.0	0.0	6.3
6 - 8	6.8	1.7	NR	NR	0.0	2.0	8.1
8 - 10	5.4	2.0	NR	NR	0.1	1.0	9.6
10 - 12	3.3	2.1	0.0	NR	0.0	0.3	9.1
12 - 14	5.8	3.1	0.0	NR	0.1	0.5	8.2
14 - 16	4.0	3.4	0.0	NR	0.0	1.3	7.9
16 - 18	2.0	5.1	0.0	NR	0.0	1.7	8.3
18 - 20	6.9	3.2	0.0	NR	0.0	1.1	10.1
20 - 22	5.0	3.9	TD 20 ftbgl	NR	0.0	1.2	15.3
22 - 24	3.6	3.5		NR	0.0	0.2	12.1
24 - 26	3.7	3.9		NR	0.0	3.3	11.6
26 - 28	6.2	1.8		NR	0.0	10.9	10.9
28 - 30	3.5	1.8		NR	0.0	11.6	10.5
30 - 32	6.1	2.0		NR	0.0	11.4	11.1
32 - 34	6.1	2.2		NR	0.0	14.9/16.3	15.0
34 - 36	3.8	5.6		NR	0.0	10.5	12.8
36 - 38	6.1	3.6		NR	0.0	7.3	12.7
38 - 40	5.2	2.3		NR	0.0	10.0	10.4
40 - 42	4.2	6.2		NR	0.0	TD 40 ftbgl	9.9
42 - 44	3.9	5.0		NR	0.0	0	10.7
44 - 46	TD 44 ftbgl	2.6		NR	0.0		10.1
46 - 48		3.5		NR	0.1		9.6
48 - 50		1.9		0.0	0.0		TD 48 ftbgl
50 - 52		5.1		0.0	0.0		
52 - 54		5.6		0.0	0.0		
54 - 56		3.8		0.0	0.0		
56 - 58		3.4		0.0	0.0		
58 - 60		2.4		TD 58 ftbgl	0.0		
60 - 62		4.9			0.0		
62 - 64		1.7			0.0		
64 - 66		5.8			0.0		
66 - 68		2.7			0.0		
68 - 70		3.9			0.0		
70 - 72		1.6			NR		
72 - 74		1.7			NR		
74 - 76		1.0			NR		
76 - 78		0.1			TD 76 ftbgl		
78 - 80		0.4			8		
80 - 82		0.1					
82 - 84		0.2					
84 - 86		0.0					
86 - 88		0.0					
88 - 90		0.2					
		TD 90 fthal					
		1 D D D T LOGI					

ftbgl - feet below ground level ppm - parts per million NR - No reading was collected.

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	0W-59 (33-34	4')	OW-60 (20-2	22')
					Lab ID		Jarce OW-59 (33-34') OW-60 (20-22 $1706910-003$ $1706910-004$ $6/12/2017$ $6/13/2017$ $0)$ < 0.996 u 1.0017 $0)$ < 0.996 u 1.0017 $0)$ < 0.8796 u 1.33 $0)$ 130 v 160 $0)$ 0.34 v 0.631 $0)$ < 0.0628 u < 0.0631 $0)$ 4.6 v 6.42 $3)$ < 0.25 u < 0.25 $3)$ $6,400$ v $10,000$ $0)$ 0.72 v 1.66 $3)$ $6,400$ v 4.90 $3)$ $6,0003$ u < 0.0623 $3)$ 11 v 1.44 $3)$ 7.5 100 0.0 < 0.0001 u < 0.0001 0.00001 u < 0.0001 <		34	
					Sample D	ate	6/12/2017	'	6/13/201	.7
Metals (mg/kg)										
Antimony	3.13E+01	(1)	1.42E+02	(5)	5.42E+00	(10)	< 0.996	u	< 1.0017	u
Arsenic	7.07E+00	(1)	3.59E+01	(4)	5.83E+00	(8)	< 0.8796	u	1.3	J
Barium	1.56E+04	(1)	4.39E+03	(5)	1.65E+03	(10)	130	٧	160	v
Beryllium	1.56E+02	(1)	1.48E+02	(5)	6.32E+01	(10)	0.34	v	0.52	v
Cadmium	7.05E+01	(1)	7.21E+01	(5)	7.52E+00	(10)	< 0.0628	u	< 0.0631	u
Chromium (Total)	9.66E+01	(1)	1.34E+02	(5)	3.60E+06	(10)	4.6	V	6.4	V
Cobalt	2.34E+01	(1)	3.67E+01	(5)	5.40E+00	(8)	2.1	v	3.1	v
Cyanide	1.12E+01	(1)	1.21E+01	(5)	7.13E-01	(8)	< 0.25	u	< 0.25	u
Iron	5.48E+04	(1)	2.48E+05	(5)	6.96E+03	(8)	6,400	v	10,000	v
Lead	4.00E+02	(2)	8.00E+02	(6)	5.20E-02	(10)	0.72	v	1.6	v
Manganese	1.05E+04	(1)	4.64E+02	(5)	2.63E+03	(8)	180	v	470	v
Mercury (elemental)	2.38E+01	(1)	2.07E+01	(5)	2.09E+00	(8)	< 0.0063	u	< 0.0063	u
Nickel	1.56E+03	(1)	7.53E+02	(5)	4.85E+02	(8)	3.5	٧	4.9	v
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.17E+00	(10)	< 1.8009	u	< 1.8111	u
Silver	3.91E+02	(1)	1.77E+03	(5)	1.38E+01	(8)	< 0.062	u	< 0.0623	u
Vanadium	3.94E+02	(1)	6.14E+02	(5)	1.26E+03	(8)	11	V	14	V
Zinc	2.35E+04	(1)	1.06E+05	(5)	7.41E+03	(8)	7.5	V	10	V
Volatiles (mg/kg)										
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	3.60E-02	(8)	< 0.0001	u	<0.0001	u
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	1.28E+00	(10)	< 0.0001	u	< 0.0001	u
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	4.81E-03	(8)	< 0.0002	u	<0.0001	u
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	2.68E-02	(8)	< 0.0001	u	< 0.0001	u
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	1.36E-01	(8)	< 0.0001	u	< 0.0001	u
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	4.79E-02	(10)	< 0.0001	u	< 0.0001	u
1,1-Dichloropropene	-	-	-	-	-	-	< 0.0002	u	< 0.0001	u
Trichlorobenzene, 1,2,3-	6.30E+01	(2)	9.30E+02	(6)	4.20E-01	(9)	< 0.0001	u	< 0.0001	u
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	5.82E-05	(8)	< 0.0003	u	<0.0003	u
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.0002	u	< 0.0001	u
Trimethylbenzene, 1,2,4-	3.00E+02	(2)	1.80E+03	(6)	1.62E+00	(9)	< 0.0002	u	<0.0002	u
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.39E-03	(8)	< 0.0002	u	< 0.0002	u
1,2-Dibromoethane (Ethylene										
dibromide)	6.72E-01	(1)	3.31E+00	(4)	2.36E-04	(10)	< 0.0002	u	<0.0001	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.0002	u	< 0.0001	u
1,2-Dichloroethane	8.32E+00	(1)	4.07E+01	(4)	2.38E-02	(8)	< 0.0002	u	< 0.0001	u
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	2.77E-02	(8)	< 0.0002	u	< 0.0001	u
Trimethylbenzene, 1,3,5-	2.70E+02	(2)	1.50E+03	(6)	1.74E+00	(9)	< 0.0002	u	< 0.0002	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.0002	u	< 0.0001	u
Dichloropropane, 1,3-	1.60E+03	(2)	2.30E+04	(6)	2.60E+00	(9)	< 0.0001	u	< 0.0001	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.0002	u	< 0.0001	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(4)	8.93E-01	(8)	0.0003	J	0.0003	J
2,2-Dichloropropane	-	-	-	-	-	-	< 0.0001	u	< 0.0001	u
2-Butanone (Methyl ethyl ketone,	1									
MEK)	3.74E+04	(1)	9.17E+04	(5)	2.01E+01	(8)	<0.0006	u	<0.0005	u
o-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	3.56E+00	(8)	< 0.0002	u	< 0.0001	u
Hexanone, 2-	2.00E+02	(2)	1.30E+03	(6)	1.76E-01	(9)	< 0.0003	u	< 0.0002	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	0.0004	J	0.0003	J
Chlorotoluene, p-	1.60E+03	(2)	2.30E+04	(6)	4.80E+00	(9)	< 0.0002	u	< 0.0002	u
4-Isopropyltoluene	-	-	-	-	-	-	< 0.0002	u	<0.0002	u
Methyl isobutyl ketone	5.81E+03	(1)	2.02E+04	(5)	4.80E+00	(8)	< 0.0005	u	< 0.0004	u
	1		1							<u> </u>

	Residential Soil Screening Level	Source	Non- Residential Soil Screening	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	OW-59 (33-3	84')	OW-60 (20-2	22')
	ļ		20101	ļ	Lab ID	ļ	1706910-00)3	1706910-00)4
					Sample D	ate	6/12/201	7	6/13/201	7
Acetone	6.63E+04	(1)	2.42E+05	(5)	4.98E+01	(8)	0.0119	v	0.011	v
Benzene	1.78E+01	(1)	8.72E+01	(4)	4.18E-02	(8)	0.0019	v	0.0007	v
Bromobenzene	2.90E+02	(2)	1.80E+03	(6)	8.40E-01	(9)	< 0.0002	u	< 0.0002	u
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	6.21E-03	(8)	< 0.0002	u	< 0.0002	u
Tribromomethane (Bromoform)	6.74E+02	(1)	1.76E+03	(4)	1.47E-01	(8)	< 0.0002	u	< 0.0001	u
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	3.43E-02	(8)	< 0.0004	u	< 0.0003	u
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	4.42E+00	(8)	< 0.0003	u	< 0.0003	u
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	3.67E-02	(8)	< 0.0001	u	< 0.0001	u
Chlorobenzene (Monochlorobenzene	3.78E+02	(1)	4.12E+02	(5)	1.08E+00	(8)	< 0.0001	u	< 0.0001	u
Ethyl chloride	1.90E+04	(1)	1.66E+04	(5)	1.07E+02	(8)	< 0.0002	u	< 0.0001	u
Chloroform	5.90E+00	(1)	2.87E+01	(4)	1.09E-02	(8)	< 0.0002	u	< 0.0001	u
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	9.52E-02	(8)	< 0.0002	u	< 0.0002	u
cis-1,2-Dichloroethene	1.56E+02	(1)	7.08E+02	(5)	3.52E-01	(8)	< 0.0002	u	< 0.0001	u
cis-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0001	u	< 0.0001	u
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	7.55E-03	(8)	< 0.0001	u	< 0.0001	u
Dibromomethane (Methylene						. ,				
Bromide)	2.40E+01	(2)	9.90E+01	(6)	4.20E-02	(9)	<0.0001	u	<0.0001	u
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	7.23E+00	(8)	< 0.0002	u	< 0.0001	u
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.23E+01	(8)	0.0003	J	0.0002	J
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.0002	u	< 0.0002	u
Cumene (isopropylbenzene)	2.36E+03	(1)	2.74E+03	(5)	1.14E+01	(8)	< 0.0002	u	< 0.0002	u
tert-Butyl methyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	5.53E-01	(8)	0.0007	J	< 0.0003	u
Methylene chloride (Dichloromethane	4.09E+02	(1)	1.21E+03	(5)	2.21E-02	(10)	< 0.0003	u	< 0.0003	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	0.0003	J	< 0.0001	u
Butylbenzene, n-	3.90E+03	(2)	5.80E+04	(6)	6.40E+01	(9)	< 0.0002	u	< 0.0002	u
Propyl benzene	3.80E+03	(2)	2.40E+04	(6)	2.40E+01	(9)	< 0.0002	u	< 0.0002	u
Butylbenzene, sec-	7.80E+03	(2)	1.20E+05	(6)	1.18E+02	(9)	< 0.0002	u	< 0.0002	u
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.71E+00	(10)	< 0.0001	u	< 0.0001	u
Butylbenzene, tert-	7.80E+03	(2)	1.20E+05	(6)	3.20E+01	(9)	< 0.0002	u	<0.0002	u
Tetrachloroethene	1.11E+02	(1)	1.20E+02	(5)	3.98E-02	(10)	< 0.0001	u	<0.0001	u
Toluene	5.23E+03	(1)	1.40E+04	(5)	1.11E+01	(10)	0.0008	v	0.0004	J
trans-1,2-Dichloroethene	2.95E+02	(1)	3.05E+02	(5)	5.03E-01	(8)	< 0.0002	u	<0.0001	u
trans-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0001	u	< 0.0001	u
Trichloroethylene	6.77E+00	(1)	6.90E+00	(5)	3.10E-02	(8)	< 0.0001	u	< 0.0001	u
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	1.57E+01	(8)	< 0.0001	u	<0.0001	u
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	1.34E-02	(8)	< 0.0001	u	< 0.0001	u
Xylenes	8.71E+02	(1)	7.98E+02	(5)	1.54E+02	(8)	0.001	J	0.0007	J
Semi-volatiles (mg/kg)										
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.183	u	< 0.1838	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.1492	u	< 0.1499	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.1377	u	< 0.1384	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.1615	u	< 0.1622	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(7)	8.93E-01	(8)	< 0.192	u	< 0.1929	u
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	6.62E+01	(8)	< 0.1472	u	< 0.1479	u
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	6.74E-01	(8)	< 0.1565	u	< 0.1572	u
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	8.25E-01	(8)	< 0.1567	u	< 0.1575	u
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	6.45E+00	(8)	< 0.0883	u	< 0.0887	u
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	6.69E-01	(8)	< 0.1179	u	< 0.1184	u
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	4.92E-02	(8)	< 0.1855	u	< 0.1863	u
2,6-Dintitrotoluene	3.56E+00	(1)	1.72E+01	(4)	1.02E-02	(8)	< 0.1746	u	< 0.1754	u
b-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	5.70E+01	(8)	< 0.178	u	< 0.1788	u

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	OW-59 (33-3	34')	OW-60 (20-22		
	1		2010.	ļ	Lab ID		1706910-00)3	1706910-00)4	
					Sample D	ate	6/12/201	7	6/13/201	.7	
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	1.15E+00	(8)	< 0.1437	u	< 0.1444	u	
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 0.1668	u	< 0.1676	u	
Cresol. o-	3.20E+03	(2)	4.10E+04	(6)	1.50E+01	(9)	< 0.1469	u	< 0.1476	u	
Nitroaniline, 2-	6.30E+02	(2)	8.00E+03	(6)	1.60E+00	(9)	< 0.1824	u	< 0.1832	u	
2-Nitrophenol	-	-	-	-		-	< 0.1869	u	< 0.1878	u	
3.3-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	1.24E-01	(8)	< 0.1462	u	< 0.1469	u	
3+4-Methylphenol	-	-	-	-	-	-	< 0.1338	u	< 0.1344	u	
3-Nitroaniline	-	-	_	-	-	-	< 0.1774	u	< 0.1782	u	
4.6-Dinitro-o-cresol	4.93E+00	(1)	2.15E+01	(5)	3.98E-02	(8)	< 0.1504	u	< 0.1511	u	
4-Bromophenyl phenyl ether	_	-		-	-	-	< 0.162	u	< 0.1628	u	
4-Chloro-3-methylphenol	_	-	_	-	_	-	< 0.1803	u	< 0.1812	u	
Chloroaniline, p-	2.70E+01	(3)	1.10E+02	(7)	3.20E-03	(9)	< 0.1541	u	< 0.1549	u	
4-Chlorophenyl phenyl ether	-	-	_	-	_	-	< 0.1548	u	< 0.1555	u	
Nitroaniline, 4-	2.70E+02	(3)	1.10E+03	(7)	3.20E-02	(9)	< 0.1687	u	< 0.1695	u	
4-Nitrophenol		-		-	-	-	< 0.1542	u	< 0.1549	u	
Acenaphthene	3.48F+03	(1)	1.51E+04	(5)	8.25F+01	(8)	< 0.163	u u	< 0.1637	ŭ	
Acenaphthylene	-	-	-	-	-	-	< 0.1829	u U	< 0.1837	ŭ	
Aniline	9.50F+02	(3)	4.00F+03	(7)	9.20F-02	(9)	< 0.1121	u u	< 0.1127	ŭ	
Anthracene	1.74F+04	(1)	7.53E+04	(5)	8.51F+02	(8)	< 0.1813	u u	< 0.1822	ŭ	
Azobenzene	5.60F+01	(3)	2.60F+02	(7)	1.86F+06	(9)	< 0.183	u u	< 0.1839	ŭ	
Benzo(a)anthracene	1.53E+00	(0)	3 23E+01	(4)	6 37F-01	(8)	< 0 1704		< 0.1712	u u	
Benzo(a)pyrene	1.00E+00	(1)	2 36F+01	(4) (<u>4</u>)	3 53E+00	(10)	< 0.1768		< 0.1712	u II	
Benzo(b)fluoranthene	1.53E+00	(1)	3 23E+01	(4) (<u>4</u>)	6.17E+00	(8)	< 0.1892		< 0.1901	u II	
Benzo(g h i)pervlene	-	(1)	-	()	-	-	< 0.1618		< 0.1626	u II	
Benzo(k)fluoranthene	1 53E+01	(1)	3 23E+02	(4)	6.05E+01	(8)	< 0.1010		< 0.1620	u II	
Benzoic acid	2.50E+05	(2)	3 30E+06	(6)	3.00E+02	(9)	< 0.1502	<u>и</u>	< 0 1509	u U	
Benzyl alcohol	6.30F+03	(2)	8 20F+04	(6)	9.60E+00	(9)	< 0.1665	U U	< 0.1673	ŭ	
Bis(2-chloroethoxy)methane	1.90F+02	(2)	2.50F+03	(6)	2.60F-01	(9)	< 0.1795	u	< 0.1803	ŭ	
Bis(2-chloroethyl) ether	3.11F+00	(1)	1.95F+00	(5)	6.05F-04	(8)	< 0.1276	u u	< 0.1281	ŭ	
Bis(2-chloroisopropyl) ether	9.93F+01	(1)	5.19F+02	(4)	4.75F-02	(8)	< 0.1981	u u	< 0.199	ŭ	
Bis(2-ethylhexyl)phthalate [Di(2-		(-/		(' '		(-)					
ethylhexyl)phthalate, DEHP1	3.80E+02	(1)	1.83E+03	(4)	2.15E+01	(10)	0.21	J	0.25	J	
Butyl Benzyl Phthalate	2.90E+03	(3)	1.20E+04	(7)	4.60E+00	(9)	< 0.1648	u	< 0.1656	u	
Carbazole	_	-	_	-	_	-	< 0.1576	u	< 0.1584	u	
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.86E+02	(8)	< 0.1496	u	< 0.1503	u	
Dibenz(a.h)anthracene	1.53E-01	(1)	3.23E+00	(4)	1.97E+00	(8)	< 0.1596	u	< 0.1603	u	
Dibenzofuran	_	-	_	-	-	-	< 0.1714	u	< 0.1722	u	
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	9.79E+01	(8)	0.19	J	0.26	b	
Dimethyl phthalate (DMP, Phthalic											
Acid)	6.16E+04	(1)	2.69E+05	(5)	3.57E+00	(8)	< 0.1858	u	< 0.1867	u	
Di-n-butyl phthalate (Dibutyl						. ,					
phthalate)	6.16E+03	(1)	2.69E+04	(5)	3.38E+01	(8)	0.17	J	0.34	J	
Di-n-octyl phthalate	-		-	,	-	-	< 0.1491	u	< 0.1498	u	
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.34E+03	(8)	< 0.1655	u	< 0.1663	u	
Fluorene	2.32E+03	(1)	1.00E+04	(5)	8.00E+01	(8)	< 0.152	u	< 0.1527	u	
Hexachlorobenzene	3.33E+00	(1)	1.17E+02	(5)	1.89E-01	(8)	< 0.1831	u	< 0.184	u	
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.1694	u	< 0.1702	u	
Hexachlorocyclopentadiene	2.30E+00	(1)	8.67E+02	(5)	2.40E+00	(8)	< 0.1584	u	< 0.1592	u	
Hexachloroethane	1.33E+02	(1)	1.88E+02	(5)	3.20E-02	(8)	< 0.1434	u	< 0.144	u	
Indeno(1,2,3-c,d)pyrene	1.53E+00	(1)	3.23E+01	(4)	2.01E+01	(8)	< 0.164	u	< 0.1648	u	
Isophorone	5.61E+03	(1)	2.70E+04	(4)	0.00E+00	(9)	< 0.1902	u	< 0.1911	u	
۱ <u>ــــــــــــــــــــــــــــــــــــ</u>	•	· · · · ·	•			· · · ·					

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	OW-59 (33-3	84')	OW-60 (20-2	22')
					Lab ID		1706910-00)3	1706910-00)4
					Sample Da	ate	6/12/201	7	6/13/201	.7
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.1845	u	< 0.1854	u
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	1.44E-02	(8)	< 0.1654	u	< 0.1661	u
Nitroso-di-N-propylamine, N-	7.80E-01	(3)	3.30E+00	(7)	1.62E-04	(9)	< 0.1759	u	< 0.1767	u
N-Nitrosodiphenylamine	1.09E+03	(1)	5.24E+03	(4)	1.00E+01	(8)	< 0.1908	u	< 0.1917	u
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	1.52E-01	(8)	< 0.1705	u	< 0.1713	u
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	8.59E+01	(8)	< 0.1756	u	< 0.1764	u
Phenol	1.85E+04	(1)	7.74E+04	(5)	5.23E+01	(8)	< 0.1375	u	< 0.1381	u
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.92E+02	(8)	< 0.1493	u	< 0.15	u
Pyridine	7.80E+01	(2)	1.20E+03	(6)	1.36E-01	(9)	< 0.1322	u	< 0.1328	u
Total Petroleum Hydrocarbons (mg/k	(g)									
Gasoline Range Organics (GRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 1.1271	u	< 1.1271	u
Diesel Range Organics (DRO)	1.00E+03	(11) 3.80E+03		(11)	4.61E+03 (11)		< 1.529	u	< 1.5232	u
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 47.4834	u	< 47.3037	u

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)

EPA - Regional Screening Levels (Nov. 2018)

(1) NMED Residential Screening Level

(2) EPA Residential Screening Level

(3) EPA Residential - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic

(4) NMED Industrial Occupational Screening Level

(5) NMED Construction Worker Screening Level

(6) EPA Industrial - Screening Levels

(7) EPA Industrial - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic

(8) SoilGW NMED Cw Dilution Attenuation Factor (DAF) = 20

(9) SoilGW Risk-based EPA DAF = 20

(10) SoilGW MCL-based NMED DAF = 20

(11) NMED Tables 6-2 and 6-4 TPH Soil Screening Levels "unknown oil" - see report Section 5 for use of screening levels

Bold represents value above Non-Residential Screening Level

yellow highlight represents value above Leachate (DAF) Screening Level Bold with yellow highlight value exceeds Residential Screening Level and DAF

v = reportable detection above the Practical quantitation limit (PQL)

u - result is not detected at method detection limit (MDL)

J - estimated result at concentration above MDL but less than PQL

	Screening Levels	Source	BW-4B		BW-5B		BW-5C		0W-59		09-WO	
Lab ID			1706G62-003		1706G62-005	5	1706G62-004		1706G62-00	7(1706G62-00)1
Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Metals (ug/l) TOTAL												
Antimony	6	(3)	<1.86	u	<1.86	u	<1.86	u	<1.86	u	<1.86	u
Arsenic	10	(3)	12	Ζ	2.8	J	<1.49	u	11	Ζ	8.1	v
Barium	2000	(3)	4700	Ζ	73	v	210	v	350	٧	1600	v
Beryllium	4	(3)	48	Ζ	<0.26	u	<0.26	u	1.5	J	4.6	Ζ
Cadmium	5	(3)	<2.91	u	<0.58	u	<0.58	u	<0.58	u	<0.58	u
Chromium	50	(3)	170	Ζ	3	J	<1.09	u	14	٧	48	v
Cobalt	50	(3)	79	v	1	J	1.2	J	8	v	21	v
Cyanide	200	(3)	<5	u	<5	u	<5	u	26.8	v	<5	u
Iron	1000	(3)	82000	Ζ	1500	Ζ	740	Ζ	9700	Ζ	28000	Ζ
Lead	15	(3)	200	Ζ	0.93	J	<0.48	u	9.4	v	31	Ζ
Manganese	200	(3)	5600	Z	26	v	130	Z	1200	Z	2200	Z
Mercury	2	(3)	0.24	v	0.07	J	0.18	J	0.08	J	0.1	J
Nickel	372	(4)	540	Z	<3.61	u	<3.61	u	20	v	47	v
Selenium	50	(3)	<7.11	u	4.4	J	4.9	J	15	v	13	v
Silver	50	(3)	<2.09	u	<0.42	u	<0.42	u	<0.42	u	<0.42	u
Vanadium	63.1	(4)	140	J	22	J	2.9	J	26	J	70	v
Zinc	10000	(3)	3400	v	3.8	J	3.6	J	32	v	71	v
Chloride	250000	(3)	73000	v	50000	v	1400000	Z	2000000	Ζ	1600000	Ζ
Fluoride	1600	(3)	1300	v	280	J	<218.5	u	<218.5	u	<218.5	u
Sulfate	600000	(3)	230000	v	100000	v	220000	v	3000000	Ζ	740000	Ζ
Metals (ug/I) DISSOLVED												
Antimony (D)	6	(3)	NS		<0.17	u	< 0.17	u	1	J	0.28	J
Arsenic (D)	10	(3)	NS		2.4	v	1.9	J	9.4	J	4.4	J
Barium (D)	2000	(3)	NS		52	v	210	v	14	v	44	v
Beryllium (D)	4	(3)	NS		<0.29	u	<0.29	u	0.39	J	0.45	J
Cadmium (D)	5	(3)	NS		<1	u	<1	u	<1	u	<0.58	u
Calcium (D)	-	-	NS		2800	v	64000	v	210000	٧	170000	v
Chromium (D)	50	(3)	NS		1.8	J	1.6	J	<1.01	u	<1.09	u
Cobalt (D)	50	(3)	NS		<1.59	u	<1.59	u	3.5	J	1.9	J
Cyanide (D)	200	(3)	NS		-		-		-		-	
Iron (D)	1000	(3)	NS		110	v	<16.45	u	30	٧	<10.21	u
Lead (D)	15	(3)	NS		< 0.00013	J	< 0.00013	u	<0.84	u	<0.84	u
Magnesium (D)	-	-	NS		350	J	8300	v	65000	٧	33000	v
Manganese (D)	200	(3)	NS		8.2	v	120	Ζ	670	Ζ	550	Ζ
Nickel (D)	372	(4)	NS		<1.07	u	4.9	J	10	٧	6.1	J
Potassium (D)	-	-	NS		850	J	3500	v	1700	٧	5000	v
Selenium (D)	50	(3)	NS		5.3	v	6.8	v	23	٧	14	v
Sodium (D)	-	-	NS		260000	v	950000	v	2400000	٧	1100000	v
Silver (D)	50	(3)	NS		<0.88	u	<0.88	u	<0.88	u	<0.42	u
Vanadium (D)	63.1	(4)	NS		18	J	<1.94	u	4.2	J	6.6	J
Zinc (D)	10000	(3)	NS		12	v	11	v	13	٧	11	v
Volatiles (ug/l)												
1,1,1,2-Tetrachloroethane	5.74	(4)	<0.21	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
1,1,1-Trichloroethane	200	(3)	<0.15	u	<0.07	u	<0.07	u	<0.07	u	<0.07	u
1,1,2,2-Tetrachloroethane	10	(3)	<0.27	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
1,1,2-Trichloroethane	5	(3)	<0.28	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
1,1-Dichloroethane	25	(3)	<0.8	u	<0.4	u	0.61	J	<0.4	u	<0.4	u
1,1-Dichloroethene	7	(3)	<0.16	u	<0.08	u	<0.08	u	<0.08	u	<0.08	u
1,1-Dichloropropene	-	-	<0.19	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
1,2,3-Trichlorobenzene	7	(1)	<0.23	u	<0.12	u	<0.12	u	< 0.12	u	<0.12	u
1,2,3-Trichloropropane	0.00835	(4)	<0.78	u	<0.39	u	< 0.39	u	<0.39	u	<0.39	u

	Screening Levels	Source	BW-4B		BW-5B		BW-5C		OW-59		09-MO	
Lab ID			1706G62-003		1706G62-005	5	1706G62-004		1706G62-00	7	1706G62-00)1
Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	1
1,2,4-Trichlorobenzene (V)	70	(3)	<0.28	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
1,2,4-Trimethylbenzene	56	(1)	<0.23	u	<0.11	u	<0.11	u	0.13	J	<0.11	u
1,2-Dibromo-3-chloropropane	0.2	(2)	<2.77	u	<1.39	u	<1.39	u	<1.39	u	<1.39	u
1,2-Dibromoethane (EDB)	0.05	(3)	<0.26	u	<0.13	u	<0.13	u	<0.13	u	<0.13	u
1,2-Dichlorobenzene (V)	600	(3)	<0.18	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
1,2-Dichloroethane (EDC)	5	(3)	<0.8	u	<0.4	u	0.57	J	<0.4	u	<0.4	u
1,2-Dichloropropane	5	(3)	<0.2	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
1,3,5-Trimethylbenzene	60	(1)	<0.17	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
1,3-Dichlorobenzene (V)	-	-	<0.3	u	<0.15	u	<0.15	u	<0.15	u	<0.15	u
1,3-Dichloropropane	370	(1)	< 0.33	u	<0.17	u	<0.17	u	<0.17	u	<0.17	u
1,4-Dichlorobenzene (V)	75	(2)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
1-Methylnaphthalene (V)	11.37	(4)	< 0.32	u	<0.16	u	<0.16	u	<0.16	u	<0.16	u
2,2-Dichloropropane	-	_	< 0.31	u	<0.16	u	<0.16	u	<0.16	u	<0.16	u
2-Butanone	5564	(4)	<2.26	u	<1.13	u	<1.13	u	<1.13	u	<1.13	u
2-Chlorotoluene	233	(4)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
2-Hexanone	38	(1)	<1.31	u	<0.66	u	<0.66	u	<0.66	u	<0.66	u
2-Methylnaphthalene (V)	35.11	(4)	<0.3	u	<0.15	u	<0.15	u	<0.15	u	<0.15	u
4-Chlorotoluene	250	(1)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
4-Isopropyltoluene	-	-	<0.19	u	<0.1	u	<0.1	u	<0.1	u	0.21	J
4-Methyl-2-pentanone	1243	(4)	<1.41	u	<0.71	u	<0.71	u	<0.71	u	<0.71	u
Acetone	14063	(4)	10	J	3.1	J	5.4	J	6	J	13	v
Benzene	5	(3)	<0.12	u	<0.06	u	<0.06	u	<0.06	u	<0.06	u
Bromobenzene	62	(1)	<0.28	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
Bromodichloromethane	1.34	(4)	< 0.35	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
Bromoform	32.85	(4)	<0.42	u	<0.21	u	<0.21	u	<0.21	u	<0.21	u
Bromomethane	7.54	(4)	<0.51	u	<0.26	u	<0.26	u	<0.26	u	<0.26	u
Carbon disulfide	810	(4)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
Carbon Tetrachloride	5	(3)	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Chlorobenzene	100	(2)	<0.21	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Chloroethane	20900	(4)	<0.47	u	<0.23	u	<0.23	u	<0.23	u	<0.23	u
Chloroform	100	(3)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
Chloromethane	20.3	(4)	<0.59	u	<0.29	u	<0.29	u	<0.29	u	<0.29	u
cis-1,2-DCE	70	(3)	<0.41	u	<0.2	u	<0.2	u	<0.2	u	<0.2	u
cis-1,3-Dichloropropene	4.71	(4)	<0.16	u	<0.08	u	<0.08	u	<0.08	u	<0.08	u
Dibromochloromethane	1.68	(4)	<0.14	u	<0.07	u	<0.07	u	<0.07	u	<0.07	u
Dibromomethane	8.3	(1)	<0.18	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
Dichlorodifluoromethane	197	(4)	<2	u	<1	u	<1	u	<1	u	<1	u
Ethylbenzene	700	(3)	<0.19	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
Hexachlorobutadiene (V)	1.39	(4)	<1.6	u	<0.8	u	<0.8	u	<0.8	u	<0.8	u
Isopropylbenzene	447	(4)	<0.1	u	<0.05	u	<0.05	u	<0.05	u	<0.05	u
Methyl tert-butyl ether (MTBE)	100	(4)	<0.48	u	<0.24	u	38	۷	6.8	۷	0.86	J
Methylene Chloride	5	(3)	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Naphthalene (V)	30	(3)	<0.23	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
n-Butylbenzene	-	-	<0.26	u	<0.13	u	<0.13	u	<0.13	u	<0.13	u
n-Propylbenzene	-	-	<0.15	u	<0.07	u	<0.07	u	<0.07	u	<0.07	u
sec-Butylbenzene	-	-	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Styrene	100	(3)	<0.31	u	<0.16	u	<0.16	u	<0.16	u	<0.16	u
tert-Butylbenzene	-	-	<0.21	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
Tetrachloroethene (PCE)	5	(3)	<0.26	u	<0.13	u	<0.13	u	<0.13	u	<0.13	u
Ioluene	1000	(3)	<0.13	u	0.23	J	<0.06	u	< 0.06	u	0.24	J
trans-1,2-DCE	100	(3)	<0.37	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
trans-1,3-Dichloropropene	4.71	(4)	<0.44	u	<0.22	u	<0.22	u	<0.22	u	<0.22	u

Lab ID ITOBGR2-005 ITOBGR2-005 ITOBGR2-007 ITOBGR2-007 <thitobgr2-007< th=""> <thitobgr2-007< th=""> <thi< th=""><th></th><th>Screening Levels</th><th>Source</th><th colspan="2">BW-4B</th><th>BW-5B</th><th></th><th colspan="2">BW-5C</th><th>0W-59</th><th></th><th>09-WO</th><th></th></thi<></thitobgr2-007<></thitobgr2-007<>		Screening Levels	Source	BW-4B		BW-5B		BW-5C		0W-59		09-WO	
Sample Date 6/28/2017	Lab ID			1706G62-003		1706G62-005	5	1706G62-004		1706G62-00	7	1706G62-00)1
Tichhoroshnen (TCE) 5 (3) <0.22 u <0.111 u <0.118 u <0.018 u <0.011 u <0.011 u <0.0118 u <0.0118 <td>Sample Date</td> <td></td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td>	Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Trehtoroluromethane 1140 (4) <0.37 u <0.18	Trichloroethene (TCE)	5	(3)	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Vinyet.hirvinia 2 (3) <0.36 u <0.18 u <0.32 u <0.33 u <0.33 u <0.213 u <0.214 u	Trichlorofluoromethane	1140	(4)	<0.37	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
Sylenes, Total 620 (3) <0.64 (a) <0.32 (a) <0.33 (a) <0.33 (a) <0.32 (a) <0.32 (a) <0.33	Vinyl chloride	2	(3)	<0.36	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
Sambadius (ug/l) Image: sambadius (ug/	Xylenes, Total	620	(3)	<0.64	u	<0.32	u	<0.32	u	<0.32	u	<0.32	u
12.4-Trichtonbenzene 70 (2) <21.26 u <21.3 u <21.0 u <23.0 u<23.0 u <23.0 u	Semivolatiles (ug/l)		. ,										
12-Dethomobenzene 600 (3) <20.1 u	1,2,4-Trichlorobenzene	70	(2)	<21.28	u	<2.13	u	<2.13	u	<2.13	u	<2.13	u
1.3.0cbrookenzene - <18.27	1,2-Dichlorobenzene	600	(3)	<20.1	u	<2.01	u	<2.01	u	<2.01	u	<2.01	u
1.4 Dethylaphthalene 75 (3) <21.37	1,3-Dichlorobenzene	-	-	<18.27	u	<1.83	u	<1.83	u	<1.83	u	<1.83	u
1 Mathyinaphthalene 11.38 (4) <33.08 u <3.31 u< <3.31 u<<<<<	1,4-Dichlorobenzene	75	(3)	<21.37	u	<2.14	u	<2.14	u	<2.14	u	<2.14	u
2.4.5-Trichorophenol 1186 (4) <51	1-Methylnaphthalene	11.38	(4)	<33.08	ů	<3.31	u	<3.31	u	<3.31	u	<3.31	u
2.4.6-Trichlorophenol 11.9 (4) <55	2.4.5-Trichlorophenol	1166	(4)	<51	ů	<5.1	u	<5.1	u	<5.1	u	<5.1	u
2.4 Dichlorophenol 45.3 (4) <56.8	2.4.6-Trichlorophenol	11.9	(4)	<55	ū	<5.5	u	<5.5	u	<5.5	u	<5.5	u
2.4.Dimetrylphenol 354 (4) <28.29	2.4-Dichlorophenol	45.3	(4)	<56.81	u.	<5.68	ш.	<5.68	U.	< 5.68	u.	<5.68	ū
2.4.Dintrophenol 38.7 (1) 22.59 0 22.86 0 2.87 0 2.28 0 2.44 0 2.44 0 2.44 0 2.44 0 2.44 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 <th2.33< th=""></th2.33<>	2.4-Dimethylphenol	354	(4)	<28.29	ŭ	<2.83	ŭ	<2.83	ш	<2.83	ы П	<2.83	ŭ
All nitrosphene Oil Land V Califier Oil Califier Oil Califier Oil Califier Oil Califier Oil Califier Oil Califier Califier <thcalifier< th=""> <</thcalifier<>	2 4-Dinitrophenol	38.7	(4)	<25.20	u U	<2.58	u U	<2.58	м П	<2.58	u u	<2.58	ŭ
Antional and the second seco	2.4-Dinitrotoluene	2 37	(1)	< 39.66		<3.97		<3.97	и	<3.97		<3.97	
Abbreview Abbreview <t< td=""><td>2.6-Dinitrotoluene</td><td>0.485</td><td>(4)</td><td><44.92</td><td>u</td><td><1.07</td><td>u</td><td><4.49</td><td>u II</td><td><4.49</td><td>u</td><td><1.01</td><td>u</td></t<>	2.6-Dinitrotoluene	0.485	(4)	<44.92	u	<1.07	u	<4.49	u II	<4.49	u	<1.01	u
2-hinomingunation 10 40	2-Chloronanhthalene	733	(4)	<36.96	u	×7.75	u	<37		×==== <3.7	u	<3.7	u
2-Initroprend 3-1 (4) (-1,3-4) (1) (-1,3-5) <	2 Chlorophonol	01	(4)	<75.34	u	<7.52	u 	<7.52	u 	<7.52	u	<7.52	u
2-metry(phenol 930 (1) <32.00 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <4.32 0 <4.32 0 <4.32 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92	2 Mothylpaphthalono	35.1	(4)	<73.34	u	<7.00	u 	<7.53	u	<7.53	u	<7.55	u
Zmeterylphenol 33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (2)	2 Methylnaphthalene	030	(4)	<32.05	u	<3.21	u	<3.21	u	<3.21	u 	<3.21	u
2/Ntrophenol - < < < < < < < < < < < < < < < < < < < < < <	2 Nitroanilino	190	(1)	< 10.46	u	< 1.05	u	< 1.05	u	< 1.05	u 	< 1.05	u
2-minopland 1 2-minopland 2-minopland <td>2 Nitrophonol</td> <td>190</td> <td>(1)</td> <td><49.40</td> <td>u </td> <td><4.95</td> <td>u </td> <td><4.95</td> <td>u </td> <td><4.95</td> <td>u </td> <td><4.95</td> <td>u</td>	2 Nitrophonol	190	(1)	<49.40	u 	<4.95	u 	<4.95	u 	<4.95	u 	<4.95	u
3.3 - Unit Modelizatine 1.2.5 (4) (5.3.2) 0 (5.3.4) 0 (4.6.2) 0 (4.6.2) 0 (4.6.2) 0 (4.6.2) 0 (4.6.3) 0 (4.6.3) 0 (4.6.3) 0 (4.6.3) 0 (5.3.5) 0 (5.5.5) 0 (5.5.5) 0 (5.5.6) 0 (5.6.3) 0 (5.6.3) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4)	2 3 Dichlorobonzidino	1 25	(4)	<31.95	u	<2.19	u	<3.13	u	<3.19	u 	<3.19	u
Orthodynamic of the size of the	3+1-Methylphenol	930	(4)	<32.07	u	<3.92	u	<3.92	u	<3.92	u	<3.92	u
A-6.Dirito-2-methylphenol 1.52 (4) <38.67	3-Nitroaniline	-	(1)	3.07</td <td>u</td> <td><4.34</td> <td>u</td> <td><0.21</td> <td>и 11</td> <td><4.34</td> <td>u</td> <td><4.34</td> <td>u</td>	u	<4.34	u	<0.21	и 11	<4.34	u	<4.34	u
ABCOMDEND (Phenyl ether 1.02 (1) 1.03 1.04 1.03.1 1.04 <th1.03.1< <="" td=""><td>4 6-Dinitro-2-methylphenol</td><td>1 52</td><td>(4)</td><td><38.67</td><td>u</td><td><3.87</td><td>u</td><td><3.87</td><td>и 11</td><td>< 3.87</td><td>u</td><td>< 3.87</td><td>u</td></th1.03.1<>	4 6-Dinitro-2-methylphenol	1 52	(4)	<38.67	u	<3.87	u	<3.87	и 11	< 3.87	u	< 3.87	u
Achloro-Brithendi -	4-Bromonbenyl phenyl ether	1.02	-	<46.2		<4.62		<4.62	ч	<4.62		<4.62	
Achoroaniline 3.7 (5) 35.1 u 35.1 u 35.2 u 36.1 u 36.1 u 36.1 u 36.1 u 36.1 u 36.1 u	4-Chloro-3-methylphenol	-	_	<63.41	и	<6.34	ш	<6.34	п	<6.34	и	<6.34	u
Achlorophenyl phenyl ether -	4-Chloroaniline	37	(5)	<35.11	ŭ	<3.52	ŭ	<3.52	ш	<3.52	ы П	<3.52	ŭ
Anitroaniline 38 (5) <40.33 u <4.03 u <3.53	4-Chlorophenyl phenyl ether	-	-	<36.15	ŭ	<3.61	ũ	<3.61	ũ	<3.61	м П	<3.61	ы. П
ANitrophenol - <t< td=""><td>4-Nitroaniline</td><td>38</td><td>(5)</td><td><40.33</td><td>ŭ</td><td><4.03</td><td>ŭ</td><td><4.03</td><td>ш</td><td><4.03</td><td>ы П</td><td><4.03</td><td>ŭ</td></t<>	4-Nitroaniline	38	(5)	<40.33	ŭ	<4.03	ŭ	<4.03	ш	<4.03	ы П	<4.03	ŭ
Acenaphthene 535 (4) <36.15 u <3.61 u <3.61 <td>4-Nitrophenol</td> <td>-</td> <td>-</td> <td><54.78</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td>	4-Nitrophenol	-	-	<54.78	ŭ	<5.48	ŭ	<5.48	ŭ	<5.48	ŭ	<5.48	ŭ
Acenaphthylene - <35.31 u <35.53	Acenaphthene	535	(4)	<36.15	ū	<3.61	u	<3.61	u	<3.61	u	<3.61	u
Aniline 130 (5) <30.59 u <3.06 u <3.05 u <3.05	Acenaphthylene	_	-	<35.31	u.	<3.53	ш.	<3.53	U.	<3.53	u.	<3.53	u.
Anthracene 1721 (4) <35.37 u <3.54 u <4.53 u <4.53 u <4.53 u <4.53 u <4.53 u <4.53 u <3.87 u <3.87 u <3.87 u <3.87 u <3.89 u <3.99	Aniline	130	(5)	<30.59	ū	<3.06	u	<3.06	u	<3.06	u	<3.06	u
Azobenzene1.2(5)<45.33u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.54u<4.54u<4.54u<4.54u <td>Anthracene</td> <td>1721</td> <td>(4)</td> <td><35.37</td> <td>ū</td> <td><3.54</td> <td>u</td> <td><3.54</td> <td>u</td> <td><3.54</td> <td>u</td> <td><3.54</td> <td>ū</td>	Anthracene	1721	(4)	<35.37	ū	<3.54	u	<3.54	u	<3.54	u	<3.54	ū
Benz(a)anthracene 0.12 (4) <38.66 u <3.87 u <3.99 u <3.95 u <3.95 u <3.95 u <3.95 u <3.95 u <3.95 u <4.39 u <4.3	Azobenzene	1.2	(5)	<45.33	ū	<4.53	u	<4.53	u	<4.53	u	<4.53	u
Benzo(a)pyrene 0.2 (3) <39.92 u <3.99 u <3.95 u <3.95 u <3.95 u <4.39 u <4.39 u <4.39 u <4.39 u <4.39 <td>Benz(a)anthracene</td> <td>0.12</td> <td>(4)</td> <td><38.66</td> <td>ū</td> <td><3.87</td> <td>u</td> <td><3.87</td> <td>u</td> <td><3.87</td> <td>u</td> <td><3.87</td> <td>u</td>	Benz(a)anthracene	0.12	(4)	<38.66	ū	<3.87	u	<3.87	u	<3.87	u	<3.87	u
Benzo(b)fluoranthene 0.343 (4) <39.52 u <3.95 u <4.04 u <4.04 u <4.39 u <4.32 u <4.32 u <4.32 u	Benzo(a)pyrene	0.2	(3)	<39.92	u	<3.99	u	<3.99	u	<3.99	u	<3.99	u
Benzolg,h,i)perylene -	Benzo(b)fluoranthene	0.343	(4)	<39.52	u	<3.95	u	<3.95	u	<3.95	u	<3.95	u
Benzok/fluoranthene 3.43 (4) <43.87 u <4.39 u <4.59 u <4.59 u <4.59 u <4.59 u <4.32 u <4.32 u <4.32 u <4.32 u <4.33 u <4.32 u <4.33 u <<	Benzo(g,h,i)perylene	-	-	<40.38	u	<4.04	u	<4.04	u	<4.04	u	<4.04	u
Benzoic acid 75000 (1) 93 J 8.2 J 7.9 J 8.3 J 7.8 J Benzyl alcohol 2000 (1) <45.91	Benzo(k)fluoranthene	3.43	(4)	<43.87	u	<4.39	u	<4.39	u	<4.39	u	<4.39	u
Benzyl alcohol 2000 (1) <45.91 u <4.59 u <4.32 u <4.32 u <4.32 u <4.32 u <4.32 u <4.33 u <3.87 u <3.87 </td <td>Benzoic acid</td> <td>75000</td> <td>(1)</td> <td>93</td> <td>J</td> <td>8.2</td> <td>J</td> <td>7.9</td> <td>J</td> <td>8.3</td> <td>J</td> <td>7.8</td> <td>J</td>	Benzoic acid	75000	(1)	93	J	8.2	J	7.9	J	8.3	J	7.8	J
Bis(2-chloroethoxy)methane 59 (1) <43.22 u <4.32 u <4.33 u <4.82 u <4.82 u <4.82 <thu< th=""> <4.82 u <t< td=""><td>Benzyl alcohol</td><td>2000</td><td>(1)</td><td><45.91</td><td>u</td><td><4.59</td><td>u</td><td><4.59</td><td>u</td><td><4.59</td><td>u</td><td><4.59</td><td>u</td></t<></thu<>	Benzyl alcohol	2000	(1)	<45.91	u	<4.59	u	<4.59	u	<4.59	u	<4.59	u
Bis(2-chloroethyl)ether 0.1365 (4) <43.28 u <4.33 u <3.87 u <3.83 u	Bis(2-chloroethoxy)methane	59	(1)	<43.22	u	<4.32	u	<4.32	u	<4.32	u	<4.32	u
Bis(2-chloroisopropyl)ether 9.81 (4) <38.74 u <3.87 u <3.83 u <4.63 u	Bis(2-chloroethyl)ether	0.1365	(4)	<43.28	u	<4.33	u	<4.33	u	<4.33	ū	<4.33	u
Bis(2-ethylhexyl)phthalate 6 (2) <48.24 u <4.82 u <4.83 u <4.63 u <4.58 u <4.58 u <4.58 u <4.58 u <4.58 <thu< th=""> <4.58 u <th< td=""><td>Bis(2-chloroisopropyl)ether</td><td>9.81</td><td>(4)</td><td><38.74</td><td>ū</td><td><3.87</td><td>ū</td><td><3.87</td><td>ű</td><td><3.87</td><td>ū</td><td><3,87</td><td>ū</td></th<></thu<>	Bis(2-chloroisopropyl)ether	9.81	(4)	<38.74	ū	<3.87	ū	<3.87	ű	<3.87	ū	<3,87	ū
Butyl benzyl phthalate 160 (5) <46.27 u <4.63 u <4.58 u <4.58 <td>Bis(2-ethylhexvl)phthalate</td> <td>6</td> <td>(2)</td> <td><48.24</td> <td>u u</td> <td><4.82</td> <td>ũ</td> <td><4.82</td> <td> U</td> <td><4.82</td> <td>v U</td> <td>5.1</td> <td>Ţ</td>	Bis(2-ethylhexvl)phthalate	6	(2)	<48.24	u u	<4.82	ũ	<4.82	 U	<4.82	v U	5.1	Ţ
Carbazole - <45.82 u <4.58 u <4.58 <thu< th=""> <4.58 <thu< th=""> <thu< td="" th<=""><td>Butyl benzyl phthalate</td><td>160</td><td>(5)</td><td><46.27</td><td>ŭ</td><td><4.63</td><td>ŭ</td><td><4.63</td><td>ű</td><td><4.63</td><td>ŭ</td><td><4,63</td><td>ū</td></thu<></thu<></thu<>	Butyl benzyl phthalate	160	(5)	<46.27	ŭ	<4.63	ŭ	<4.63	ű	<4.63	ŭ	<4,63	ū
Chrysene 34.3 (4) <38.19 u <3.82 u <3.82 u <3.82 u <3.82 u <3.82 u	Carbazole	-	-	<45.82	u	<4.58	u	<4.58	u	<4.58	ŭ	<4.58	u
	Chrysene	34.3	(4)	<38.19	u	<3.82	u	<3.82	u	<3.82	u	<3.82	u

	Screening Levels	Source	BW-4B	BW-4B		BW-5B			0M-59		0%-60	
Lab ID			1706G62-003		1706G62-00	5	1706G62-004		1706G62-00)7	1706G62-001	
Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Dibenz(a,h)anthracene	0.0343	(4)	<46.4	u	<4.64	u	<4.64	u	<4.64	u	<4.64 u	I
Dibenzofuran	7.9	(1)	<40.75	u	<4.08	u	<4.08	u	<4.08	u	<4.08 u	I
Diethyl phthalate	14800	(4)	<40.49	u	<4.05	u	<4.05	u	<4.05	u	<4.05 u	ı
Dimethyl phthalate	611.56	(4)	<35.78	u	<3.58	u	<3.58	u	<3.58	u	<3.58 u	ı
Di-n-butyl phthalate	885	(4)	<50.34	u	<5.03	u	<5.03	u	<5.03	u	<5.03 u	ı
Di-n-octyl phthalate	-	-	<46.77	u	<4.68	u	5	J	<4.68	u	<4.68 u	ı
Fluoranthene	802	(4)	<42.64	u	<4.26	u	<4.26	u	<4.26	u	<4.26 u	I
Fluorene	288	(4)	<40.08	u	<4.01	u	<4.01	u	<4.01	u	<4.01 u	I
Hexachlorobenzene	1	(2)	<38.49	u	<3.85	u	<3.85	u	<3.85	u	<3.85 u	I
Hexachlorobutadiene	1.39	(4)	<13.49	u	<1.35	u	<1.35	u	<1.35	u	<1.35 u	I
Hexachlorocyclopentadiene	50	(2)	<12.74	u	<1.27	u	<1.27	u	<1.27	u	<1.27 u	I
Hexachloroethane	3.28	(4)	<11.99	u	<1.2	u	<1.2	u	<1.2	u	<1.2 u	I
Indeno(1,2,3-cd)pyrene	0.343	(4)	<41.62	u	<4.16	u	<4.16	u	<4.16	u	<4.16 u	ı
Isophorone	780.63	(4)	<43.58	u	<4.36	u	<4.36	u	<4.36	u	<4.36 u	1
Naphthalene	1.65	(4)	<28.73	u	<2.87	u	<2.87	u	<2.87	u	<2.87 u	ı
Nitrobenzene	1.4	(4)	<35.87	u	<3.59	u	<3.59	u	<3.59	u	<3.59 u	ı
N-Nitrosodimethylamine	0.00167	(4)	<35.01	u	<3.5	u	<3.5	u	<3.5	u	<3.5 u	ı
N-Nitrosodi-n-propylamine	0.11	(5)	<45.68	u	<4.57	u	<4.57	u	<4.57	u	<4.57 u	I
N-Nitrosodiphenylamine	121.92	(4)	<38.86	u	<3.89	u	<3.89	u	<3.89	u	<3.89 u	1
Phenanthrene	170	(4)	<43.44	u	<4.34	u	<4.34	u	<4.34	u	<4.34 u	ı
Pentachlorophenol	1	(3)	<49.21	u	<4.92	u	<4.92	u	<4.92	u	<4.92 u	I
Phenol	5760	(4)	<31.14	u	<3.11	u	<3.11	u	<3.11	u	<3.11 u	I
Pyrene	117	(4)	<44.33	u	<4.43	u	<4.43	u	<4.43	u	<4.43 u	1
Pyridine	20	(1)	<22.96	u	<2.3	u	<2.3	u	<2.3	u	<2.3 u	ı
TPH (mg/l)												_
Gasoline Range Organics (GRC	0.0858	(6)	< 0.05	٧	< 0.025	u	0.039	J	0.23	v	< 0.025 v	1
Diesel Range Organics (DRO)	0.0858	(6)	0.47	J	0.74	J	< 0.36	u	0.56	J	< 0.36 u	ı
Motor Oil Range Organics (MR	0.0858	(6)	< 5	u	< 5	u	< 5	u	< 5	u	< 5 u	ı

- No screening level or analytical result available

 $\boldsymbol{450}$ - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (November 2018) - Tap Water

(2) EPA - Regional Screening Levels (November 2018) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/I TDS Concentration or less (December 2018)

(4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (February 2019)

(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds

(6) NMED SSG (March 2019)

v = reportable detection above the Practical quantitation limit (PQL)

u - result is not detected at method detection limit (MDL)

j - estimated result at concentration above MDL but less than PQL

z - concentration exceeds MCL

Marathon Petroleum Company - Gallup Refinery SMW-2 Area Additional Sampling Gallup, New Mexico Table 4

							Evaporation	Evaporation
Sample Location			65-M0	09-MO	Z-MMS	SMW-4	Pond #2	Pond #3
Lab Sample ID			1706662-007	17066662-001	1706637-001	1706G37-002	1706G37-003	1706G37-002
Sample Date			6/28/2017	6/28/2017	6/28/2017	6/28/2017	6/28/2017	6/28/2017
Parameter	Screening Level	Source						
Method E300 (mg/L) Total								
Bromide	NE		3.6 v	2.4 v	2.8 v	0.26 J	1.9 v	2.3 v
Chloride	250	4	2000 Z	1600 Z	2600 v	63 v	5000 v	7100 v
Fluoride	1.6	4	<0.2185 u	<0.2185 u	<0.2185 u	1.1 v	18 Z	16 Z
Nitrate+Nitrite as N	10	9	<0.26 u	3 <	<0.26 u	0.21 J	1.1 J	1.1 J
Phosphorus, Orthophosphate (As P)	NE		<55 u	<1.25 u	<55 u	<1.25 u	<2.5 u	<2.5 u
Sulfate	600	4	3000 Z	740 Z	1500 v	180 v	1400 v	1800 v
Method E200.7 (mg/L) Dissolved								
Calcium - E200.7	NE		210 v	170 v	7 00E	4.5 v	410 v	540 v
Magnesium	NE		05 v	33 v	^ 06	1.2 v	100 v	150 v
Potassium	NE		1.7 v	5 v	0.75 J	0.52 J	140 v	230 v
Sodium	NE	,	2400 v	1100 v	v 2300 v	310 v	3100 v	4300 v
NE Not Ectobliched								

NE - Not Established

450 - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (November 2018) - Tap Water

(2) EPA - Regional Screening Levels (November 2018) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/I TDS Concentration or less (December 2018) (4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (February 2019)

(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds (6) 40 CFR 141.61 MCL (November 2015)

v = reportable detection above the Practical quantitation limit (PQL)

u - result is not detected at method detection limit (MDL)

J - estimated result at concentration above MDL but less than PQL

Z - concentration exceeds MCL

Table 5 Groundwater and Surface Water Field Measurements Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

WELL	DATE	DEPTH TO GROUNDWATER	TEMPERATURE	SPECIFIC CONDUCTIVITY	DISSOLVED OXYGEN	рН	OXYGEN REDUCTION
		(ft BTOC)	°C	(uS/cm)	(mg/L)		POTENTIAL
BW-4A	06/28/17	ND	Well was not sampled due to insufficient groundwater volu		volume.		
BW-4B	06/28/17	51.65	16.3	1458	3.66	8.87	11.2
BW-5A	06/28/17	23.21	Well was not sampled due to insufficient groundwater volume.				volume.
BW-5B	06/28/17	20.60	18.0	1155	6.04	8.80	48
BW-5C	06/28/17	2.70	20.2	5274	1.83	7.65	-28.0
OW-59	06/28/17	26.15	15.4	11067	9.61	7.40	111.1
OW-60	06/28/17	33.15	16.3	6189	8.12	7.43	98.1
SMW-2	06/28/17	24.80	16.3	11232	5.24	7.08	117.7
SMW-4	06/28/17	32.13	16.2	1384	4.37	8.44	86.7
EP-2	06/28/17	NA	22.9	16175	1.31	8.17	-212.7
EP-3	06/28/17	NA	23.6	22127	1.33	8.17	-56.7

ND - not detected

NA - not applicable

ft BTOC - feet below top of casing

Table 6 Groundwater Gauging Results Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

WELL	STICKUP (ft ABGL)	DATE	DATUM	DEPTH TO GROUNDWATER (ft BGL)	DEPTH TO GROUNDWATER (ft BTOC)	COMMENTS
	-	06/15/17	BGL	ND	NA	COLLECTED FROM INSIDE THE AUGERS
	3.00	06/16/17	BTOC	ND	ND	
BW-4A	3.00	06/19/17	BTOC	ND	ND	
	3.00	06/26/17	BTOC	ND	ND	
	3.00	06/28/17	BTOC	ND	ND	
	-	06/19/17	BGL	71.00	NA	COLLECTED FROM INSIDE THE AUGERS
	-	06/19/17	BGL	69.50	NA	COLLECTED FROM INSIDE THE AUGERS
BW-4B	3.00	06/27/17	BTOC	27.92	30.92	PRIOR TO DEVELOPMENT
	3.00	06/27/17	BTOC	60.88	63.88	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/28/17	BTOC	48.65	51.65	PRIOR TO SAMPLING
	3.00	06/26/17	BTOC	19.80	22.80	PRIOR TO DEVELOPMENT
BW-5A	3.00	06/26/17	BTOC	20.20	23.20	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/27/17	BTOC	20.21	23.21	
	3.00	06/26/17	BTOC	26.80	29.80	
BW-5B	3.00	06/27/17	BTOC	10.50	13.50	PRIOR TO DEVELOPMENT
BWSB	3.00	06/27/17	BTOC	58.10	61.10	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/28/17	BTOC	17.60	20.60	PRIOR TO SAMPLING
BW-5C	-	06/20/17	BGL	ND	ND	COLLECTED FROM INSIDE THE AUGERS-TD@47.80'
	-	06/22/17	BGL	11.40	NA	COLLECTED FROM INSIDE THE AUGERS
	3.00	06/23/17	BTOC	0.70 ft ABGL	2.30	
	3.00	06/26/17	BTOC	0.58 ft ABGL	2.42	
	3.00	06/27/17	BTOC	0.56 ft ABGL	2.44	PRIOR TO DEVELOPMENT
	3.00	06/27/17	BTOC	44.90	47.90	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/27/17	BTOC	0.30 ft ABGL	2.70	PRIOR TO SAMPLING

Table 6 Groundwater Gauging Results Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

WELL	STICKUP	DATE	DATUM	DEPTH TO GROUNDWATER	DEPTH TO GROUNDWATER	COMMENTS
	- (IT ADGL)	06/13/17	BGL	24 ft BGL	NA	COLLECTED FROM INSIDE THE AUGERS
	2.67	06/14/17	BTOC	21.77	24.44	
OW-59	2.67	06/19/17	BTOC	22.08	24.75	
	2.67	06/27/17	BTOC	22.33	25.00	PRIOR TO DEVELOPMENT
	2.67	06/28/17	BTOC	23.48	26.15	PRIOR TO SAMPLING
	3.00	06/14/17	BGL	ND	ND	COLLECTED FROM INSIDE THE AUGERS
	3.00	06/14/17	BGL	ND	ND	IMMEDIATELY AFTER WELL INSTALLATION
	3.00	06/15/17	BTOC	21.68	24.68	
	3.00	06/16/17	BTOC	14.74	17.74	
OW-60	3.00	06/19/17	BTOC	14.45	17.45	
	2.50	06/27/17	-	-	-	WELL WAS REINSTALLED
	2.50	06/27/17	BTOC	7.75	10.25	PRIOR TO DEVELOPMENT
	2.50	06/27/17	BTOC	42.15	44.65	IMMEDIATELY AFTER WELL DEVELOPMENT
	2.50	06/28/17	BTOC	30.65	33.15	PRIOR TO SAMPLING

BGL - below ground level

BTOC - below top of casing

ABGL - above ground level

ND - not detected

NA - not available
Table 7 Fluid Levels	Marathon Petroleum Company - Gallup Refinery	Gallup, New Mexico
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Stratigraphic unit in which	screen exists	Upper Sand	Chinle/Alluvial Interface	Upper Sand	Chinle/Alluvial Interface	Sonsela Sandstone																									
Screened Interval Depth Top to	Bottom (ft)	21 - 36	21 - 36	21 - 36	21 - 36	21 - 36	21 - 36	41 - 61	41 - 61	41 - 61	41 - 61	41 - 61	41 - 61	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	48 - 58	48 - 58	48 - 58	48 - 58	48 - 58	48 - 58	64.3-74.30	64.3-74.30	64.3-74.30	64.3-74.30	64.3-74.30	64.3-74.30
Corrected Water Table Elevation	(factor 0.8) (ft)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						
Ground water Elevation	(ft)	DRY	DRY	DRY	DRY	DRY	DRY	6,841.65	6,835.28	6,834.80	6,829.63	6,834.18	6,828.36	DRY	DRY	DRY	DRY	DRY	DRY	6,868.17	6,867.82	6,866.54	6,867.07	6,866.78	6,866.25	6,873.86	6,874.05	6,874.22	6,874.30	6,873.53	6,873.36
Depth to Water	(fi)	DRY	DRY	DRY	DRY	DRY	DRY	31.58	37.95	38.43	43.60	39.05	44.87	DRY	DRY	DRY	DRY	DRY	DRY	8.65	00.6	10.28	9.75	10.04	10.57	2.99	2.80	2.63	2.55	3.32	3.49
SPH Column	inickness (ft)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA						
Depth to	(ft)	ΠN	ΠN	ND	ΠN	ΠN	ND	ΠN	ΠN	ΠN	ΠN	QN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	DN	DN	ΠN	ΠN	ΠN	QN	ND
Total Well Depth	(H)	38.80	38.30	38.80	38.80	38.80	38.30	63.50	63.50	63.50	63.50	63.50	63.50	23.00	23.02	23.02	23.02	23.02	23.02	61.45	61.45	61.45	61.45	61.45	61.45	76.35	76.35	76.35	76.35	76.35	76.35
Stick-up	iengun (π)	2.51	2.51	2.51	2.51	2.51	2.51	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.50	2.50	2.50	2.50	2.50	2.50	2.63	2.63	2.63	2.63	2.63	2.63
Well Casing Rim Elevation	(ft)	6,873.18	6,873.18	6,873.18	6,873.18	6,873.18	6,873.18	6,873.23	6,873.23	6,873.23	6,873.23	6,873.23	6,873.23	6,877.00	6,877.00	6,877.00	6,877.00	6,877.00	6,877.00	6,876.82	6,876.82	6,876.82	6,876.82	6,876.82	6,876.82	6,876.85	6,876.85	6,876.85	6,876.85	6,876.85	6,876.85
Ground Level Elevation	(ft)	6,870.67	6,870.67	6,870.67	6,870.67	6,870.67	6,870.67	6,870.62	6,870.62	6,870.62	6,870.62	6,870.62	6,870.62	6,874.39	6,874.39	6,874.39	6,874.39	6,874.39	6,874.39	6,874.32	6,874.32	6,874.32	6,874.32	6,874.32	6,874.32	6,874.22	6,874.22	6,874.22	6,874.22	6,874.22	6,874.22
Casing Diameter	(Inch)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Inspection or	sampie uate	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/07/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18
Well ID	Number	BW-4A	ı	ı			·	BW-4B	ı	ı	I	ı	I	BW-5A	ı	ı	ı	ı	I	BW-5B		ı				BW-5C		ı	ı	L	<u>.</u>
Date of	Installation	06/29/17						06/29/17						06/29/17						06/29/17						06/29/17					

Table 7 Fluid Levels Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

/ell ID umber	Inspection or Sample Date	Casing Diameter (Inch)	Ground Level Elevation (ft)	Well Casing Rim Elevation (ft)	Stick-up length (ft)	Total Well Depth (ft)	Depth to SPH (ft)	SPH Column Thickness (ft)	Depth to Water (ft)	Ground water Elevation (ft)	Corrected Water Table Elevation (factor 0.8) (ft)	Screened Interval Depth Top to Bottom (ft)	Stratigraphic unit in which screen exists
/60	21/17	2.00	6,887.63	6,889.73	2.10	38.30	ND	NA	24.30	6,865.43	NA	20 - 35	Chinle/Alluvial Interface
12	/05/17	2.00	6,887.63	6,889.73	2.10	38.50	ND	NA	24.30	6,865.43	NA	20 - 35	Chinle/Alluvial Interface
02	/21/18	2.00	6,887.63	6,889.73	2.10	38.55	DN	NA	24.00	6,865.73	NA	20 - 35	Chinle/Alluvial Interface
70	1/26/18	2.00	6,887.63	6,889.73	2.10	38.48	DN	NA	24.05	6,865.68	NA	20 - 35	Chinle/Alluvial Interface
0	8/14/18	2.00	6,887.63	6,889.73	2.10	38.52	ND	NA	24.13	6,865.60	NA	20 - 35	Chinle/Alluvial Interface
	l1/06/18	2.00	6,887.63	6,889.73	2.10	38.50	ND	NA	23.90	6,865.83	NA	20 - 35	Chinle/Alluvial Interface
_	09/21/17	2.00	6,891.06	6,893.51	2.45	45.55	ND	NA	16.45	6,877.06	NA	25 - 45	Chinle/Alluvial Interface
	12/05/17	2.00	6,891.06	6,893.51	2.45	45.70	ND	NA	16.40	6,877.11	NA	25 - 45	Chinle/Alluvial Interface
_	02/21/18	2.00	6,891.06	6,893.51	2.45	46.06	ND	NA	16.26	6,877.25	NA	25 - 45	Chinle/Alluvial Interface
	04/26/18	2.00	6,891.06	6,893.51	2.45	46.15	ND	NA	16.52	6,876.99	NA	25 - 45	Chinle/Alluvial Interface
	08/14/18	2.00	6,891.06	6,893.51	2.45	46.42	ND	NA	16.52	6,876.99	NA	25 - 45	Chinle/Alluvial Interface
	11/06/18	2.00	6,891.06	6,893.51	2.45	45.70	ND	NA	16.25	6,877.26	NA	25 - 45	Chinle/Alluvial Interface
			NA = Not Applica	ble			MN	= Not Measu	red				
			Dry indicates no	water was detect	ted.								
rbor	SL												

Table 8.1 BW-5B and BW-5C BTEX and MTBE Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

					PARAMETERS		
	STANDARDS		Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
WQCC 20	NMAC 6.2.3103 (DECEMB	ER 2018)	0.005	1	0.7	0.62	0.1
40 CFR	141.61 MCL (NOVEMBER	2015)	0.005	1	0.7	10	NE
NMED	TAP WATER (FEBRUARY 2	2019)	0.00455	1.09	0.0149	0.193	0.143
EPA RS	L TAP WATER (NOVEMBER	2018)	0.00046	1.1	0.0015	0.19	0.014
WELL ID	DATE SAMPLED	METHOD					
BW-5B	12/08/17	8260B	<0.001	0.0018	<0.001	<0.0015	0.00064
BW-5C	12/08/17	8260B	<0.001	<0.001	<0.001	<0.0015	0.039

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.61 Detection Limits for Organic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

Table 8.1.1 BW-5B and BW-5C General Chemistry and DRO/GRO/MRO Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

			-				PARAME	TERS				
			Fluoride	Chloride	Bromide	Nitrite	Nitrate	Phosphorus	Sulfate	DRO	GRO	MRO
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
WQCC 2	ONMAC 6.2.3103 (DEC	EMBER 2018)	1.6	250.0	NE	1	10	NE	600.0	NE	NE	NE
	40 CFR 141.62 MC	-	4.0	NE	NE	1	10	NE	NE	NE	NE	NE
NME	ED TAP WATER (FEBRU)	ARY 2019)	1.18	NE	NE	1.97	31.59	NE	NE	NE	NE	NE
EPAR	SL TAP WATER (NOVEN	ABER 2018)	0.8	NE	NE	2	32	NE	NE	NE	NE	NE
	NMED SSG (March 20	119)	NE	NE	NE	NE	NE	NE	NE	0.0858	0.0858	0.0858
Well ID	DATE SAMPLED	METHOD										
BW-5B	12/08/17	E300	0.27	110	0.47	0.15	0.15	<2.5	110	<1	0.014	<5
BW-5C	12/08/17	E300	<0.5	1400	1.2	0.23	0.23	<2.5	210	<1	0.035	<5

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1 NMED Soil Screening Guidance Volume 1, Table 6-4 (groundwater), (March 2017)

								PAR	AMETERS					
			Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Selenium	Mercury	Uranium	Zinc
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
WQCC 201	NMAC 6.2.3103 (DE	CEMBER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.002	0.03	10.0
40 CFR	141.62 MCL (NOVE	MBER 2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	0.002	0.03	NE
NMED	TAP WATER (FEBRI	UARY 2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.000626	0.0592	5.96
EPA RSL	TAP WATER (NOVE	EMBER 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.00063	0.004	6
Well ID	DATE SAMPLED	METHOD												
BW-5B	12/08/17	200.7/200.8	0.003	0.085	<0.002	0.012	<0.006	1.7	0.00097	0.042	<0.005	0.00015	0.042	0.0086
BW-5C	12/08/17	200.7/200.8	0.0022	0.12	<0.002	<0.006	<0.006	0.54	<0.0025	0.058	<0.005	0.000081	0.038	<0.01

Table 8.1.2 BW-5B and BW-5C Total Metals Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup. New Mexico

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1 (Dec 2014)

Table 8.1.3 BW-5B and BW-5C Dissolved Metals Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

							PA	RAMETER:					
	STANDARD	S	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	lron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Selenium (mg/L)	Uranium (mg/L)	Zinc (mg/L)
WQCC 20	INMAC 6.2.3103 (I	JECEMBER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.03	10.0
40 CFR	141.62 MCL (NOV	/EMBER 2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	0.03	NE
NMEC	O TAP WATER (FEB	RUARY 2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.0592	5.96
EPA RS	L TAP WATER (NO	VEMBER 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.004	6
Well ID	DATE SAMPLED	METHOD											
BW-5B	12/08/17	200.7/200.14	0.0032	0.05	<0.002	<0.006	<0.006	0.024	<0.0005	0.0064	0.0039	0.04	0.007
BW-5C	12/08/17	200.7/200.15	<0.02	0.11	<0.002	<0.006	<0.006	0.29	<0.0005	0.043	<0.01	0.041	0.0074

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less. a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

Table 8.1.4

BW-5A and BW-5B Semi-Volatile Organic Compound Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

			PARAMETERS
	STANDARDS		Bis(2-ethylhexyl)phthalate (mg/L)
WQCC 20N	IMAC 6.2.3103 (DECEMI	BER 2018)	NE
40 CFR 1	141.61 MCL (NOVEMBER	R 2015)	0.006
NMED	TAP WATER (FEBRUARY	2019)	0.0556
EPA RSL	TAP WATER (NOVEMBE	R 2018)	0.0056
Well ID	DATE SAMPLED	METHOD	
BW-5B	12/08/17	8270C	<0.01
BW-5C	12/08/17	8270C	<0.01

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1 (Dec 2014)

NOTES

1) Detected for the first time. Possible lab contaminant.

2) Request to remove 8270C Analysis in 2015 approved per NMED Comment 7(b), Approval with Modification, FWGWMWP - 2012 Updates; 2013 Updates; 2014 Updates for 2015.

Gallup, New Mexico

								PARAM	ETERS						
			Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene	Total Xylenes	MTBE (mg/L)	Fluoride (mg/L)	Chloride (mg/L)	Nitrite (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DRO (mg/L)	GRO (mg/L)	MRO (mg/L)
	STANDARDS				(mg/ L)	(mg/r)									
WQCC 20NN	MAC 6.2.3103 (DECE	MBER 2018)	0.005	1	0.7	0.62	0.1	1.6	250	1	10	600	NE	NE	NE
40 CFR 1	41.61 MCL (NOVEME	3ER 2015)	0.005	1	0.7	10	NE	4.0	NE	1	10	NE	NE	NE	NE
NMED T	AP WATER (FEBRUA	RY 2019)	0.00455	1.09	0.0149	0.193	0.143	1.18	NE	1.97	31.59	NE	NE	NE	NE
EPA RSL T	AP WATER (NOVEM	BER 2018)	0.00046	1.1	0.0015	0.19	0.014	0.8	NE	2	32	NE	NE	NE	NE
NN	1ED SSG (MARCH 20	19)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.0858	0.0858	0.0858
Well ID	DATE SAMPLED	METHOD													
OW-59	12/06/17	8260B	<0.001	<0.001	<0.001	<0.0015	0.0094	<0.5	1700	<2	<2	2600	0.55	3.1	<5
OW-60	12/06/17	8260B	<0.001	<0.001	<0.001	<0.0015	0.00028	1.1	1700	14	14	780	<1	0.031	<5

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water 40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

NMED Soil Screening Guidance Volume 1, Table 6-4 (groundwater), (March 2017)

OW-59 and OW-60 Total Metals Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico Table 8.2.1

								PI	ARAMETERS	S					
			Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Selenium	Silvor	Mercury	Uranium	Zinc
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(mg/L)	(mg/L)
MQCC	C 20NMAC 6.2.3103 (DECEMB	ER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.05	0.002	0.03	10.0
40 (CFR 141.62 MCL (NOVEMBER	2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	NE	0.002	0.03	NE
NN	AED TAP WATER (FEBRUARY	2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.0812	0.000626	0.0592	5.96
EPA	RSL TAP WATER (NOVEMBEF	R 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.094	0.00063	0.004	9
Vell ID	DATE SAMPLED	METHOD													
W-59	12/06/17	200.7/200.8	0.0095	0.064	<0.002	<0.006	0.0042	2.1	0.0014	0.17	<0.02	0.0037	<0.0002	0.17	0.0041
09-M(12/06/17	200.7/200.8	<0.02	0.12	<0.002	0.0033	<0.006	3.1	0.002	0.13	0.021	0.0024	<0.0002	0.048	0.0097

DEFINITIONS

NE = Not established

NA = Not analyzed Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less. a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

OW-59 and OW-60 Dissolved Metals Analytical Result Summary **Marathon Petroleum Company - Gallup Refinery** Gallup, New Mexico Table 8.2.2

								PAR/	METERS					
			Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Selenium	Silver	Uranium	Zinc
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(mg/L)
MQCC	20NMAC 6.2.3103 (DE	CEMBER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.05	0.03	10.0
40 Ci	FR 141.62 MCL (NOVE	VIBER 2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	NE	0.03	NE
IWN	ED TAP WATER (FEBRL	JARY 2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.0812	0.0592	5.96
EPA F	ISL TAP WATER (NOVE	(MBER 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.094	0.004	6
Well ID	DATE SAMPLED	METHOD												
OW-59	12/06/17	200.7/200.8	0.012	0.013	<0.002	<0.006	<0.006	0.024	<0.0025	0.13	0.023	0.0047	0.14	0.011
09-WO	12/06/17	200.7/200.8	0.013	0.029	<0.002	<0.006	<0.006	0.02	<0.0005	0.042	0.031	0.0029	0.047	0.01

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

Table 8.2.3

OW-59 and OW-60 Semi-Volatile and Volatile Organic Compounds, Analytical Result Summary Marathon Petroleum Company - Gallup Refinery

Gallup, New Mexico

			Р	ARAMETERS	
	STANDARDS		1-Methyl naphthalene (mg/L)	Acetone (mg/L)	Bis(2- ethylhexyl)phthalate (mg/L)
WQCC 201	NMAC 6.2.3103 (DECEM	BER 2018)	NE	NE	NE
40 CFR	141.61 MCL (NOVEMBE	R 2015)	NE	NE	0.006
NMED	TAP WATER (FEBRUAR)	′ 2019)	0.0114	14.06	0.0556
EPA RSL	TAP WATER (NOVEMBE	R 2018)	0.0011	14	0.0056
Well ID	DATE SAMPLED	METHOD			
OW-59	12/06/17	8260B	<0.004	0.0028	<0.01
OW-60	12/06/17	8260B	<0.004	0.0025	0.045

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

Appendix A Well Logs

Envir	Wes Jo	Senta tern Gall b No	O al Co Refininç lup Refi b. WEST	g SW, In nery T17020	ing Fi	Crm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon/ Hand Auger to 5' BGL : 44' : Not Encountered : 6/14/2017 : 6/14/2017	WELL NO. BW-4A (Sheet 1 of 3) Elev., TOC (ft.msl) : 6873.18 Elev., PAD (ft.msl) : 6870.67 Elev., GL (ft.msl) : Site Coordinates : N : N1634063.05 E : W2542465.22						
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery (%)	Sample	DI	ESCRIPTION	Completion Results Well No. BW-4A						
-3 -2 -2 -1								SILTY CLAY, low, firm, dry to damp, brown							
	7.7			CL	Concrete Pad - 4'x4'x6)"									
2	9.5			СН	100		CLAY, high, stiff, o	CLAY, high, stiff, damp, brown, no odor,							
	9.0			СН	100		CLAY, SIMILAR T no odor,	O ABOVE (STA), very stiff,							
	6.8			СН	90		CLAY, STA, no oo	dor,	2" Sch 40 PVC w/Threaded Joints						
9-	5.4			СН	80		CLAY, STA, no oo	dor,							
	3.3			СН	80		CLAY, STA, no oc	dor,							
12- - - 13-	5.8			СН	50		CLAY, STA, no oc	dor,							
14- - - 15-	4.0			СН			CLAY, STA, no oc	dor,	Bentonite Pellets						
1010 Tr. Houstor 713-955	avis Stre n, Texas i-1230	et 77002	2				DiSorbo Co	onsulting, LLC	8501 N. MoPac Expy, Suite Austin, Texas 78 512-693-4	300 759 190					

D	Í	5	0	rk)(C	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WELL NO. BW-4A (Sheet 2 of 3)			
Envir	onme Wes Jo	enta stern Gall ob No	al Co Refinin up Refi . WES	g SW, In nery T17020	ing Fi c	rm	Sampling Method Comments Total Depth Ground Water Start Date	: 2' Split Spoon/ Hand Auger to 5' BGL : 44' : Not Encountered : 6/14/2017	Elev., TOC (ft.msl) : 6873.18 Elev., PAD (ft. msl) : 6870.67 Elev., GL (ft. msl) : Site Coordinates : N : N1634063.05 E : W2642465.22			
								. 6/14/2017				
									Completion Results			
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery (%)	Sample	DE	SCRIPTION	Well No. BW-4A			
15-	4.0		///	СН	60							
16			+				CLAY, STA, no odd	or,				
17-	2.0			СН	80							
18-							CLAYEY SILT, low	v, firm/crumbly, damp, light				
19-	6.9			ML	40		brown/tan, no odor	,	2" Sch 40 PVC w/Threaded Joints			
20-							CLAYEY SILT/SIL	TY CLAY, STA,				
21	5.0			ML/CL	70		interbedded, no od	or,				
22								, firm/crumbly damp, tap				
23	3.6			ML	50		no odor,	, min oranoly, adnp, adn,				
24							CLAYEY SILT/SIL	TY CLAY, STA,				
25-	3.7			ML/CL	60		Interbedded, no od	or,	A Dia Mandrid A Dia Mandrid Constant Filler Deals			
26							CLAY, high, very st	tiff, damp, brown, no odor,				
27-	6.2			СН	60				2" Sch 40 PVC Slottted 0.01" Screen w/Threaded Joints			
28-			+				CLAY, STA, darker	brown, no odor,				
. 29-	3.5			СН	70							
30-			4				CLAY, STA, no odd	Dr,				
31-	6.1			СН	80							
32-	6.1			CL			SILTY CLAY, low, light brown (reddish sand,	very stiff, damp, no odor, n), trace very fine grain				
1010 Tr	avie Stra	ot					DiSorbo Co	nsulting, LLC	8501 N. MoPac Expv. Suite 300			
Houstor 713-955	1010 Travis Street 8501 N. MoPac Expy, Suite 300 Houston, Texas 77002 Austin, Texas 78759 713-955-1230 512-693-4190											

Env	ironm Wei	Senta stern Gall ob No	O al Co Refininç up Refi v. WEST	g SW, In nery T17020	o ing Fi	D rm	Geologist: Tracy PayneDriller: Enviro-Drill Inc/CohaganDrilling Rig: CME75Drilling Method: Hollow Stem Auger 7 1/4"Sampling Method: 2' Split Spoon/Comments: Hand Auger to 5' BGLTotal Depth: 44'Ground Water: Not EncounteredStart Date: 6/14/2017Finish Date: 6/14/2017	WELL NO. BW-4A (Sheet 3 of 3) Elev., TOC (ft.msl) : 6873.18 Elev., PAD (ft. msl) : 6870.67 Elev., GL (ft. msl) : Site Coordinates : N : N1634063.05 E : W2542465.22				
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery (%)	Sample	DESCRIPTION	Completion Results Well No. BW-4A				
33	6.1 			CL ML/CL	60 80		CLAYEY SILT/SILTY CLAY, low, firm to stiff, damp, reddish brown and grey, alternating silt/clay, no odor,	2" Sch 40 PVC Slottted 0.01" Screen w/Threaded Joints				
36				CL	60		SILTY CLAY, low, stiff, damp, reddish brown and grey (less grey than above), no odor,	2" Flush Threaded Sch 40 PVC Cap				
39 40	- - - - - - - - - - - - -			CL	60		SILTY CLAY, STA, no odor,	-10/20 Sieve Sand Filter Pack				
41 ^{ioq} . 42	4.2			CL	70		SILTY CLAY, STA, reddish blown and grey, no odor, SILTY CLAY, STA, no odor.					
300 Mells/BW 43	3.9 			CL	60							
ss/Western Refinery ¹	- - - - - -											
47 ants/M-Tech/sample 67 68 68 68												
sers/cholmes/Docur												
N:0 1010 8107 67 713-9	DiSorbo Consulting, LLC 010 Travis Street louston, Texas 77002 13-955-1230 DiSorbo Consulting, LLC 8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190											

Envir	onme Wes Jo	Senta stern Gall ob No	O al Co Refininç lup Refi b. WEST	g SW, Ir nery T17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	Elev., TOC Elev., PAD Elev., GL (f Site Coordi N E	(ft.msl) (ft. msl) (ft. msl) nates	NO. BW-4B (Sheet 1 of 5) : 6873.23 : 6870.62 : : : : : : : : : : : : : : : : : : :
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	ESCRIPTION	Well	Com No. BW-	pletion Results 4B
-3 -2 -1											Steel Protective Casing
	1.3			CL	100		SILTY CLAY, low, no odor,	firm, dry to damp, brown,			-Concrete Pad - 4'x4'x6"
	1.2			СН	100		CLAY, high, stiff, c	damp, brown, no odor,			
5-	1.3			СН	100		CLAY, SIMILAR T	O ABOVE (STA), very stiff,			
7-	1.7			СН	90						
9- 	2.0			СН	80		CLAY, STA, no oc	lor.		-2" w/	Sch 40 PVC Threaded Joints rout
11- 12-	2.1		\square	СН	80		CLAY. STA. no oc	lor.			
13-	3.1			СН	80		CLAY, STA, no oo	lor.			
15	3.4 5 1			СН	80		CLAY, STA, no oc	lor,			
17- 1010 Tr Houstor 713-955	avis Stre n, Texas i-1230	et 77002					l DiSorbo Co	onsulting, LLC		8501	N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

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D	ne Ne	5	0	rk)()	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WELL NO. BW-4B (Sheet 2 of 5)
Envir	ONME Wes Jo	tern Gall b No	al Co Refining up Refi b. WES	nsult g SW, In nery T17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	Elev., TOC (ft.msl) : 6873.23 Elev., PAD (ft. msl) : 6870.62 Elev., GL (ft. msl) : Site Coordinates : N : N1634043.22 E : W2542462.98
									Completion Results
Depth (ft.)	PID (ppm)	Saturation	Lithology	nscs	Recovery	Sample	DE	SCRIPTION	Well No. BW-4B
17-	5.1			СН	70				
18-	3.2			ML	60		CLAYEY SILT, low brown/tan, no odor	v, firm/crumbly, damp, light ,	
20-	3.9			ML/CL	70		CLAYEY SILT/SIL ⁻ interbedded,	TY CLAY, STA, no odor,	
22	3.5			ML	60		CLAYEY SILT, low brown and tan, no	v, firm/crumbly, damp, odor,	
24				ML/CL	60		CLAYEY SILT/SIL	TY CLAY, STA, no odor,	
25-	3.9		\square	СН	60		CLAY, high, very st	tiff, damp, brown, no odor,	
20-	1.8			СН	70		CLAY, STA, darker	[,] brown, no odor,	
28-	1.8			CL	80		SILTY CLAY, mode damp, dark brown brown, trace fine gr	erate to low, very stiff, grading to light reddish ain sand at base, no odor,	Grout 2" Sch 40 PVC w/Threaded Joints
30-				CL	80		SILTY CLAY, STA,		
31-	2.0			CL	80		SANDY GRAVELL damp, light grey an	Y CLAY, low, stiff, dry to d brown, no odor,	
32-	2.2			ML/CL	80		SILTY CLAY, low, a no odor, CLAYEY SILT/SIL ⁻ damp, reddish brow	stiff, damp, reddish brown, IY CLAY, low, firm/crumbly, vn and grey,	
	5.6			CL	80		SILTY CLAY, STA,	no odor,	
36-	3.6			CL			SILTY CLAY, STA,	no odor,	Bentonite Pellets
							DiSorbo Co	nsultina. LLC	

1010 Travis Street Houston, Texas 77002 713-955-1230 8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

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	D	í	5	0	rk)(C	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WE	LL NO. BW-4B (Sheet 3 of 5)
-	Enviro	Wes Uc	ent stern Gal ob No	al Co Refining lup Refi b. WES	g SW, In nery T17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	Elev., TOC (ft.ms Elev., PAD (ft. ms Elev., GL (ft. ms Site Coordinates N E	sl) : 6873.23 sl) : 6870.62) : : : N1634043.22 : W2542462.98
	pth (ft.)	(mdd) C	turation	hology	scs	covery	mple	DE	SCRIPTION	C Well No. E	ompletion Results 3W-4B
	<u>م</u> 37_	E	Sa	Ē	Š	Re	Sa				
	3/ -	3.6			CL	80					
	38 -							SILTY CLAY, STA	, no odor,		-Bentonite Pellets
	39-	2.3			CL	80					
	40							SILTY CLAY, STA	, no odor,		-2" Sch 40 PVC
	41-	6.2			CL	80					w/Threaded Joints
	42			$\left\langle \right\rangle $				SILTY CLAY, STA	, no odor,		
	43	5.0			CL	70					
	44			\square	CL	80		SILTY CLAY. STA	. no odor.		
	45	2.6			CL	80		GRAVELLY SILTY	CLAY, low, firm/crumbly,		
	46			\square	CL	80		dry-calcium carbon reddish brown, no	odor,		
B.boı	47	3.5			CL	80		SANDY CLAY, low and reddish brown	r, firm/crumbly, dry, grey , very fine grain sand, no		
s\BW-4	48							SILTY CLAY, low,	very stiff, dry to damp,		- 10/20 Sieve Sand Filter Pack
ary Well	49	19			CL	80		SILTY CLAY, STA	, no odor,		
Bounda	50				0L						2" Sob 40 DVC Slotted 0.01"
efinery	50 -							SILTY CLAY, STA	, no odor,		Screen w/Threaded Joints
estern R	51 -	5.1			CL	80					
ples/We	52-			$\overline{//}$				SILTY CLAY, STA	, trace grey clay,		
ch∖sam	53	5.6			CL	70		occupiental gravely			
ts/M-Te	54							SILTY CLAY, low,	very stiff, dry to damp,		
ocumen	55	3.8			CL	70		reaaish brown, no	oaor,		
Imes\Do	56-	0.4						SILTY CLAY, STA	, trace grey clay, no odor,		
sers/cho											
03-29-2018 C:\Us	1010 Tra Houston 713-955	avis Stre , Texas -1230	et 7700	2				DiSorbo Co	nsulting, LLC	8	501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

D Envir	onme Wes Jo	Sent stern Gal ob No	O al Co Refining lup Refin o. WEST	g SW, Ir nery T17020	ing Fi	C rm	Geologist: Tracy PayneDriller: Enviro-Drill Inc/CohaganDrilling Rig: CME75Drilling Method: Hollow Stem Auger 7 1/4"Sampling Method: 2' Split Spoon -Comments: Hand Auger to 5' BGLTotal Depth: 90'Ground Water: Not EncounteredStart Date: 6/15/2017Finish Date: 6/16/2017	WELL NO. BW-4B (Sheet 4 of 5) Elev., TOC (ft.msl) : 6873.23 Elev., PAD (ft.msl) : 6870.62 Elev., GL (ft.msl) : Site Coordinates : N : N1634043.22 E : W2542462.98
Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery	Sample	DESCRIPTION	Completion Results Well No. BW-4B
57-	3.4			CL	60			
58-							SILTY CLAY, STA, no odor,	
59-	2.4			CL	80			-10/20 Sieve Sand Filter Pack
60-						$\left - \right $	SILTY CLAY, low, very stiff, dry to damp,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
61-	4.9			CL	80		reduisit brown grey clay, no odor,	2" Flush Threadeed
62						$\left - \right $	SILTY CLAY, STA, no odor,	
63	1.7			CL	80			
64							SILTY CLAY, STA, no odor,	_
65	5.8			CL	80			
66							SILTY CLAY, STA,	_
67	2.7			CL	80			
68-							SILTY CLAY, low, very stiff, calcareous, dry	_
69	3.9			CL	80		to damp, brown and blueish grey, no odor,	— Pel Plug
70-							SILTY CLAY, low, firm/crumbly, damp,	_
71-	1.6			CL	80		reddish brown, no odor,	
72						$\left - \right $	SILTY CLAY, STA, no odor,	_
73-	1.7			CL	60			
74-						$\left - \right $	SILTY CLAY, STA, no odor,	_
75-	1.0			CL	60			
76	0.1			CL			SILTY CLAY, STA, no odor,	
1010 Tr	avis Stre	et					DiSorbo Consulting, LLC	8501 N. MoPac Expy, Suite 300

Houston, Texas 77002 713-955-1230 3501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

Envir	onmo Wes	Sent stern Gall ob No	O al Co Refining lup Refi b. WES	g SW, In nery T17020	o ing Fi	C rm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	WELL NO. BW-4B (Sheet 5 of 5) Elev., TOC (ft.msl) : 6873.23 Elev., PAD (ft.msl) : 6870.62 Elev., GL (ft.msl) : Site Coordinates : N : N1634043.22 E : W2542462.98		
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	ESCRIPTION	Completion Results Well No. BW-4B		
77-	0.1			CL	70						
78-	0.4			CI	60		SILTY CLAY, STA	a, no odor,			
80	011							a no odor	_		
81	0.1			CL	70						
82							SILTY CLAY, STA	, no odor,			
83-	0.2			CL	60				— Pel Plug		
85	0.0			CL	70		SILTY CLAY, STA no odor,	a, very stiff, trace grey clay,			
86-	0.1			CL	40		SILTY CLAY, STA	a, no odor,			
88	0.2			CL/SS	40		SILTY CLAY, STA sandstone, hard/d	, imbedded with fine grain ense, white.			
90			<u> </u>								
91											
92-											
94											
95											
96											
97-							DiSorbo Co	onsulting, LLC			
1010 Tr Houstor 713-955	O10 Travis Street 8501 N. MoPac Expy, Suite 300 Jouston, Texas 77002 Austin, Texas 78759 '13-955-1230 512-693-4190										

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D	Í	5	0	rk	0)	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WELL NO. BW-5A (Sheet 1 of 1)	
Envir	Onme Wes Jo	tern Gall b No	al Co Refining lup Refin b. WEST	nsult g SW, In nery F17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon : : 20.5' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC (ft.msl) : 6877.00 Elev., PAD (ft.msl) : 6874.39 Elev., GL (ft.msl) : Site Coordinates : N : N1633259.56 E : W2542551.45	
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DES	SCRIPTION	Completion Results Well No. BW-5A	
-3										
	0.0			CL	100		SILTY CLAY, low, fi	rm, dry, brown, no odor,	Concrete Pad - 4'x4'x6"	
	0.1			CL	100		SILTY CLAY, SIMIL odor,	AR TO ABOVE (STA), no		
	0.0			CL	100		SILTY CLAY, STA, I	no odor,		
	0.0			СН	40		CLAY, high, very stil	ff, dry, brown, no odor,	Bentonite Pellets	
8- 9- 1	0.1			СН	80		CLAY, STA, no odo	r,		
	0.0			CL	60		CLAY, moderate, ve dry, brown, no odor,	ery stiff, gravel at base,		
	0.0			SP	80		GRAVELLY SILT/S/ gravel-clay at base -	AND, very fine, 5-10 mm · stiff, dry, tan, no odor,		
14	0.0			CL	70		SILTY CLAY, low, si brown, tan and grey, sand,	tiff, dry, light reddish , trace very fine grain	- 10/20 Sieve Sand Filter Pack	
	0.0			CL	60		SILTY CLAY, STA,		Screen w/Threaded Joints	
18-	0.0			CL	80		SANDY SILTY CLA fine sand, light reddi grey, no odor.	Y, low, very stiff, very ish brown, occasional		
20			/ 1			-			2" Flush Threaded Sch 40 PVC Cap	
1010 Tra Houston 713-955	DiSorbo Consulting, LLC8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-41901010 Travis Street Houston, Texas 77002 713-955-12308501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190									

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D	onme Wes Jo	Sent tern Gal ob No	O al Co Refininç lup Refi b. WEST	g SW, In nery T17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC Elev., PAD Elev., GL (ft Site Coordir N E	(ft.msl) (ft. msl) (ft. msl) (nates	NO. BW-5B (Sheet 1 of 4) : 6876.82 : 6874.32 : : : : : : N1633269.31 : W2542551.84			
Depth (ft.)	PID (ppm)	Saturation	Lithology	nscs	Recovery	Sample	DI	ESCRIPTION	Well	Com No. BW-	pletion Results 5B			
-3								SILTY CLAY, low, firm, dry, brown, no odor,						
	0.0			CL	100		SILTY CLAY, Iow,	, firm, dry, brown, no odor,			-Concrete Pad 4'x4'x6"			
3-	0.1			CL	100		SILTY CLAY, SIN	IILAR TO ABOVE (STA), no						
5	0.0			CL	100		SILTY CLAY, STA	A, no odor,			Sch 40 PVC			
	0.0			СН	40		CLAY, high, very	stiff, dry, brown, no odor,		- G	rout			
9-	0.1			СН	80		CLAY, STA, no oc	dor,						
	0.0			CH CL	60 60		CLAY, STA, no or SILTY CLAY, low, tan to light brown,	dor, , very stiff, dry, calcareous, no odor,						
12- - - 13-	0.1			SP			GRAVELLY SILT/ dense, dry, tan, no gravel,	SAND, very fine, very odor, sandstone and chert						
1010 Tr Houstor 713-955	DiSorbo Consulting, LLC 1010 Travis Street Houston, Texas 77002 713-955-1230 DiSorbo Consulting, LLC 8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190													

D Envir	onme Wes Jo	Sent stern Gal ob No	O al Co Refininç lup Refi b. WEST	nsult o SW, In nery 17020	ing Fi	Crm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC (ft. Elev., PAD (ft. Elev., GL (ft. rr Site Coordinat N E	ELL NO. BW-5B (Sheet 2 of 4) msl) : 6876.82 msl) : 6874.32 hsl) : es : : N1633269.31 : W2542551.84		
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	SCRIPTION	Well No	Completion Results . BW-5B		
13-	0.1			SP	90							
14	0.0			CL	90		SILTY CLAY, low, t damp, reddish brov and very fine grain	firm to stiff/crumbly, dry to vn and grey, trace gravel sand, no odor,				
16							CLAYEY SILT/SAN	ID, very fine grain, aht brown and arev, no				
17	0.0			SP	50		odor,	, , , , , , , , , , , , , , , , , , ,				
18	0.0			SP	50		CLAYEY SILT/SAN brown, no odor,	ID, STA, dry, light reddish				
20-	0.0			CL	60		SANDY SILTY CLA reddish brown and fine grain sand,	λΥ, low, very stiff, dry, light light grey, no odor, very		Grout		
22-	0.0			CL	90		SANDY SILTY CLA	AY, STA, no odor,		2" Sch 40 PVC w/Threaded Joints		
24	0.0			CL	60		SANDY SILTY CLA	AY, STA, no odor,				
26							SANDY SILTY CLA	AY, STA, no odor,				
27	0.0			CL	70							
28	0.0			CL			SANDY SILTY CLA	AY, STA, no odor,				
1010 Tr	29 I F Z Z I I II II 1010 Travis Street DiSorbo Consulting, LLC Austin Torge 72750											

Houston, Texas 77002 713-955-1230

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D Envir	onme Wes Jo	Senta stern Gall ob No	O al Co Refininç lup Refin o. WEST	nsult g SW, In nery F17020	ing Fi	D rm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	WELL NO. BW-5B (Sheet 3 of 4) Elev., TOC (ft.msl) : 6876.82 Elev., PAD (ft.msl) : 6874.32 Elev., GL (ft.msl) : Site Coordinates N : N1633269.31 E : W2542551.84		
									Completion Results		
Depth (ft.)	PID (ppm)	Saturation	Lithology	nscs	Recovery	Sample	DE	SCRIPTION	Well No. BW-5B		
29-	0.0			CL	60						
30	0.0			CL	60		SILTY CLAY, low, brown, no odor, sc	firm to stiff, damp, reddish fter than above,			
32-	0.0			CL	70		SILTY CLAY, STA	, no odor, trace grey clay,			
34	0.0			CL	70		SILTY CLAY, STA	, no odor, trace grey clay,			
36	0.0			CL	60		SILTY CLAY, STA	, no odor,			
38-	0.0			CL	70		SILTY CLAY, low, reddish brown, no	stiff to very stiff, damp, odor,			
40	0.0			CL	70		SILTY CLAY, STA	, stiff, damp, no odor,			
42	0.0			CL	60		SILTY CLAY, STA	Ly			
44	0.0			CL			SILTY CLAY, STA	., calcareous,	Bentonite Pellets		
1010 Tr Houstor 713-955	DiSorbo Consulting, LLC 1010 Travis Street Houston, Texas 77002 713-955-1230 Bisorbo Consulting, LLC 8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190										

	D	N	5	0	rk))	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WELL NO. BW-5B (Sheet 4 of 4)			
	Envir	ONM Wes	ent stern Gal ob No	al CC Refinin lup Refi b. WES	g SW, In nery T17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC (ft.msl) : 6876.82 Elev., PAD (ft. msl) : 6874.32 Elev., GL (ft. msl) : Site Coordinates : N : N1633269.31 E : W2542551.84			
										Completion Results			
	Depth (ft.)	PID (ppm)	Saturation	Lithology	uscs	Recovery	Sample	DE	SCRIPTION				
	45 -	0.0		///	CL	60				Bentonite Pellets			
	46			$\left\langle \right\rangle$	-			SILTY CLAY, STA	,				
	47 -	0.1			CL	60							
	48-			\square				SILTY CLAY, low,	very stiff, damp, light	2" Sch 40 PVC w/Threaded Joints			
	49	0.0			CL	80		reddish brown, no at base,	odor, trace pink sandstone				
	50								trace arey clay and				
	- 51 —	0.0			CL	70		sandstone present	,				
	- 52-												
.boı	53-	0.0			CI	20		SILTY CLAY, STA	, sandstone present,	- 10/20 Sieve Sand Filter Pack			
Is\BW-5B		0.0				20				Screen w/Threaded Joints			
idary Wel	54 - - -							SILTY CLAY, low, reddish brown and	very stiff, damp/dry, grey, bluish grey at base,				
nery\Bour	55	0.0			CL	80							
stern Refi	56							SILTY CLAY, STA clay, damp.	, increase in bluish grey				
nples\We	57 -	0.0			CL	90							
-Tech∖san	58-			///						2" Flush Threaded Sch 40 PVC Cap			
iments/M-	59-												
mes\Doct	60 -												
sers\choli	- 61 —												
03-29-2018 C:\U	1010 Tra Houston 713-955	avis Stre n, Texas 5-1230	et 7700	2				DiSorbo Co	nsulting, LLC	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190			

D	onme Wes Jo	Senta stern Gall ob No	O al Co Refining up Refin wEST	nsult s SW, In hery 17020	ing Fi	C	Geologist: TracyDriller: EnviroDrilling Rig: CME7Drilling Method: HollowSampling Method: 2' SplComments:Total Depth: 76'Ground Water: 68'Start Date: 06/19	Payne p-Drill Inc/Cohagan 75 w Stem Auger 7 1/4" it Spoon /2017	Elev., TOC (ft.msl Elev., PAD (ft. msl Elev., GL (ft. msl) Site Coordinates N	L NO. BW-5C (Sheet 1 of 4)) : 6876.85 i) : 6874.22 : : : : : : N1633279.54
							Finish Date : 06/21	/2017	E	: W2542553.04
							Saturation		Co	ompletion Results
h (ft.)	(mqq)	ration	logy	S	very	ple			Well No. B	W-5C
Dept	PID (Satul	Litho	nsc	Reco	Sam	DESCRII	PTION		
-3 -2 -2 -1										Steel Protective Casing
	0.0			CL	100		SILTY CLAY, low, firm, dry	/, brown, no odor,		Concrete Pad - 4'x4'x6"
2	0.1			CL	100		SILTY CLAY, SIMILAR TC odor,) ABOVE (STA), no		
	0.0			CL	100		SILTY CLAY, STA, no odd	yr,		
	0.0			СН	40		CLAY, high, very stiff, dry,	brown, no odor,		-2" Sch 40 PVC w/Threaded Joints
9-	0.1			СН	80		CLAY, STA, no odor,			Grout
				СН	60		CLAY, STA, no odor,			Clout
	0.0			CL	60		SILTY CLAY, low, very stif tan to light brown, no odor	f, dry, calcareous,		
	0.1			SP	90		GRAVELLY SILT/SAND, v dense, dry, tan, no odor, s gravel,	very fine, very andstone and chert		
	0.0			CL	90		SILTY CLAY, low, firm to s damp, reddish brown and and very fine grain sand, n	stiff/crumbly, dry to grey, trace gravel o odor,		
	0.0		í, í	SP			CLAYEY SILT/SAND, very firm/crumbly, dry, light brow odor.	/ fine grain, wn and grey, no		
1010 Tra Houstor	avis Stre I, Texas	et 77002	2				DiSorbo Consulti	ng, LLC	85	501 N. MoPac Expy, Suite 300 Austin, Texas 78759

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	Enviro	onmo Wes	Sent stern Gal ob No	Refining lup Refi b. WES	g SW, In nery T17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon : : 76' : 68' : 06/19/2017 : 06/21/2017	Elev., TOC (f Elev., PAD (f Elev., GL (ft. Site Coordina N E	/ELL NO. BW-5C (Sheet 2 of 4) t.msl) : 6876.85 t.msl) : 6874.22 msl) : ates : : N1633279.54 : W2542553.04
								Saturation Saturation			Completion Results
	(ft.)	(md	ttion	Я		ery	е			Well N	o. BW-5C
	Depth	d) OII	Satura	Litholo	nscs	Recov	Sampl	DE	SCRIPTION		
	17-	0.0			SP	50					
	18- - 19- -	0.0			SP	50		CLAYEY SILT/SAI brown, no odor,	ND, STA, dry, light reddish		
	20 21	0.0			CL	60		SANDY SILTY CL reddish brown and fine grain sand,	AY, low, very stiff, dry, light light grey, no odor, very		
	22-	0.0			CL	90		SANDY SILTY CL	AY, STA, no odor,		
	24 25	0.0			CL	60		SANDY SILTY CL	AY, STA, no odor,		
N-5C.boi	26 27	0.0			CL	70		SANDY SILTY CL	AY, STA, no odor,		2" Sch 40 PVC w/Threaded Joints
oundary Wells\B\	28 - 29 -	0.0			CL	60		SANDY SILTY CL	AY, STA, no odor,		Grout
stern Refinery\Bo	30 - 31 -	0.0			CL	60		SILTY CLAY, low, brown, no odor, so	firm to stiff, damp, reddish fter than above,		
ch\samples\We	32 - 33 -	0.0			CL	70		SILTY CLAY, STA	, no odor, trace grey clay,		
ocuments/M-Te	34 35	0.0			CL	70		SILTY CLAY, STA	, no odor, trace grey clay,		
sers\cholmes\D	36 - 37 -	0.0			CL			SILTY CLAY, STA	, no odor,		
03-29-2018 C:\U	1010 Tra Houston 713-955	avis Stre I, Texas I-1230	et 7700	2				DiSorbo Co	nsulting, LLC		8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

-	Enviro	onmo Wes	Sent stern Gal ob No	Refining lup Refi b. WES	g SW, In nery T17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon : : 76' : 68' : 06/19/2017 : 06/21/2017	Elev., TOC Elev., PAD Elev., GL († Site Coordi N E	(ft.msl) (ft.msl) (ft.msl) it.msl) nates	NO. BW-5C (Sheet 3 of 4) : 6876.85 : 6874.22 : : : : N1633279.54 : W2542553.04
								Saturation			Com	oletion Results
	(H.)	(mc	tion	Ŋ		yıe	0			Well	No. BW-	5C
	Depth (PID (pp	Saturat	Litholog	NSCS	Recove	Sample	DE	SCRIPTION			
	37-	0.0			CL	60						
	38- 	0.0			CL	70		SILTY CLAY, low, s reddish brown, no c	stiff to very stiff, damp, odor,			
	40 - 41 -	0.0			CL	70		SILTY CLAY, STA,	stiff, damp, no odor,			
	42 - 43 -	0.0			CL	60		SILTY CLAY, STA,				
	44 45	0.0			CL	60		SILTY CLAY, STA,	calcareous,			
5C.boi	46 47	0.1			CL	60		SILTY CLAY, STA,			2"	Sch 40 PVC
ary Wells\BW-5	48	0.0			CI	60		SILTY CLAY, STA, very dense, dry, no	pink sandstone at base, odor,		Gr	out
efinery∖Bounda	50-							SILTY CLAY, low, s	stiff, calcareous, dry,			
Western Re	51 52	0.0			CL	90						
ech\samples\	53-	0.0			CL	60		SILTY CLAY, STA, near base, very der	sandstone lense present ise, white,			
cuments\M-T€	54 - 55 -	0.0			CL	80		SILTY CLAY, low, v brown, occasional g	very stiff, dry, reddish grey, no odor,			
rs\cholmes\Do	56 - 57 -	0.0			CL			SILTY CLAY, STA, odor,	increase in grey clay, no		Be	ntonite Pellets
03-29-2018 C:\Use	1010 Tra Houston 713-955	avis Stre , Texas -1230	et 7700	2				DiSorbo Cor	nsulting, LLC		8501	N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

D	Í	5	0	rk	0	C	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"		WELL NO. BW-5C (Sheet 4 of 4)
Envir	ONM Wes Jo	ent stern Gal ob No	al Co Refining lup Refi o. WEST	nsult g SW, Ir nery F17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon : : 76' : 68' : 06/19/2017 : 06/21/2017	Elev., T Elev., F Elev., C Site Co N E	, TOC (ft.msl) : 6876.85 , PAD (ft. msl) : 6874.22 , GL (ft. msl) : Coordinates : : N1633279.54 : W2542553.04
							Saturation			Completion Results
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	SCRIPTION	W	Well No. BW-5C
57-	0.0			CL	60					
58-	0.0				60		SHALE, very dens cracks, fissle, light	e, damp to saturated in brown and grey, no odor,		— Bentonite Pellets
60	0.0				50		SHALE, STA, very brown, no odor,	r fine grain sand, dry,		2" Sch 40 PVC w/Threaded Joints
62 63	0.0				40		SHALE, STA, san interbedded clays,	d increases with dry,		
64 65	0.0			SST	40		SANDSTONE, ver interbedded with c	y dense, fine grain, lay lenses, dry, brown,		
66 67 67	0.0			SST	40		SANDSTONE, ST damp in fractures, micaceous, light p	A, interbedded with clay, weathered, soft, urple brown,		
68			<u>KLKL</u>	SP	80		SAND, fine to med brown,	lium, loose, saturated,		▼ 2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
69-	0.0			SP	80		SILTSTONE, dens	se, dry/damp, brown,		10/20 Sieve Sand Filter Pack
70-				SST	80	IШ	SANDSTONE, firm	n/dense, damp to moist, grey	,	
71-				SST	20		SANDSTONE, ST	A, moist,	_/	
72-				SST	10		SANDSTONE, ST	A, moist,		
74-				SST	10		SANDSTONE, ST damp, dark grey to	A, moist, shale at base, stiff, black.		2" Flush Threaded Sch 40 PVC Cap
76					I	<u> </u>	<u> </u>]	
1010 Tr. Houstor 713-955	avis Stre n, Texas 5-1230	et 7700:	2				DiSorbo Co	onsulting, LLC		8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

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Enviro	Wes Jo	5 enta tern Gall b No	O al Co Refining lup Refi b. WEST	g SW, In nery T17020	ing Fi	C	Geologist: TraDriller: EmDrilling Rig: CMDrilling Method: HoSampling Method: 2' SComments: HaTotal Depth: 40'Ground Water: 26'Start Date: 06/Finish Date: 06/	acy Payne viro-Drill Inc/Cohagan /E75 Illow Stem Auger 7 1/4" Split Spoon ind Auger to 5 BGL / /12/2017 /12/2017	WELL NO. OW-59 (Sheet 1 of 3) Elev., TOC (ft.msl) : 6889.73 Elev., PAD (ft.msl) : Elev., GL (ft.msl) : 6887.63 Site Coordinates : N : N1635547.14 E : W2544633.00			
							Saturation Saturation		Completion Results			
pth (ft.)	(mqq) (turation	logy	cs	covery (%)	mple			Well No. OW-59			
-3-	DIG	Sat	Lith	SN	Rec	Sai		RIPTION	Stool Protoctive Casing			
-2-				Steel Protective Casing								
0-							SILTY CLAY, low, firm,	damp, brown, no	Concrete Pad - 4'x4'x6"			
1-	0.0			CL	100							
2-							SILTY CLAY, SIMILAR	TO ABOVE (STA),				
3-	0.0			CL	100							
4							SILTY CLAY, STA,					
5	0.0			CL	100							
	2.0				70		CLAY, high, stiff, damp,	brown, no odor,	——Grout			
	2.0				70				2" SCH 40 PVC w/Threaded Joints			
9-	1.0			CL	80		SILTY CLAY, low, stiff, odor, sandy at base,	damp, light brown, no				
10-								no brown no odor				
11-	0.3			ML	70			np, brown, no odor,				
12							SILTY CLAY, low, verv	stiff, damp, brown, no				
13-	0.5			CL			odor, trace sand,	, , , ,				
1010 Tra Houston 713-955	1010 Travis StreetDiSorbo Consulting, LLC8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-41901010 Travis StreetAustin, Texas 78759 512-693-4190											

D	j.	5	0	rk	0)	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	W	ELL NO. OW-59 (Sheet 2 of 3)		
Envir	ONM Wes Jo	tern Gall b No	al Co Refining lup Refi b. WEST	nsult g SW, Ir nery F17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon Hand Auger to 5 BGL : 40' : 26' : 06/12/2017 : 06/12/2017	Elev., TOC (ft. Elev., PAD (ft. Elev., GL (ft. r Site Coordinat N E	msl) : 6889.73 msl) : nsl) : 6887.63 es : : N1635547.14 : W2544633.00		
							Saturation Saturation			Completion Results		
th (ft.)	(mqq)	uration	ology	S	overy (%)	nple			Well No	. OW-59		
Dep	DIA	Satu	Litho	nso	Rec	San	DE	SCRIPTION				
13-	0.5			CL	50							
15-	1.3			СН	50		SILTY CLAY, high no odor,	, very stiff, damp, brown,		-Grout		
16-			\square				SILTY CLAY, STA	, no odor,				
17-	1.7			СН	60							
18-							SILTY CLAY, low t	to moderate, stiff, damp,		-Bentonite Pellets		
19-	1.1			CL	50		brown, no odor,	w/Threaded				
20-							SANDY SILTY CL	AY, low, firm to soft, damp,				
21-	1.2			CL	50							
22-							SANDY CLAY, lov	v, soft, damp, brown, no				
23-	0.2			CL	60					-10/20 Sieve Sand Filter Pack		
24-							SILTY CLAY, low,	soft, damp, brown, no				
25-	3.3			CL	70					Screen w/Threaded Joints		
26-		▼					SANDY SILT, very	/ fine, very moist, brown, no				
27-	10.9			ML	80		odor,					
28-	11.6			ML			SANDY SILT, STA	A, very moist, no odor,				
							DiSorbo Co	onsulting, LLC		0504 NL MaDara Free Co. 14, 000		
1010 Tr Houstor 713-955	1010 Travis StreetDiSorbo Consulting, LLC8501 N. MoPac Expy, Suite 300 Austin, Texas 787591010 Travis StreetAustin, Texas 787591010 Travis Street512,602,4100											

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D	onme Wes Jc	Senta stern Gall ob No	O al Co Refining lup Refin o. WEST	nsult nsult g SW, In nery 17020	ing Fi	C rm	Geologist: Tracy PayneDriller: Enviro-Drill Inc/CohaganDrilling Rig: CME75Drilling Method: Hollow Stem Auger 7 1/4"Sampling Method: 2' Split SpoonComments: Hand Auger to 5' BGLTotal Depth: 48'Ground Water: Not EncounteredStart Date: 6/13/2017	WELL NO. OW-60 (Sheet 1 of 3) Elev., TOC (ft.msl) : 6893.51 Elev., PAD (ft.msl) : Elev., GL (ft.msl) : 6891.06 Site Coordinates : N : N1635335.02
pth (ft.)	(mdd) (turation	yology	CS	covery (%)	mple	Finish Date : 6/13/2017 DESCRIPTION	E : W2545018.21 Completion Results Well No. OW-60
-3- -2- -1-		Sat		SN	<u> </u>	Sa		Steel Protective Casing
0-	6.5			CL	100		SILTY CLAY, low, firm, damp, brown, no odor,	Concrete Pad - 4'x4'x6"
2	5.8			СН	100		CLAY, high, firm to stiff, damp, brown, no odor,	
	6.3			СН	100		CLAY, SIMILAR TO ABOVE (STA), no odor,	
7-	8.1			СН	90		CLAY, STA, no odor,	— Grout
9-	9.6			СН	100		SILTY CLAY, moderate firm damp brown	2" Sch 40 PVC w/Threaded Joints
11 12	9.1			CL	50		SILTY CLAY, STA. soft, no odor.	
13-	8.2			CL	50		SILTY CLAY, STA, firm, no odor,	
15	7.9 8.3			CL	70		SILTY CLAY, STA, no odor,	
17- 1010 Tr	avis Stre	et	/ / /				DiSorbo Consulting, LLC	[अ]] ₩] 8501 N. MoPac Expy, Suite 300

Houston, Texas 77002 713-955-1230 501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

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	Enviro	onme Wes	Sent stern Gal ob No	O al Co Refining lup Refining D. WEST	nsult g SW, In nery 17020	ing Fi	C rm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to 5' BGL : 48' : Not Encountered : 6/13/2017 : 6/13/2017	WELL NO. OW-60 (Sheet 2 of 3) Elev., TOC (ft.msl) : 6893.51 Elev., PAD (ft. msl) : Elev., GL (ft. msl) : 6891.06 Site Coordinates : N : N1635335.02 E : W2545018.21
	Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DE	SCRIPTION	Completion Results Well No. OW-60
	17 - - - - - - - - - - - - - - - - - - -	8.3 10.1			CL CL	70 50		SILTY CLAY, STA	, no odor,	
	20 21 22	15.3			CL	60		SILTY CLAY, mod no odor,	erate, soft, damp, brown,	Bentonite Pellets
	23- 24-	12.1			CL	70		SILTY CLAY, STA	, alcareous nodules	2" Sch 40 PVC w/Threaded Joints
	25 26 27	11.6			CL	80		SILTY CLAY, STA	, tan-silt pockets	
	28-	10.5			ML	80		CLAYEY SILT, low brown and grey, no	ν, soft/crumbly, damp, light ο odor,	
	30 - 31 - 22 -	11.1			CL	70		SILTY CLAY, low, reddish brown with	firm to crumbly, damp, light trace grey, no odor,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
EST/OW-60.bor	32 - 33 - 34 -	15.0			CL	70		SILTY CLAY, STA	, no odor,	
Imes/Desktop/WF	35 - 36 -	12.8			CL	80		SILTY CI AY, Iow	very stiff. crumbly. damp	
03-20-2019 C:\Users\chol	37 1010 Tra Houston 713-955	12.7 avis Stre a, Texas -1230	et 77002	2	CL			DiSorbo Co	nsulting, LLC	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

Env	viron	Veste Job	o No.	O al Co Refining up Refin WEST	nsult g SW, In nery f17020	C C	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to 5' BGL : 48' : Not Encountered : 6/13/2017 : 6/13/2017	WELL NO. OW-60 (Sheet 3 of 3) Elev., TOC (ft.msl) : 6893.51 Elev., PAD (ft.msl) : Elev., GL (ft.msl) : 6891.06 Site Coordinates : N : N1635335.02 E : W2545018.21
Depth (ft.)			Saturation	Lithology	USCS	Recovery (%)	Sample	DE	ESCRIPTION	Completion Results Well No. OW-60
37 38 39 40	7 - 12 8 - 12 9 - 10 0 - 10	.7			CL ML	70 50		SILT, Iow, compac damp, light grey, n SILT, STA, no odc	et to dense/stiff crumbly, to odor, or,	
41	1 9. 2 1 3 10 4 1	9 .7			ML ML	60		SILT, STA, trace v SILT, STA, no odc	very fine sand, no odor,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
4	5 10 - - 7 9. 8 - -	.1 6			ML	50		SILT, STA, trace r grey, no odor.	eddish brown clay with	2" Flush Threaded Sch 40 PVC Cap
49 50 52 52 52 52 52 52 52 52 52 52 52 52 52	9 1 2 3 4 5 6 7									
301-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 300000000000000000000000000000000000	0 Travis ston, Te 955-123	Street xas 77	t 7002					onsulting, LLC	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190	

Appendix B Waste Analyses and Waste Manifests


Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 30, 2017

Cheryl Johnson Western Refining Southwest, Gallup Rt. 3 Box 7 Gallup, NM 87301 TEL: FAX

RE: Soil T-35 Drill Cuttings

OrderNo.: 1708D66

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/23/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order 1708D66 Date Reported: 8/30/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GallupProject: Soil T-35 Drill CuttingsLab ID: 1708D66-001M		SLUDGE	Clien Col Ro	nt Sample llection I eceived I	e ID: T-3: Date: 8/23 Date: 8/23	5 Soil 0 3/2017 9 3/2017 1	Clean Up 9:50:00 AM 3:55:00 PM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE C	ORGANICS						Analyst: TOM	
Diesel Range Organics (DRO)	10000	31	190		mg/Kg	20	8/28/2017 2:56:47 PM	33552
Motor Oil Range Organics (MRO)	4400	960	960		mg/Kg	20	8/28/2017 2:56:47 PM	33552
Surr: DNOP	0	0	70-130	S	%Rec	20	8/28/2017 2:56:47 PM	33552
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	5.0		mg/Kg	1	8/25/2017 11:01:22 AM	33543
Surr: BFB	77.3	0	54-150		%Rec	1	8/25/2017 11:01:22 AM	33543
MERCURY, TCLP							Analyst: pmf	
Mercury	ND	0.00075	0.020		mg/L	1	8/28/2017 1:59:07 PM	33583
EPA METHOD 6010B: TCLP METALS							Analyst: MED	
Arsenic	0.040	0.013	5.0	J	mg/L	1	8/28/2017 1:57:50 PM	33562
Barium	0.68	0.00062	100	J	mg/L	1	8/28/2017 1:57:50 PM	33562
Cadmium	ND	0.00063	1.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Chromium	ND	0.0017	5.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Lead	ND	0.0053	5.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Selenium	ND	0.032	1.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Silver	ND	0.0018	5.0		mg/L	1	8/28/2017 1:57:50 PM	33562
EPA METHOD 8260B: TCLP COMPOUNDS	6						Analyst: DJF	
Benzene	ND	0.049	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Toluene	ND	0.040	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Ethylbenzene	ND	0.035	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
1,2-Dichloroethane (EDC)	ND	0.052	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
2-Butanone	ND	0.30	200		ppm	10	8/25/2017 11:59:53 AM	33543
Carbon tetrachloride	ND	0.049	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Chlorobenzene	ND	0.030	100		ppm	10	8/25/2017 11:59:53 AM	33543
Chloroform	ND	0.030	6.0		ppm	10	8/25/2017 11:59:53 AM	33543
1,4-Dichlorobenzene	ND	0.056	7.5		ppm	10	8/25/2017 11:59:53 AM	33543
1,1-Dichloroethene	ND	0.20	0.70		ppm	10	8/25/2017 11:59:53 AM	33543
Tetrachloroethene (PCE)	ND	0.040	0.70		ppm	10	8/25/2017 11:59:53 AM	33543
	ND	0.061	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Vinyi chioride	ND	0.042	0.20		ppm	10	8/25/2017 11:59:53 AM	33543
Ayienes, 10tal	ND 106	0.16	0.50		ppm % Paa	10	0/20/2017 11:59:53 AM	33543
Surr: 1,2-Dichloroethane-04	106		70-130		%Rec	10	0/20/2017 11:59:53 AM	33543
Sun: 4-Biomofluoromethene	94.0 104		70-130			10	0/20/2017 11.09.03 AN	33543
Surr: Toluene-d8	96.0		70-130		%Rec	10	8/25/2017 11:59:55 AM	33543
	30.0		10-130		/01/00	10	0/20/2011 11.09.00 AM	33343

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as sp

- Page 1 of 8
- s specified

Lab Order **1708D66**

Date Reported: 8/30/2017

Page 2 of 8

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GallupProject: Soil T-35 Drill CuttingsLab ID: 1708D66-002Matrix: 3		SLUDGE	Clier Co R	nt Sampl llection 1 eceived 1	e ID: Dril Date: 8/23 Date: 8/23	ll Cuttii 3/2017 3/2017	ngs 10:32:00 AM 3:55:00 PM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RA		6					Analyst: TOM	
Diesel Range Organics (DRO)	2.3	1.6	10	J	mg/Kg	1	8/28/2017 3:41:24 PM	33552
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/28/2017 3:41:24 PM	33552
Surr: DNOP	93.6	0	70-130		%Rec	1	8/28/2017 3:41:24 PM	33552
EPA METHOD 8015D: GASOLINE RA	ANGE						Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	5.0		mg/Kg	1	8/25/2017 10:37:23 AM	33543
Surr: BFB	77.5	0	54-150		%Rec	1	8/25/2017 10:37:23 AM	33543
MERCURY. TCLP							Analyst: pmf	
Mercury	ND	0.00075	0.020		mg/L	1	8/28/2017 2:00:51 PM	33583
EPA METHOD 6010B: TCLP METAL	_S				-		Analyst: MED	
Arsenic	0.031	0.013	50	.1	ma/l	1	8/28/2017 1:59:04 PM	33562
Barium	1.9	0.00062	100	J	ma/l	1	8/28/2017 1:59:04 PM	33562
Cadmium	ND	0.00063	1.0	°,	ma/l	1	8/28/2017 1:59:04 PM	33562
Chromium	ND	0.0017	5.0		ma/L	1	8/28/2017 1:59:04 PM	33562
Lead	ND	0.0053	5.0		ma/L	1	8/28/2017 1:59:04 PM	33562
Selenium	ND	0.032	1.0		mg/L	1	8/28/2017 1:59:04 PM	33562
Silver	ND	0.0018	5.0		mg/L	1	8/28/2017 1:59:04 PM	33562
EPA METHOD 8260B: TCLP COMPO	DUNDS						Analyst: DJF	
Benzene	ND	0.049	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Toluene	ND	0.040	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Ethylbenzene	ND	0.035	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
1,2-Dichloroethane (EDC)	ND	0.052	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
2-Butanone	ND	0.30	200		ppm	10	8/25/2017 12:28:45 PM	33543
Carbon tetrachloride	ND	0.049	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Chlorobenzene	ND	0.030	100		ppm	10	8/25/2017 12:28:45 PM	33543
Chloroform	ND	0.030	6.0		ppm	10	8/25/2017 12:28:45 PM	33543
1,4-Dichlorobenzene	ND	0.055	7.5		ppm	10	8/25/2017 12:28:45 PM	33543
1,1-Dichloroethene	ND	0.20	0.70		ppm	10	8/25/2017 12:28:45 PM	33543
Tetrachloroethene (PCE)	ND	0.040	0.70		ppm	10	8/25/2017 12:28:45 PM	33543
Trichloroethene (TCE)	ND	0.060	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Vinyl chloride	ND	0.042	0.20		ppm	10	8/25/2017 12:28:45 PM	33543
Xylenes, Total	ND	0.16	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Surr: 1,2-Dichloroethane-d4	106		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543
Surr: 4-Bromofluorobenzene	91.1		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543
Surr: Dibromofluoromethane	104		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543
Surr: Toluene-d8	97.5		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

1708D66-001B T-35 SOIL CLEAN UP Collected date/time: 08/23/17 09:50

SAMPLE RESULTS - 01

Wet Chemistry by Method 9012 B

Wet Chemistry by	Method 9012	3					1
	Result	<u>Qualifier</u>	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		
Reactive Cyanide	ND		0.250	1	08/25/2017 22:23	<u>WG1013530</u>	Ťτ
Wet Chemistry by	Method 9034-	9030B					3
***************************************	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		4
Reactive Sulfide	ND		25.0	1	08/25/2017 16:05	<u>WG1013568</u>	
Wet Chemistry by	Method 9045)					s Sr
	Result	Qualifier	Dilution	Analysis	Batch	######################################	
Analyte	su			date / time			[°] Qc
Corrosivity by pH	8.51	<u>T8</u>	1	08/29/2017 10:3	37 <u>WG1014298</u>		- 900 (FF)
Sample Narrative:							΄GΙ
L931847-01 WG1014298: 8.	51 at 20.5c						δ
Wet Chemistry by	Method D93/10	D10A					
	Result	Qualifier	Dilution	Analysis	Batch		°Sc
Analyte	Deg. F			date / time			L]
Ignitability	DNI at 170		1	08/28/2017 13:0	0 WG1014260		

1708D66-002B DRILL CUTTINGS Collected date/time: 08/23/17 10:32

SAMPLE RESULTS - 02

Wet Chemistry by Method 9012 B

	Result	Qualifier	RDL	Dilution	Analysis	Batch	icρ
Analyte	mg/kg		mg/kg		date / time	—	
Reactive Cyanide	ND		0.250	1	08/25/2017 22:26	<u>WG1013530</u>	² Tc
Wet Chemistry by	Method 9034-	9030B					3
	Result	<u>Qualifier</u>	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		4
Reactive Sulfide	ND		25.0	1	08/25/2017 16:05	<u>WG1013568</u>	Cn
Wet Chemistry by	Method 9045E)					Sr
	Result	Qualifier	Dilution	Analysis	Batch	анан на	
Analyte	SU			date / time			^в Ос
Corrosivity by pH	10.0	<u>T8</u>	1	08/29/2017 10:3	7 <u>WG1014298</u>	a 1996 finan odorozani kandina 1996 ya 10 kura na maka kada kunda sa kata kunda makana kata 1999 ya 1999 ya 19	
Sample Narrative:							⁷ Gl
L931847-02 WG1014298: 10).03 at 20.1c						
							^e Al
Wet Chemistry by	Method D93/10	10A					
	Result	Qualifier	Dilution	Analysis	Batch		°Sc
Analyte	Deg. F			date / time			
Ignitability	DNI at 170		1	08/28/2017 13:00	D WG1014260	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	······

WG10135 Wet Chemistry b	.30 39 Method 9012 B			Ø	UALITY	CONTF 1931847-(ROL SU	JMMAF	≻		NO	E LAB. NATIONWIDE.	¥,
Method Blank	< (MB)												
(MB) R3244658-1	08/25/17 22:01					name and a second and an an an a line of the Add and the Ad		TATING AND	NV/KANA) ANA ANA ANA ANA ANA ANA ANA ANA ANA			and an address of the first of the second	0
Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg									
Reactive Cyanide	D		0.039	0.250									<u> </u>
L931815-01 Or	riginal Sample ((os) • Dupli	cate (DUP)										S .
(OS) L931815-01 08	8/25/17 22:20 • (DUP)	R3244658-6	08/25/17 22:2	1	A CONTRACTOR AND A						*****		្រ
	Original Result	t DUP Result	Dilution D(D RPD D	UP Qualifier	DUP RPD Limits							
Analyte	mg/kg	mg/kg	%			26							Ś
Reactive Cyanide	ND Como D	0.0532	1 0		-	20							C
		Coj • Lauc				(IC (LUSU)					YN DYN GAN GAN GANNAR AN AM		ص ت
2-90044725X (CJJ)	08/22/1/22:02 • (LC Spike Amount	LCS Result	3-3 08/25/1/ 2 LCSD Result	22:03 LCS Rec.	I CSD Rec	Rec Limits	LCS Qualifi	er I CSD Qu	alifiar PDD	DDD Limite			
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			2
Reactive Cyanide	2.50	2.57	2.47	103	66	50-150			4	20			
L931767-05 C	Priginal Sample ((OS) • Matr	ix Spike (N	(IS) • Matrix	x Spike Du	Iplicate (MS)					na n		
	Spike Amount	Original Resul	t MS Result	MSD Result	+036-3 UG/23 MS.Rec.	/1/ 22:18 MSD Rec.	Dilution	Roc Limits	MS Qualifier	MSD Oualifier D	nai Anna nai		
Analyte	mg/kg	mg/kg	тд/кд	mg/kg	88	3e				- *	در ا		
Reactive Cyanide	1.67	QN	1.55	1.57	89	60	· · ·	75-125	· · · ·	L	20	n, ng∂r kanganganganganan kankek a mag	
	- - - - - - -		:		:								
Hall Free	ACCOUNT:	oratory		ЯЧ	QJECT:		S	ö		DATE/TIN	Ē		
	לוו הזווו ובנו זרמו שוומוא אוס רמוזיי						E6.1	1847		08/29/17 1/	212		

	9034-90308
WG1013568	Wet Chemistry by Method

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

¥

Michinon algulk (M	10				SCHOOLS AND
(MB) WG1013568-1 08/.	25/17 16:05			ANALY MALE AND AN ANY ANY ANY ANY ANY ANY ANY ANY ANY	Ô
	MB Result	MB Qualifier	MB MDL	MB RDL	107.12 10 107.12 10 107.12 10 10 10 10 10 10 10 10 10 10 10 10 10
Analyte	mg/kg		mg/kg	Jug/kg	2 2
Reactive Sulfide	n		7.63	25.0	
					Ss
1 931847-01 Orioin	nal Samola (((al IO) ate-		
		1.454 · 1.00			4
(OS) L931847-01 08/25	5/17 16:05 • (DUP)	WG1013568-4	08/25/17 16:05	1994 STATUS (1997) Advances of the maximum and an and an and an and the status of the status of the status of t	Б С
	Original Result	t DUP Result	Dilution DUP	PD DUP Qualifier DUP RPD Limits	<u>(</u>

%	0.000 20	
mg/kg	QN	
mg/kg	QN	

Sr

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SC

R

1

		SD Qualifier RPD Limits	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	0.000 20
	******	LCS Qualifier L		
e (LCSD)		Rec. Limits	%	70.0-130
le Duplicaté		LCSD Rec.	8	73.1
trol Samp	16:05	LCS Rec.	%	73.1
ratory Con	58-3 08/25/17	LCSD Result	mg/kg	73.1
.CS) • Labo	CSD) WG10135(LCS Result	mg/kg	73.1
rol Sample (L	8/25/17 16:05 • (LC	Spike Amount	mg/kg	100
Laboratory Cont	(LCS) WG1013568-2 0.		Analyte	Reactive Sulfide

	itory
ACCOUNT:	Hall Environmental Analysis Labora

SDG: L931847

PROJECT:

Date/TIME: 08/29/17 14:15

WG1014298 Wet Chemistry by M	s Iethod 9045D		QUALITY	Y CONTR 1931847-0	OL SUM	MARY		ONE LAB, NATIONWIDE.	¥
L931847-02 Origi	iinal Sample (OS) • Du	uplicate (DUP)							
(OS) L931847-02 08/25	9/17 10:37 • (DUP) WG1014295 Original Result DUP Result	8-3 08/29/17 10:37 It Dilution DUP RP1	D DUP Qualifier	DUP RPD			na mana na mang mang mang mang mang mang		
Analyte	ns ns	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Limits %					, L C
Corrosivity by pH	10.0 10.0	1 0.399	18	2					3 2 2
 Sample Narrative: 05: 10.03 at 20.1c DUP: 10.04 at 20.2c 									
Laboratory Contro	rol Sample (LCS) • Lat	boratory Control	l Sample Duplice	ate (LCSD)					λ
(LCS) WG1014298-1 08/	V29/17 10:37 • (LCSD) WG1014	1298-2 08/29/17 10:37	L	Normal an an one of the Andrew Andrew Andrew and a line of the Andrew Andrew Andrew Andrew Andrew Andrew Andrew	Non-Book of the set of			NAMANANA MANJARAWANA NA KATATATATATATATATATATATATATATATATATATA	o Oc
Analyte	Spike Amount LCS Result su su	t LCSD Result L(su %	CS Rec. LCSD Rec. %	. Rec. Limits %	LCS Qualifier	LCSD Qualifier RPD %	RPD Limits %		<u> </u>
Corrosivity by pH	10.0	10.1	M 101	98.4-102		0.000			ō
Sample Narrative: LCS: 10.06 at 20.0c LCSD: 10.06 at 20.1c									
	ACCOUNT:		PROJECT:		SDG.		DATE/TIME:		
Hall Environm	mental Analysis Laboratory				L931847		08/29/17 14:15		

WG10142 Wet Chemistry t	.60 by Method D93/10	AON		Q	UALITY	CONTR 1931847-0	OL SUN	1 MARY		ONE LAB. NATIONWIDE.	₿¥́
L931842-01 C	Jriginal Sample	dnd • (SO)	licate (DUP)								
(OS) L931842-01 (08/28/17 13:00 • (DUF	o) R3244961-3	08/28/17 13:00	STATISTICS AND A DOWN TO A DOWN		THE REAL PROPERTY AND AND AND AND AND AND AND AND A PROPERTY AND AND A PROPERTY	*****		a da a su a da a da a da a da a da a da		0
	Original Resi	ult DUP Result	Dilution DUF	, RPD	UP Qualifier L	NUP RPD mits					2+2
Analyte	Deg. F	Deg. F	98		8<						<u>0</u>
Ignitability	131	135	1 3.00	_	Ť	0					SS
L931859-01 C	Driginal Sample	dna • (SO)	licate (DUP)								L L L
(OS) L931859-01 (08/28/17 13:00 • (DUF	^o) R3244961-4	08/28/17 13:00			*****	****		a mana mana mana mana mana kana kana kan	n de anna an fha an ann ann ann ann ann ann ann ann an	
	Original Rest	ult DUP Result	Dilution DUF	RPD D	UP Qualifier D	UP RPD mits					ئې دې
Analyte	Deg. F	Deg. F	%	I	, 34	6					5
Ignitability	148	142	1 4.00	6	+	C					O O
Laboratory C	ontrol Sample (LCS) • Lab(oratory Cont	rol Samp	le Duplicat	e (LCSD)					Ğ
(LCS) R3244961-1	08/28/17 13:00 • (FC	SD) R3244961-:	2 08/28/17 13:00			~				o de la compañía de l	
	Spike Amour	nt LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier RPD	RPD Limits		2
Analyte	Deg. F	Deg. F	Deg. F	સ્ટ	*	8		%	%		
Ignitability	82.0	6.6/	80.3	0.76	98.0	96.0-104		0.000	10		°S S
							·		,		
								:			
	ACCOUNT:			Чd	(OJECT:		SDG:		DATE/TIME:		

GLOSSARY OF TERMS

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
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.
Rec.	Recovery.
Qualifier	Description
Т8	Sample(s) received past/too close to holding time expiration.



ACCOUNT: Hall Environmental Analysis Laboratory

DATE/TIME: 08/29/17 14:15

Client: Wester Project: Soil T	ern Refining S -35 Drill Cut	outhwe	st, Gallup							
Sample ID LCS-33552	Samp1 Batcl	ype: LC	:S 552	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Prep Date: 8/25/2017	Analysis D	Date: 8/	28/2017	S	SeqNo: 1	432934	Units: mg/ł	٨g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.0	73.2	114			
Surr: DNOP	4.8		5.000		95.7	70	130			
Sample ID MB-33552	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batcl	h ID: 33	552	F	RunNo: 4	5247				
Prep Date: 8/25/2017	Analysis E	Date: 8/	28/2017	5	SeqNo: 1	432935	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.4	10								J
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		97.7	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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 3 of 8

24

940

5.0

24.90

996.0

Client: Project:	Western Soil T-35	Refining So 5 Drill Cutt	outhwe ings	st, Gallup							
Sample ID	MB-33543	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBS	Batch	ı ID: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8 /	/25/2017	٤	SeqNo: 1	432593	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang Surr: BFB	je Organics (GRO)	ND 790	5.0	1000		78.6	54	150			
Sample ID	LCS-33543	SampT	ype: L(Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	LCSS	Batch	ID: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8/	/25/2017	S	eqNo: 1	432594	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Ranç	je Organics (GRO)	24	5.0	25.00	0	95.0	76.4	125			
Surr: BFB		880		1000		88.1	54	150			
Sample ID	1708D66-001AMS	SampT ⁻	ype: M:	S	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	T-35 Soil Clean U	p Batch	ID: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8/	/25/2017	S	eqNo: 1	432598	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Ranç	je Organics (GRO)	24	5.0	24.95	0	95.0	77.8	128			
Surr: BFB		930		998.0		92.9	54	150			
Sample ID	1708D66-001AMS	D SampT	ype: M	SD	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	T-35 Soil Clean U	p Batch	1D: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8 /	/25/2017	S	eqNo: 1	432599	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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

Gasoline Range Organics (GRO)

Surr: BFB

- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range

94.9

94.7

0

77.8

54

128

150

0.326

0

20

0

Page 4 of 8

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#: 1708D66 30-Aug-17

Client:WesternProject:Soil T-35	Refining S 5 Drill Cutt	outhwe	st, Gallup							
Sample ID mb-33543	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: PBS	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	ate: 8/	25/2017	S	SeqNo: 1	432746	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050					-			
1,2-Dichloroethane (EDC)	ND	0.050								
2-Butanone	ND	20								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	10								
Chloroform	ND	0.60								
I,4-Dichlorobenzene	ND	0.75								
I,1-Dichloroethene	ND	0.070								
Fetrachloroethene (PCE)	ND	0.070								
Trichloroethene (TCE)	ND	0.050								
/invl chloride	ND	0.020								
Surr: 1.2-Dichloroethane-d4	0.52		0.5000		104	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.8	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.66		0.5000		96.3	70	130			
	0110		0.0000		0010					
Sample ID Ics-33543	SampT	ype: LC	S.	Tes	tCode: El	PA Method	8260B: TCLP	Compou	nds	
Client ID: LCSS	Batch	ו ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	ate: 8/	25/2017	S	SeqNo: 1	432747	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.050	1.000	0	111	70	130			
Chlorobenzene	0.94	0.050	1.000	0	93.9	70	130			
1,1-Dichloroethene	1.2	0.050	1.000	0	120	68.8	161			
Trichloroethene (TCE)	1.0	0.050	1.000	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	0.55		0.5000		109	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.2	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		104	70	130			
Surr: Toluene-d8	0.49		0.5000		98.3	70	130			
Sample ID 1708d66-002ams	SampT	уре: М	3	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: Drill Cuttings	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	ate: 8/	25/2017	5	SeqNo: 1	432750	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.3	0.50	0.9990	0	127	61.9	146			
Chlorobenzene	1.0	0.50	0.9990	0	103	70	130			
1,1-Dichloroethene	1.3	0.50	0.9990	0	125	37.1	170			
Trichloroethene (TCE)	1.2	0.50	0.9990	0	116	49.8	150			
Surr: 1,2-Dichloroethane-d4	5.5		4.995		109	70	130			
Duolifiors										

* 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 Detection Limit
- W Sample container temperature is out of limit as specified

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montai			50-Aug-17
Western Re Soil T-35 I	efining Southwest, Gallup Drill Cuttings		
6-002ams	SampType: MS	TestCode: EPA Method 8260B: TCLP Compounds	

Sample ID 1708d66-002ams	SampT	туре: МS	3	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: Drill Cuttings	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	Date: 8/	25/2017	S	SeqNo: 1	432750	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	4.8		4.995		95.8	70	130			
Surr: Dibromofluoromethane	5.3		4.995		106	70	130			
Surr: Toluene-d8	4.9		4.995		98.0	70	130			
Sample ID 1708d66-002amsc	I SampT	- уре: М	SD	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: Drill Cuttings	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	Date: 8/	25/2017	S	SeqNo: 1	432751	Units: ppm			
Prep Date: 8/24/2017 Analyte	Analysis D Result	0ate: 8/ PQL	25/2017 SPK value	SPK Ref Val	SeqNo: 1 %REC	432751 LowLimit	Units: ppm HighLimit	%RPD	RPDLimit	Qual
Prep Date: 8/24/2017 Analyte Benzene	Analysis D Result 1.1	Date: 8/ PQL 0.50	25/2017 SPK value 0.9980	SPK Ref Val	SeqNo: 1 %REC 115	432751 LowLimit 61.9	Units: ppm HighLimit 146	%RPD 10.2	RPDLimit 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene	Analysis D Result 1.1 0.95	Date: 8/ PQL 0.50 0.50	25/2017 SPK value 0.9980 0.9980	SPK Ref Val 0 0	SeqNo: 1 %REC 115 94.8	432751 LowLimit 61.9 70	Units: ppm HighLimit 146 130	%RPD 10.2 8.41	RPDLimit 20 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene	Analysis D Result 1.1 0.95 1.2	Date: 8/ PQL 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980	SPK Ref Val 0 0 0	SeqNo: 1 %REC 115 94.8 119	432751 LowLimit 61.9 70 37.1	Units: ppm HighLimit 146 130 170	%RPD 10.2 8.41 5.29	RPDLimit 20 20 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE)	Analysis D Result 1.1 0.95 1.2 1.1	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980	SPK Ref Val 0 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106	432751 LowLimit 61.9 70 37.1 49.8	Units: ppm HighLimit 146 130 170 150	%RPD 10.2 8.41 5.29 8.97	RPDLimit 20 20 20 20 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4	Analysis D Result 1.1 0.95 1.2 1.1 5.6	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980 4.990	SPK Ref Val 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106 111	432751 LowLimit 61.9 70 37.1 49.8 70	Units: ppm HighLimit 146 130 170 150 130	%RPD 10.2 8.41 5.29 8.97 0	RPDLimit 20 20 20 20 20 0	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	Analysis E Result 1.1 0.95 1.2 1.1 5.6 4.7	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980 4.990 4.990	SPK Ref Val 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106 111 95.1	432751 LowLimit 61.9 70 37.1 49.8 70 70 70	Units: ppm HighLimit 146 130 170 150 130 130	%RPD 10.2 8.41 5.29 8.97 0 0	RPDLimit 20 20 20 20 0 0	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane	Analysis E Result 1.1 0.95 1.2 1.1 5.6 4.7 5.3	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980 4.990 4.990 4.990	SPK Ref Val 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106 111 95.1 105	432751 LowLimit 61.9 70 37.1 49.8 70 70 70 70	Units: ppm HighLimit 146 130 170 150 130 130 130	%RPD 10.2 8.41 5.29 8.97 0 0 0	RPDLimit 20 20 20 20 0 0 0	Qual

Qualifiers:

Client: Project:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Practical Quanitative Limit PQL
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 8

Result

PQL

Wester Soil T-	rn Refining Southwest, Gallup 35 Drill Cuttings	
83	SampType: MBLK	TestCode: MERCURY, TCLP
	Batch ID: 33583	RunNo: 45252
017	Analysis Date: 8/28/2017	SeqNo: 1433185 Units: mg/L

HighLimit

%RPD

RPDLimit

Mercury		ND	0.020								
Sample ID LC	S-33583	SampTy	/pe: LC	S	Test	Code: M	ERCURY, T	CLP			
Client ID: LC	SW	Batch	ID: 33	583	R	unNo: 4	5252				
Prep Date: 8/	/28/2017	Analysis Da	ate: 8/ 2	28/2017	S	eqNo: 1	433186	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0050	0.020	0.005000	0	101	80	120			J

SPK value SPK Ref Val %REC LowLimit

Qualifiers:

Client:

Project:

Client ID:

Prep Date:

Analyte

Sample ID MB-33583

PBW

8/28/2017

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 7 of 8

Qual

WO#: **1708D66**

Page 8 of 8

30-Aug-17

Client: Project:	Wester Soil 7	ern Refining S Γ-35 Drill Cutt	outhwe	st, Gallup							
Sample ID	MB-33562	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	6010B: TCLI	P Metals		
Client ID:	PBW	Batch	h ID: 33	562	F	RunNo: 4	5251				
Prep Date:	8/25/2017	Analysis D	Date: 8/	28/2017	S	SeqNo: 1	433165	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	5.0								
Barium		ND	100								
Cadmium		ND	1.0								
Chromium		ND	5.0								
Lead		ND	5.0								
Selenium		ND	1.0								
Silver		ND	5.0								
Sample ID	LCS-33562	SampT	ype: LC	s	Tes	tCode: El	PA Method	6010B: TCLI	P Metals		
Client ID:	LCSW	Batch	h ID: 33	562	F	RunNo: 4	5251				
Prep Date:	8/25/2017	Analysis D	Date: 8/	28/2017	5	SeqNo: 1	433166	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.56	5.0	0.5000	0	112	80	120			J
Barium		0.49	100	0.5000	0	97.6	80	120			J
Cadmium		0.50	1.0	0.5000	0	100	80	120			J
Chromium		0.50	5.0	0.5000	0	99.4	80	120			J
Lead		0.48	5.0	0.5000	0	95.1	80	120			J
Selenium		0.55	1.0	0.5000	0	111	80	120			J
Silver		0.10	5.0	0.1000	0	103	80	120			J

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 Detection Limit
- W Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental Albu TEL: 505-345-3975 Website: www.hal	Analysis Labora 4901 Hawkin querque, NM 8 FAX: 505-345 lenvironmental	atory s NE 7109 Sam 4107 .com	ple Log-In Check List
Client Name: Western Refining Gallup	Work Order Number:	1708D66		RoptNo: 1
Received By: Isaiah Ortiz	8/23/2017 3:55:00 PM		Iat	-
Completed By: Ashley Gallegos	8/23/2017 4:40:39 PM		AF	
Reviewed By: SKC 08/24/17			U	
Chain of Custody				
1. Custody seals intact on sample bottles?		Yes 🗌	No 🗌	Not Present 🗹
2. Is Chain of Custody complete?		Yes 🗹	No 🗌	Not Present
3. How was the sample delivered?		<u>Courier</u>		
<u>Log In</u>				
4. Was an attempt made to cool the samples	?	Yes 🗸	No 🗌	
5. Were all samples received at a temperature	e of >0° C to 6.0°C	Yes 🔽	No 🗌	
6. Sample(s) in proper container(s)?		Yes 🔽	No 🗍	
7. Sufficient sample volume for indicated test(s)?	Yes 🗹	No 🗌	
8. Are samples (except VOA and ONG) prope	rly preserved?	Yes 🗹	No 🗌	
9. Was preservative added to bottles?		Yes 🗋	No 🔽	NA 🗆
10.VOA vials have zero headspace?		Yes 🗌	No 🗌	No VOA Vials 🗹
11. Were any sample containers received brok	en?	Yes 🗋	No 🗹	# of preserved
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes 🗹	No 🗌	for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain or	f Custody?	Yes 🗹	No 🗆	Adjusted?
14. Is it clear what analyses were requested?		Yes 🗹	No 🗌	
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes 🗹	No 🗌	Checked by:

Special Handling (if applicable)

16.V	Vas client notified of all d	iscrepancies with this order?	Yes 🛄	No 🗌	NA 🗹
	Person Notified:		Date		
	By Whom:		Via: 🗌 eMail 🔲 P	hone 🗌 Fax 📋	In Person
	Regarding:				101.011.010.010.000.000.000.000.000.000
	Client Instructions:	n an		**************************************	

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.4	Good	Yes			

								I	IALL FN	NIMNCOLV	
Client	WESTR	ERN REF	INING	Standard	Rush x	~			NALYS	IS LABORAT	rory
	GALLI	P REFIN	ERY	Project Name					www.haile	rvironmental com	
Mailing Ad	dress;	52 Giant	Crossing Road	Soil - T-35/Dr	ill Cuttings		49	NOT Haw	k ns NE - 1	Albuquerque, NM 87	7105
		Gallup,	NM 87301	Project #:			Ĕ	el. 505-	345-3975	Fax 505-345-4107	7
Phone #		506-722	-3833						Analy	sis Request	
Email or F	ax#:	505-863	-0830	Project Mana	ger						
X Standar	*age;		E Level 4 (Full Validation)	Cheroliohnso	n@wnr com		(0)		d):		
Accreditati	00			Sampler C J(NOSNHO		-	сгь)) -		
L NELAP		o one		On Ice	XYes	D No)BC	10	ŚT		
L) DOB. T	(edi			Sample Temp	perature: 1,4	J	1/01	X3T	/13		
Date	Time	Mattix	Sample RequestID	Container Type and #	Preservativ e Type	HEAL NO. 1708 D.W.	8015D (GR	82608 - (8	RCRA 8 M		
61-62-5	9:50	anos .	T-35 soil clearrup	2-302 (at	None	100 -	X	X	XX		
6-23-17	Lo:32	SOUD	DRILL CUTINGS -	2-302 jar	None	-002	X	X	XX		
Date.	Time:	REFORMER	ite pa	Received by		Date Time	Remark	1			
740 23-17	Time:	Reinquish	ed by	AD'T	4	Bate Time	- 1-				

1 10	FORM HAZARDOUS	1. Generator ID Number		2. Page 1 of	3. Emergency Respor	nse Phone	4. Manifes	t Tracking N	lumber	0 .	-1
5. Ge	enerator's Name and Mailin	g Address		2	Generator's Site Addre	ss (if different t	han mailing addre	300	190	U	
M	VESTERN REFT	NING SOUTHWEST	GALLUP RETINK	NG			and the second second				
0	ALLUP, NM 87.	301									
Gene	erator's Phone:	0			Sec. and				_		
Δ.	dwarced Chemie	on humanet in 180					U.S. EPA ID	Number	-		
7. Tra	ansporter 2 Company Name	9	1				U.S. EPA ID	Number	CAPUIO	097054	0
8. De	signated Facility Name and	d Site Address					U.S. EPA ID	Number			-
8	133 Edith Bive N	ST 107							MADAG	220882	2
Facili	ty's Phone: 505-340-	5220					1				
9a.	9b. U.S. DOT Descriptio	n (including Proper Shipping Name,	Hazard Class, ID Number,		10. Cont	lainers	11 Total	12 1101		N. C. MAR	-
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14 5	pecial Handling Instructions	and Additional Information			~						
5. (GENERATOR'S/OFFEROR	"S CERTIFICATION: I hereby decla led, and are in all respects in proper	are that the contents of this co condition for transport accord	onsignment an	e fully and accurately d	escribed above	by the proper sh tental regulations	ipping name If export shi	, and are clas	ssified, pack	iged,
F	narked and labeled/placard Exporter I certify that the co	intents of this consignment conform t	to the terms of the attacked f	ing to applicat	ble international and na	and go to the	and to generate the		prine in and i	am the Prima	iry
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ſ.	WESTERN REFINING SOUTHWEST GALLUP REFINING 92 GIAN I CROSSING ROAD							
2	5. Transporter Company Name			U.S. EPA ID N	lumber			
2	6. Transporter Company Name	-		U.S. EPA ID N	lumber			
2' H	 27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) 	28. Contain No.	ners Type	29. Total Quantity	30. Unit Wt./Vol.	31. \	Waste Code	s
	5) Non-RCRANon-DOT Regulated Material Solid (SCIL - DRILL CUTTINGS)	28	DM	16,380	p	NONE		
	(5) UN3077, Environmentally trazerdous substances, solid, n.o.s. (refactory solids), 9, PGII	01	DM	407	P			
	7) Non-RCRA/Non-DOT Regulated Material Solid (USED	03	CF	510	р			
VERATOR	3) Non-DOT Regulated Material Solid (TPH SOIL)	04	OAA	1,000	Li I	NONE		
GE	9) Non-DOT Regulated Material Solid (OIL, PPE, RAGS, DEBRIS)	17	OM	5,404	p	NONE		
	10) Non-DOT Regulated Material Solid (OIL CONTAMINATED DERAMIC SUPPORT MEDIA)	01	-DIA	186	p	NONE	•	
	11) Non-RCRAINon-DOT Regulated Material Solid (spent carbon)	32	DM	11,564	P	NONE		
	12) RQ UN1325, Waste Flammable solids, organic, n.o.s. (cans	01	DM	53	р	10001	0035	FC
	13) Non-DOT Regulated Material Solid (RESIN BEADS)	01	DM	213	p	F005 NONE		-
ł	5) ERG#; ACT14825 WEA(28)55 Dn15) ERG#171; ACT58435 WE ERG#; RC7145 WEA(9)55 Dn15) ERG#171; ACT58435 WE ERG#; RC7145 WEA(9)55 Dn19) ERG#, RC7334 WEA(17)55	A(1)255 D	017) EF 3#; RCI	RG#; AC15	0624 V	(VEA	3)CY	3 ;
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ILITY	5. Discrepancy							

Appendix C Field Methods

Field Methods

Pursuant to the Work Plan for the SMW-2 Area Investigation and Boundary Well Installations, additional groundwater monitoring wells were installed downgradient of evaporation ponds EP-6 and EP-9 and in the SMW-2 area. The field methods are described below and individual discussions are presented for the following activities:

- Drilling procedures;
- Soil screening;
- Decontamination procedures;
- Monitor well development;
- Fluid level measurements;
- Purging of wells/groundwater sample collection;
- Sample collection and handling procedures;
- Equipment calibration; and
- Management of investigation derived waste.

Drilling Procedures

The soil borings were drilled using the hollow-stem auger (HSA) method. Soil samples were collected continuously and logged by a qualified geologist in accordance with the Unified Soil Classification System (USCS) nomenclature. As shown on the boring logs, the data recorded included the lithologic interval, symbol, percent recovery, field screening results, and a sample description of the cuttings and core samples.

Soil Screening

Samples obtained from the borings were screened in the field on 2-foot intervals for evidence of contaminants. Field screening results were recorded on the soil boring logs. Field screening results were used to aid in the selection of soil samples for laboratory analysis. The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds.

Visual screening included examining the soil samples for evidence of staining caused by petroleumrelated compounds or other substances that may have caused staining of soils such as elemental sulfur or cyanide compounds. Headspace vapor screening was conducted and involved placing a soil sample in a plastic sealable bag allowing space for ambient air. The bag was sealed, labeled and then shaken gently to expose the soil to the air trapped in the container. The sealed bag was allowed to rest for a minimum of 5 minutes while the vapors equilibrated. Vapors present within the sample bag's headspace were then measured by inserting the probe of a MiniRae 3000 portable volatile organic constituent (VOC) monitor in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs.

Decontamination Procedures

The drilling equipment (e.g., hollow-stem augers) was decontaminated between each borehole using a high pressure potable water wash. The sampling equipment coming in direct contact with the samples (e.g., hand augers and split-spoon samplers) were decontaminated using a brush, as necessary, to remove larger particulate matter followed by a rinse with potable water, wash with nonphosphate detergent, rinse with potable water, and double rinse with deionized water.

Fluid Level Measurements

The depth to separate phase hydrocarbon, if present, and groundwater was measured prior to purging the wells of potentially stagnant groundwater. A Geotech Interface Probe was used to measure fluid levels to 0.01 foot. Fluid level measurements collected during the field activities are presented in Table 6.

Well Development/Purging

All wells were developed/purged using a new disposable bailer attached to the end of the clean rope. The groundwater and sediment removed from the wells were transported to the bundle cleaning pad in sealed 5-gallon buckets or in a plastic tote.

The purge volumes are calculated as follows:

Volume (gallons) = water column thickness (ft) x 3.14 x radius of well casing² (ft) x 7.48 (gals/ft). The calculated purge volumes and actual volumes removed from each well are presented below.

Well (Date)	Water Column Thickness (ft)	Calculated Purge Volume (gallons) – 3 well volumes	Actual Purge Volume (gallons)
BW-4A	Dry	NA	NA
BW-4B	33.43	16	Bailed down at 12

BW-5A	0.07	NA	NA
BW-5B	48.18	24	Bailed down at 16
BW-5C	75.36	37	45
OW-59	13.50	7	Bailed down at 8
OW-60	34.65	18	Bailed down at 12

NA – not applicable

Field measurements of groundwater stabilization parameters included pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature and the readings are presented in Table 5.

Sample Collection and Handling Procedures

Soil samples were collected using split-spoon samplers. The selected portion of the sample interval was placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. Three soil samples were collected for VOC analysis in the following manner:

- Two sample aliquots were collected using a syringe for low-level VOC analysis pursuant to EPA method 5035. For the sodium bisulfate preserved kits, 4-5 grams (4cc) of soil was injected into each vial using the syringe. The syringes were disposed after soil collection.
- Two sample aliquots were collected using a syringe for preservation with methanol. For the methanol preserved kits, 10 grams (10 cc) of soil was injected into each methanol vial using the syringe. The syringes were disposed after soil collection.
- The third sample aliquot was placed in an 8-ounce glass jar, which was filled to the top to minimize any head space.

Two additional soil samples were collected in 8-ounce glass jars for semivolatile and metals analyses.

Groundwater samples were collected using clean disposable bailers and clean rope. Surface water samples were collected using a decontaminated polypropylene dipper attached to an extendable handle. The water was immediately poured directly into clean laboratory supplied sample containers with the exception of samples collected for dissolved metals analyses. Samples specified for dissolved metals analyses were filtered in the field using a disposable 0.45 micron filter. A new filter and syringe were used for each sample. All samples were immediately placed into an ice chest with

ice. The samples were maintained in the custody of the sampler until the chain-of-custody form was completed and the ice chest was sealed for delivery to the laboratory.

Equipment Calibration

Soil vapor screening was conducted using a MiniRae 3000 portable VOC monitor. The instrument was calibrated at the beginning of each work day to a concentration of 100 ppm isobutylene.

The instruments used to measure groundwater stabilization parameters included an YSI Professional Series Data Logger and YSI Quatro Sonde. The calibration solutions used at the beginning of each day are as follows:

- 4.0 pH solution;
- 7.0 pH solution;
- 10.0 pH solution; and
- 1.413 mS/cm conductivity solution.

Management of Investigation Derived Waste

The drilling rig and drilling equipment were decontaminated on the bundle cleaning pad. The water is diverted to the Refinery's wastewater treatment system up-stream of the API Separator. The decontamination water generated from sampling equipment was collected in buckets and disposed at the bundle cleaning pad at the end of each day of sampling. All development/purge water was collected in five gallon buckets and disposed at the bundle cleaning pad.

Soil cuttings were placed into open top 55-gallon drums and were sealed when not in use. Each drum of soils was labeled and temporarily stored in a concrete curbed area pending waste characterization and disposal.

Appendix D Soil Analytical Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

July 11, 2017

Cheryl Johnson Western Refining Company Rt. 3 Box 7 Gallup, NM 87301 TEL: (505) 722-0231 FAX

RE: SMW-2 AND BOUNDARY WELLS

OrderNo.: 1706910

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 6/15/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

andis

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report
Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Client Sample ID: EB01 Collection Date: 6/12/2017 6:10:00 PM **Project:** SMW-2 AND BOUNDARY WELLS Lab ID: 1706910-001 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM Diesel Range Organics (DRO) ND 0.36 1.0 mg/L 1 6/20/2017 4:35:45 PM 32351 Motor Oil Range Organics (MRO) ND 5.0 5.0 mg/L 1 6/20/2017 4:35:45 PM 32351 Surr: DNOP 121 72.4-157 %Rec 6/20/2017 4:35:45 PM 32351 0 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 6/19/2017 4:33:28 PM G43605 Surr: BFB 114 0 52.3-138 %Rec 1 6/19/2017 4:33:28 PM G43605 **EPA METHOD 200.7: METALS** Analyst: pmf Barium 6/20/2017 3:40:02 PM ND 0.00093 0.0020 mg/L 1 A43653 Beryllium ND 0.00029 0.0020 6/20/2017 3:40:02 PM A43653 mg/L 1 Cadmium ND 0.0010 0.0020 mg/L 1 6/20/2017 3:40:02 PM A43653 Chromium ND 0.0011 0.0060 mg/L 1 6/20/2017 3:40:02 PM A43653 Cobalt ND 0.0016 0.0060 mg/L 1 6/20/2017 3:40:02 PM A43653 ND 0.016 1 A43653 Iron 0.020 mg/L 6/20/2017 3:40:02 PM ND 0.0011 Manganese 0.0020 mg/L 1 6/20/2017 3:40:02 PM A43653 ND A43653 Nickel 0.0036 0.010 mg/L 1 6/20/2017 3:40:02 PM Silver ND 0.00088 0.0050 mg/L 1 6/20/2017 3:40:02 PM A43653 Vanadium ND 0.0019 0.050 mg/L 1 6/20/2017 3:40:02 PM A43653 Zinc ND 0.0028 0.010 1 6/20/2017 3:40:02 PM A43653 mg/L EPA 200.8: METALS Analyst: JLF ND 6/26/2017 4:37:29 PM Antimony 0.00037 0.0010 mg/L 1 B43799 Arsenic ND 0.00030 0.0010 mg/L 1 6/26/2017 4:37:29 PM B43799 6/26/2017 4:37:29 PM B43799 Lead ND 0.00017 0.00050 mg/L 1 Selenium ND 0.00071 0.0010 mg/L 1 6/26/2017 4:37:29 PM B43799 **EPA METHOD 245.1: MERCURY** Analyst: MED ND 0.000037 0.00020 6/27/2017 1:47:23 PM 32504 Mercury mg/L 1 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 3.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 3.5 6/21/2017 4:02:29 PM Acenaphthylene 10 µg/L 32356 1 6/21/2017 4:02:29 PM Aniline ND 3.1 10 µg/L 1 32356 ND 3.5 6/21/2017 4:02:29 PM Anthracene 10 µg/L 1 32356 Azobenzene ND 4.5 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Benz(a)anthracene ND 3.9 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.0 10 6/21/2017 4:02:29 PM 32356 Benzo(a)pyrene µg/L 1 Benzo(b)fluoranthene ND 4.0 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 6/21/2017 4:02:29 PM 32356 Benzo(g,h,i)perylene 4.0 10 µg/L 1 Benzo(k)fluoranthene ND 4.4 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Benzoic acid 7.2 3.9 20 J µg/L 1 6/21/2017 4:02:29 PM 32356

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 Detection Limit

W Sample container temperature is out of limit as specified

Page 1 of 48

Analytical Report Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc. **CLIENT:** Western Refining Company Client Sample ID: EB01 **Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/12/2017 6:10:00 PM Lab ID: 1706910-001 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Benzyl alcohol ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Bis(2-chloroethoxy)methane ND 4.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Bis(2-chloroethyl)ether ND 4.3 10 6/21/2017 4:02:29 PM µg/L 1 32356 Bis(2-chloroisopropyl)ether ND 3.9 10 6/21/2017 4:02:29 PM µg/L 1 32356 ND Bis(2-ethylhexyl)phthalate 4.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4-Bromophenyl phenyl ether ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Butyl benzyl phthalate ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Carbazole ND 4.6 10 1 6/21/2017 4:02:29 PM 32356 µg/L 4-Chloro-3-methylphenol ND 6.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4-Chloroaniline ND 3.5 10 6/21/2017 4:02:29 PM µg/L 1 32356 2-Chloronaphthalene ND 3.7 10 µg/L 1 6/21/2017 4:02:29 PM 32356 2-Chlorophenol ND 7.5 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 3.8 10 1 6/21/2017 4:02:29 PM Chrysene µg/L 32356 Di-n-butyl phthalate ND 5.0 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.7 Di-n-octyl phthalate 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.1 Dibenzofuran 10 µg/L 1 6/21/2017 4:02:29 PM 32356 1.2-Dichlorobenzene ND 2.0 10 1 6/21/2017 4:02:29 PM 32356 µg/L 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 2.1 6/21/2017 4:02:29 PM 1.4-Dichlorobenzene 10 µg/L 1 32356 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Diethyl phthalate ND 4.0 10 1 6/21/2017 4:02:29 PM 32356 µg/L ND 3.6 6/21/2017 4:02:29 PM 32356 Dimethyl phthalate 10 µg/L 1 ND 5.7 2,4-Dichlorophenol 20 µg/L 1 6/21/2017 4:02:29 PM 32356 2.4-Dimethylphenol ND 2.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4,6-Dinitro-2-methylphenol ND 20 6/21/2017 4:02:29 PM 32356 3.9 µg/L 1 2,4-Dinitrophenol ND 2.6 20 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.0 2,4-Dinitrotoluene 10 µg/L 1 6/21/2017 4:02:29 PM 32356 2.6-Dinitrotoluene ND 4.5 10 1 6/21/2017 4:02:29 PM 32356 µg/L Fluoranthene ND 4.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Fluorene ND 4.0 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Hexachlorobenzene ND 3.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Hexachlorobutadiene ND 1.3 10 µg/L 6/21/2017 4:02:29 PM 32356 1 Hexachlorocyclopentadiene ND 1.3 6/21/2017 4:02:29 PM 32356 10 µg/L 1 6/21/2017 4:02:29 PM ND 1.2 Hexachloroethane 10 µg/L 1 32356 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.4 10 Isophorone µg/L 1 6/21/2017 4:02:29 PM 32356 1-Methylnaphthalene ND 3.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

Oualifiers:

S % Recovery outside of range due to dilution or matrix

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 2 of 48

Lab Order 1706910 Date Reported: 7/11/2017

CLIENT: Western Refining Company			Clier	nt Sampl	e ID: EB()1		
Project: SMW-2 AND BOUNDARY WE	ELLS		Col	llection l	Date: 6/12	2/2017	6:10:00 PM	
Lab ID: 1706910-001	Matrix:	AQUEOU	S R	eceived l	Date: 6/15	5/2017	11:15:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
2-Methylnaphthalene	ND	3.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2-Methylphenol	ND	3.3	10		μg/L	1	6/21/2017 4:02:29 PM	32356
3+4-Methylphenol	ND	3.2	10		μg/L	1	6/21/2017 4:02:29 PM	32356
N-Nitrosodi-n-propylamine	ND	4.6	10		µg/L	1	6/21/2017 4:02:29 PM	32356
N-Nitrosodimethylamine	ND	3.5	10		µg/L	1	6/21/2017 4:02:29 PM	32356
N-Nitrosodiphenylamine	ND	3.9	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Naphthalene	ND	2.9	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2-Nitroaniline	ND	4.9	10		µg/L	1	6/21/2017 4:02:29 PM	32356
3-Nitroaniline	ND	4.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
4-Nitroaniline	ND	4.0	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Nitrobenzene	ND	3.6	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2-Nitrophenol	ND	5.2	10		µg/L	1	6/21/2017 4:02:29 PM	32356
4-Nitrophenol	ND	5.5	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Pentachlorophenol	ND	4.9	20		µg/L	1	6/21/2017 4:02:29 PM	32356
Phenanthrene	ND	4.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Phenol	ND	3.1	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Pyrene	ND	4.4	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Pyridine	ND	2.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Surr: 2-Fluorophenol	46.0	0	15-98.1		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: Phenol-d5	36.5	0	15-80.7		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: 2,4,6-Tribromophenol	74.5	0	15-112		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: Nitrobenzene-d5	82.4	0 2	27.2-90.7		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: 2-Fluorobiphenyl	69.5	0 2	23.3-85.6		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: 4-Terphenyl-d14	65.7	0	27.6-107		%Rec	1	6/21/2017 4:02:29 PM	32356
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.062	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Toluene	0.072	0.064	1.0	J	μg/L	1	6/16/2017 11:04:36 PM	B43587
Ethylbenzene	ND	0.093	1.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
Methyl tert-butyl ether (MTBE)	ND	0.24	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,4-Trimethylbenzene	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,3,5-Trimethylbenzene	ND	0.087	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Naphthalene	ND	0.11	2.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
1-Methylnaphthalene	ND	0.16	4.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
2-Methylnaphthalene	ND	0.15	4.0		ua/L	1	6/16/2017 11:04:36 PM	B43587

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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 1706910

Date Reported: 7/11/2017

CLIENT: Project:	Western Refining Company	FUS		Clier	nt Sampl	e ID: EB()1 2/2017	6·10·00 PM	
Lab ID:	1706910-001	Matrix:	AOUEOUS	R	eceived]	Date: 6/12	5/2017	11:15:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	IOD 8260B: VOLATILES							Analyst: DJF	
Acetone		ND	0.82	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromobenz	zene	ND	0.14	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromodich	loromethane	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromoform	1	ND	0.21	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromometh	hane	ND	0.26	3.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
2-Butanone	e	ND	1.1	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Carbon dis	sulfide	ND	0.40	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Carbon Tet	trachloride	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chlorobenz	zene	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chloroetha	ane	ND	0.23	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chloroform	1	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chlorometh	hane	ND	0.29	3.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
2-Chlorotol	luene	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
4-Chlorotol	luene	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
cis-1,2-DC	E	ND	0.20	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
cis-1,3-Dicl	hloropropene	ND	0.082	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dibrom	no-3-chloropropane	ND	1.4	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Dibromoch	loromethane	ND	0.072	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Dibromome	ethane	ND	0.091	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dichlor	robenzene	ND	0.090	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,3-Dichlor	robenzene	ND	0.15	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,4-Dichlor	robenzene	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Dichlorodif	luoromethane	ND	1.0	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1-Dichlor	roethane	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1-Dichlor	roethene	ND	0.081	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dichlor	ropropane	ND	0.10	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,3-Dichlor	ropropane	ND	0.17	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
2,2-Dichlor	ropropane	ND	0.16	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1-Dichlor	ropropene	ND	0.093	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Hexachlorc	obutadiene	ND	0.80	1.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
2-Hexanon	1e	ND	0.66	10		μg/L	1	6/16/2017 11:04:36 PM	B43587
Isopropylbe	enzene	ND	0.051	1.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
4-Isopropvl	Itoluene	ND	0.096	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
4-Methvl-2	pentanone	ND	0.71	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Methvlene	Chloride	ND	0.11	3.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
n-Butvlben	izene	ND	0.13	3.0		ua/L	1	6/16/2017 11:04:36 PM	B43587
n-Propylbe	enzene	ND	0.074	1.0		ua/L	1	6/16/2017 11:04:36 PM	B43587
sec-Butvlbr	enzene	ND	0.11	1.0		ua/l	1	6/16/2017 11:04:36 PM	B43587
eee Bacylot			0.16	1.0		rs, ⊏ ua/l	1	6/16/2017 11:04:36 PM	D 42507

Hall Environmental Analysis Laboratory, Inc.

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

* 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

Qualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Analytical Report Lab Order 1706910

Hall Environmental Analys	sis Labora	tory, Inc	2.				Date Reported	7/11/2017
CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY	WELLS Matrix:	AQUEQUS	Clier Co B	nt Sampl llection 1	le ID: EB(Date: 6/12	01 2/2017 5/2017	6:10:00 PM	
Analyses	Result	MDL	POL	Oual	Units	DF	Date Analyzed	Batch ID
				2			Analyst: DIE	
EFA METHOD 8200B. VOLATILES	ND	0.40	4.0					D 40507
	ND	0.10	1.0		µg/∟	1	6/16/2017 11:04:36 PM	B43587
1,1,1,2-1 etrachloroethane	ND	0.10	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1,2,2-l etrachloroethane	ND	0.14	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
letrachloroethene (PCE)	ND	0.13	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
trans-1,3-Dichloropropene	ND	0.22	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,3-Trichlorobenzene	ND	0.12	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,4-Trichlorobenzene	ND	0.14	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1,1-Trichloroethane	ND	0.073	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Vinyl chloride	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Xylenes, Total	ND	0.32	1.5		µg/L	1	6/16/2017 11:04:36 PM	B43587
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587
Surr: 4-Bromofluorobenzene	96.7	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587
Surr: Toluene-d8	98.6	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte o
	D	Sample Diluted Due to Matrix	Е	Value ab

- 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
- detected in the associated Method Blank
- ove quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY WE	Client Sample ID: EB02C WELLSCollection Date: 6/13/2017 5:15:00 PMMatrix: AQUEOUSReceived Date: 6/15/2017 11:15:00 AM										
Lab ID: 1706910-002											
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: TOM				
Diesel Range Organics (DRO)	ND	0.36	1.0		mg/L	1	6/20/2017 5:43:20 PM	32351			
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	6/20/2017 5:43:20 PM	32351			
Surr: DNOP	122	0	72.4-157		%Rec	1	6/20/2017 5:43:20 PM	32351			
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB				
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	6/19/2017 4:57:21 PM	G43605			
Surr: BFB	116	0	52.3-138		%Rec	1	6/19/2017 4:57:21 PM	G43605			
EPA METHOD 200.7: METALS							Analyst: pmf				
Barium	ND	0.00093	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Beryllium	ND	0.00029	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Cadmium	ND	0.0010	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Chromium	ND	0.0011	0.0060		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Cobalt	ND	0.0016	0.0060		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Iron	ND	0.016	0.020		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Manganese	ND	0.0011	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Nickel	ND	0.0036	0.010		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Silver	ND	0.00088	0.0050		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Vanadium	ND	0.0019	0.050		mg/L	1	6/20/2017 3:44:25 PM	A43653			
Zinc	ND	0.0028	0.010		mg/L	1	6/20/2017 3:44:25 PM	A43653			
EPA 200.8: METALS							Analyst: JLF				
Antimony	ND	0.00037	0.0010		mg/L	1	6/26/2017 4:42:37 PM	B43799			
Arsenic	ND	0.00030	0.0010		mg/L	1	6/26/2017 4:42:37 PM	B43799			
Lead	ND	0.00017	0.00050		mg/L	1	6/26/2017 4:42:37 PM	B43799			
Selenium	ND	0.00071	0.0010		mg/L	1	6/26/2017 4:42:37 PM	B43799			
EPA METHOD 245.1: MERCURY							Analyst: MED				
Mercury	ND	0.000037	0.00020		mg/L	1	6/27/2017 1:49:21 PM	32504			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC				
Acenaphthene	ND	3.6	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Acenaphthylene	ND	3.5	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Aniline	ND	3.1	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Anthracene	ND	3.5	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Azobenzene	ND	4.5	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Benz(a)anthracene	ND	3.9	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Benzo(a)pyrene	ND	4.0	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Benzo(k)fluoranthene		4.4	10		µg/L	1	6/21/2017 4:30:48 PM	32356			
Benzoic acid	7.1	3.9	20	J	µg/L	1	6/21/2017 4:30:48 PM	32356			

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

Н 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 В Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 6 of 48

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company **Client Sample ID: EB02 Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/13/2017 5:15:00 PM Lab ID: 1706910-002 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 6/21/2017 4:30:48 PM Benzyl alcohol ND 4.6 10 µg/L 1 32356 Bis(2-chloroethoxy)methane ND 4.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Bis(2-chloroethyl)ether ND 4.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 3.9 10 Bis(2-chloroisopropyl)ether µg/L 1 6/21/2017 4:30:48 PM 32356 J Bis(2-ethylhexyl)phthalate 5.0 4.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Bromophenyl phenyl ether ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Butyl benzyl phthalate ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Carbazole ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Chloro-3-methylphenol ND 6.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Chloroaniline ND 3.5 10 6/21/2017 4:30:48 PM µg/L 1 32356 2-Chloronaphthalene ND 3.7 10 µg/L 1 6/21/2017 4:30:48 PM 32356 2-Chlorophenol ND 7.5 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 3.8 10 1 Chrysene µg/L 6/21/2017 4:30:48 PM 32356 ND 5.0 Di-n-butyl phthalate 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4.7 Di-n-octyl phthalate ND 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 4.1 Dibenzofuran 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 2.0 10 1 6/21/2017 4:30:48 PM 32356 1,2-Dichlorobenzene µg/L 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 2.1 1.4-Dichlorobenzene 10 µg/L 1 6/21/2017 4:30:48 PM 32356 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 4.0 10 1 32356 Diethyl phthalate µg/L 6/21/2017 4:30:48 PM ND 3.6 6/21/2017 4:30:48 PM 32356 Dimethyl phthalate 10 µg/L 1 ND 5.7 2,4-Dichlorophenol 20 µg/L 1 6/21/2017 4:30:48 PM 32356 2.4-Dimethylphenol ND 2.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4,6-Dinitro-2-methylphenol ND 20 6/21/2017 4:30:48 PM 32356 3.9 µg/L 1 2,4-Dinitrophenol ND 2.6 20 µg/L 1 6/21/2017 4:30:48 PM 32356 4.0 2,4-Dinitrotoluene ND 10 µg/L 1 6/21/2017 4:30:48 PM 32356 2.6-Dinitrotoluene ND 4.5 10 1 6/21/2017 4:30:48 PM 32356 µg/L Fluoranthene ND 4.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Fluorene ND 4.0 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Hexachlorobenzene ND 3.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Hexachlorobutadiene ND 1.3 10 µg/L 6/21/2017 4:30:48 PM 32356 1 ND 1.3 6/21/2017 4:30:48 PM Hexachlorocyclopentadiene 10 µg/L 1 32356 ND 1.2 Hexachloroethane 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 4.4 10 Isophorone µg/L 1 6/21/2017 4:30:48 PM 32356 1-Methylnaphthalene ND 3.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

CLIENT: Western Refining Company	Client Sample ID: EB02										
Project: SMW-2 AND BOUNDARY W	ELLS Collection Date: 6/13/2017 5:15:00 PM										
Lab ID: 1706910-002	Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM										
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC				
2-Methylnaphthalene	ND	3.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
2-Methylphenol	ND	3.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
3+4-Methylphenol	ND	3.2	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
N-Nitrosodi-n-propylamine	ND	4.6	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
N-Nitrosodimethylamine	ND	3.5	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
N-Nitrosodiphenylamine	ND	3.9	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
Naphthalene	ND	2.9	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
2-Nitroaniline	ND	4.9	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
3-Nitroaniline	ND	4.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
4-Nitroaniline	ND	4.0	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
Nitrobenzene	ND	3.6	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
2-Nitrophenol	ND	5.2	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
4-Nitrophenol	ND	5.5	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
Pentachlorophenol	ND	4.9	20		ua/L	1	6/21/2017 4:30:48 PM	32356			
Phenanthrene	ND	4.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
Phenol	ND	3.1	10		ua/L	1	6/21/2017 4:30:48 PM	32356			
Pyrene	ND	4.4	10		µg/=	1	6/21/2017 4:30:48 PM	32356			
Pyridine	ND	2.3	10		µg/=	1	6/21/2017 4:30:48 PM	32356			
1 2 4-Trichlorobenzene	ND	21	10		на/I	1	6/21/2017 4:30:48 PM	32356			
2 4 5-Trichlorophenol	ND	5.1	10		μg/L	1	6/21/2017 4:30:48 PM	32356			
2 4 6-Trichlorophenol	ND	5.5	10		μg/L	1	6/21/2017 4:30:48 PM	32356			
Surr: 2-Eluorophenol	45.9	0.0	15-98 1		%Rec	1	6/21/2017 4:30:48 PM	32356			
Surr: Phenol-d5	34.4	0	15-80.7		%Rec	1	6/21/2017 4:30:48 PM	32356			
Surr: 2.4.6-Tribromophenol	76.8	0	15-112		%Rec	1	6/21/2017 4:30:48 PM	32356			
Surr: Nitrobenzene-d5	80.1	0	27 2-90 7		%Rec	1	6/21/2017 4:30:48 PM	32356			
Surr: 2-Eluorobiohenvl	68.9	0	23.3-85.6		%Rec	1	6/21/2017 4:30:48 PM	32356			
Surr: 4-Terobenyl-d14	67.6	0	27 6-107		%Rec	1	6/21/2017 4:30:48 PM	32356			
EPA METHOD 8260B: VOLATILES	0110	Ũ	21.0 101		,01100	·	Analyst: DJF	02000			
Bonzono		0.062	1.0		ua/l	1	6/16/2017 11:22:50 DM	B12597			
	0.085	0.002	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587			
Ethylbonzono	0.005	0.004	1.0	J	µg/L	1	6/16/2017 11:32:59 FW	D43307			
Methyl tert-butyl ether (MTRE)		0.035	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587			
1.2.4 Trimothylbonzono		0.24	1.0		µg/L	1	6/16/2017 11:32:59 FW	D43307			
1 3 5-Trimethylbenzene		0.11	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587			
1.2-Dichloroethane (EDC)		0.007	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587			
1 2-Dibromoethane (EDB)		0.40	1.0		μg/L μα/Ι	1	6/16/2017 11:32:39 FIVI	B43587			
Nanhthalene		0.13	1.0 2.0		μg/L μα/Ι	1	6/16/2017 11:32:39 FW	B/3587			
1-Methylpenhthelene		0.11	2.U		μg/L μg/l	1	6/16/2017 11.32.39 PW	B/3587			
		0.10	4.0		μg/L μg/l	1	6/16/2017 11.32.39 PM	B43507			
z-memyinaphmaiene	ND	0.15	4.0		µg/∟	1	0/10/2017 11:32:59 PM	040001			

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

Hall Environmental Analysis Laboratory, Inc.

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 Detection Limit

W Sample container temperature is out of limit as specified

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Analytical Report
Lab Order 1706910

Date Reported: 7/11/2017

CLIENT: Western Refining Company **Client Sample ID: EB02 Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/13/2017 5:15:00 PM Lab ID: 1706910-002 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8260B: VOLATILES** Analyst: DJF Acetone ND 0.82 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Bromobenzene ND 0.14 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Bromodichloromethane ND 0.18 1.0 6/16/2017 11:32:59 PM µg/L 1 B43587 ND 6/16/2017 11:32:59 PM Bromoform 0.21 1.0 µg/L 1 B43587 ND Bromomethane 0.26 3.0 µg/L 1 6/16/2017 11:32:59 PM B43587 2-Butanone ND 1.1 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Carbon disulfide ND 0.40 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Chlorobenzene ND 0.11 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Chloroethane ND 0.23 2.0 6/16/2017 11:32:59 PM µg/L 1 B43587 Chloroform ND 0.40 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Chloromethane ND 0.29 3.0 µg/L 1 6/16/2017 11:32:59 PM B43587 2-Chlorotoluene ND 0.40 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.40 1.0 1 4-Chlorotoluene µg/L 6/16/2017 11:32:59 PM B43587 ND 0.20 cis-1,2-DCE 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND cis-1,3-Dichloropropene 0.082 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.072 6/16/2017 11:32:59 PM Dibromochloromethane 1.0 µg/L 1 B43587 Dibromomethane ND 0.091 1.0 1 6/16/2017 11:32:59 PM B43587 µg/L 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.15 1.0 B43587 1,3-Dichlorobenzene µg/L 1 6/16/2017 11:32:59 PM 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Dichlorodifluoromethane ND 1.0 1.0 1 6/16/2017 11:32:59 PM B43587 µg/L 1,1-Dichloroethane ND 0.40 6/16/2017 11:32:59 PM B43587 1.0 µg/L 1 ND 0.081 6/16/2017 11:32:59 PM 1,1-Dichloroethene 1.0 µg/L 1 B43587 1.2-Dichloropropane ND 0.10 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.17 6/16/2017 11:32:59 PM B43587 1,3-Dichloropropane 1.0 µg/L 1 2,2-Dichloropropane ND 0.16 2.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.093 1,1-Dichloropropene 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Hexachlorobutadiene ND 0.80 1.0 1 6/16/2017 11:32:59 PM B43587 µg/L 2-Hexanone ND 0.66 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Isopropylbenzene ND 0.051 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 4-Isopropyltoluene ND 0.096 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 4-Methyl-2-pentanone ND 0.71 10 µg/L 6/16/2017 11:32:59 PM B43587 1 Methylene Chloride ND 0.11 3.0 6/16/2017 11:32:59 PM B43587 µg/L 1 ND 0.13 3.0 B43587 n-Butylbenzene µg/L 1 6/16/2017 11:32:59 PM n-Propylbenzene ND 0.074 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 sec-Butylbenzene ND 1.0 0.11 µg/L 1 6/16/2017 11:32:59 PM B43587 Stvrene ND 0.16 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587

Hall Environmental Analysis Laboratory, Inc.

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

* 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

Oualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Analytical Report Lab Order 1706910

Date Reported: 7/11/2017

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY	WELLS	Client Sample ID: EB02 Collection Date: 6/13/2017 5:15:00 PM								
Lab ID: 1706910-002	Matrix:	Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
tert-Butylbenzene	ND	0.10	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
1,1,1,2-Tetrachloroethane	ND	0.10	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
1,1,2,2-Tetrachloroethane	ND	0.14	2.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
Tetrachloroethene (PCE)	ND	0.13	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
trans-1,3-Dichloropropene	ND	0.22	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
1,2,3-Trichlorobenzene	ND	0.12	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
1,2,4-Trichlorobenzene	ND	0.14	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
1,1,1-Trichloroethane	ND	0.073	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
Vinyl chloride	ND	0.18	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587		
Xylenes, Total	ND	0.32	1.5		µg/L	1	6/16/2017 11:32:59 PM	B43587		
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587		
Surr: 4-Bromofluorobenzene	98.0	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587		
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587		
Surr: Toluene-d8	102	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in t
	D	Sample Diluted Due to Matrix	Е	Value above quantitation

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- the associated Method Blank
- ation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Analytical Report
Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY V Lab ID: 1706910-003	VELLS Matrix:	Collection Date: 6/12/2017 5:00:00 PM Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8015M/D: DIESEL RANGI	E ORGANICS						Analyst: TOM				
Diesel Range Organics (DRO)	ND	1.5	9.5		ma/Ka	1	6/20/2017 11:00:19 AM	32362			
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	6/20/2017 11:00:19 AM	32362			
Surr: DNOP	89.5	0	70-130		%Rec	1	6/20/2017 11:00:19 AM	32362			
EPA METHOD 8015D: GASOLINE RANG	θE						Analyst: NSB				
Gasoline Range Organics (GRO)	ND	1.1	5.0		ma/Ka	1	6/19/2017 4:40:03 PM	32325			
Surr: BFB	102	0	54-150		%Rec	1	6/19/2017 4:40:03 PM	32325			
EPA METHOD 7471: MERCURY							Analyst: ELS				
Mercury	ND	0.0063	0.031		mg/Kg	1	6/20/2017 11:30:58 AM	32380			
EPA METHOD 6010B: SOIL METALS					0		Analyst: MED				
Antimony	ND	1.0	2.5		mg/Ka	1	6/26/2017 8:40:45 AM	32349			
Arsenic	ND	0.88	2.5		ma/Ka	1	6/20/2017 12:32:04 PM	32349			
Barium	130	0.070	0.099		mg/Kg	1	6/26/2017 8:40:45 AM	32349			
Beryllium	0.34	0.034	0.15		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Cadmium	ND	0.063	0.099		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Chromium	4.6	0.093	0.30		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Cobalt	2.1	0.11	0.30		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Iron	6400	37	120		mg/Kg	50	6/26/2017 8:58:04 AM	32349			
Lead	0.72	0.17	0.25		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Manganese	180	0.053	0.099		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Nickel	3.5	0.15	0.49		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Selenium	ND	1.8	2.5		mg/Kg	1	6/26/2017 8:40:45 AM	32349			
Silver	ND	0.062	0.25		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Vanadium	11	0.17	2.5		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Zinc	7.5	0.34	2.5		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM				
Acenaphthene	ND	0.16	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Acenaphthylene	ND	0.18	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Aniline	ND	0.11	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Anthracene	ND	0.18	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Azobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benz(a)anthracene	ND	0.17	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(a)pyrene	ND	0.16	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(b)fluoranthene	ND	0.19	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(k)fluoranthene	ND	0.15	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzoic acid	ND	0.15	0.50		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzyl alcohol	ND	0.17	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			

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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 11 of 48

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Client Sample ID: OW-59 (33-34') **Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/12/2017 5:00:00 PM Lab ID: 1706910-003 Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: DAM Bis(2-chloroethoxy)methane ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Bis(2-chloroethyl)ether ND 0.13 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Bis(2-chloroisopropyl)ether ND 0.20 0.20 6/28/2017 11:41:38 AM mg/Kg 1 32411 Bis(2-ethylhexyl)phthalate 0.21 J 0.19 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 6/28/2017 11:41:38 AM 4-Bromophenyl phenyl ether 0.16 0.20 mg/Kg 32411 1 Butyl benzyl phthalate ND 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Carbazole ND 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Chloro-3-methylphenol ND 0.18 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Chloroaniline ND 0.15 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 2-Chloronaphthalene ND 0.18 0.25 6/28/2017 11:41:38 AM 32411 mg/Kg 1 2-Chlorophenol ND 0.14 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Chlorophenyl phenyl ether ND 0.15 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.15 0.20 1 6/28/2017 11:41:38 AM 32411 Chrysene mg/Kg 0.17 0.11 0.40 J 1 Di-n-butyl phthalate mg/Kg 6/28/2017 11:41:38 AM 32411 ND Di-n-octyl phthalate 0.15 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Dibenz(a,h)anthracene 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Dibenzofuran ND 0.17 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.15 1,2-Dichlorobenzene 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 1,3-Dichlorobenzene ND 0.14 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 1,4-Dichlorobenzene ND 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 3.3'-Dichlorobenzidine ND 0.15 0.25 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Diethyl phthalate 0.19 0.17 0.20 J mg/Kg 1 6/28/2017 11:41:38 AM 32411 Dimethyl phthalate ND 0.19 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 2,4-Dichlorophenol ND 0.16 0.40 6/28/2017 11:41:38 AM mg/Kg 1 32411 ND 0.088 0.30 2,4-Dimethylphenol mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 4.6-Dinitro-2-methylphenol 0.15 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 2,4-Dinitrophenol ND 0.12 0.50 6/28/2017 11:41:38 AM 32411 mg/Kg 1 2.4-Dinitrotoluene ND 0.19 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.17 2,6-Dinitrotoluene 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Fluoranthene ND 0.17 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 Fluorene ND 0.15 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Hexachlorobenzene ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Hexachlorobutadiene ND 0.17 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Hexachlorocyclopentadiene ND 0.16 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 ND 0.14 0.20 6/28/2017 11:41:38 AM Hexachloroethane mg/Kg 1 32411 ND 0.16 Indeno(1,2,3-cd)pyrene 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Isophorone ND 0.19 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 1-Methylnaphthalene ND 0.19 0.20 32411 mg/Kg 1 6/28/2017 11:41:38 AM 2-Methylnaphthalene ND 0.17 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411

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

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 12 of 48

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Client Sample ID: OW-59 (33-34') **Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/12/2017 5:00:00 PM Lab ID: 1706910-003 Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: DAM 2-Methylphenol ND 0.15 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 3+4-Methylphenol ND 0.13 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 N-Nitrosodi-n-propylamine ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 N-Nitrosodiphenylamine ND 0.19 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Naphthalene 0.18 0.20 mg/Kg 32411 1 6/28/2017 11:41:38 AM 2-Nitroaniline ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 3-Nitroaniline ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Nitroaniline ND 0.17 0.40 1 6/28/2017 11:41:38 AM 32411 mg/Kg Nitrobenzene ND 0.17 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 6/28/2017 11:41:38 AM ND 0.19 0.20 32411 2-Nitrophenol mg/Kg 1 4-Nitrophenol ND 0.15 0.25 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Pentachlorophenol ND 0 17 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Phenanthrene ND 0.18 0.20 1 6/28/2017 11:41:38 AM 32411 mg/Kg ND 0.14 0.20 Phenol mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Pyrene 0.15 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Pyridine 0.13 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 1,2,4-Trichlorobenzene ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.15 0.20 2,4,5-Trichlorophenol mg/Kg 1 6/28/2017 11:41:38 AM 32411 2,4,6-Trichlorophenol ND 0.16 0.20 6/28/2017 11:41:38 AM mg/Kg 1 32411 Surr: 2-Fluorophenol 52.0 0 21.4-101 %Rec 1 6/28/2017 11:41:38 AM 32411 Surr: Phenol-d5 55.4 0 32-110 %Rec 1 6/28/2017 11:41:38 AM 32411 Surr: 2,4,6-Tribromophenol 64.4 Λ 38.7-115 %Rec 1 6/28/2017 11:41:38 AM 32411 Surr: Nitrobenzene-d5 63.6 26.2-120 %Rec 1 32411 6/28/2017 11:41:38 AM Surr: 2-Fluorobiphenyl 61.0 36.2-124 %Rec 6/28/2017 11:41:38 AM 32411 1 45.0 15-114 %Rec 6/28/2017 11:41:38 AM Surr: 4-Terphenyl-d14 1 32411 METHOD 8260B/5035LOW: VOLATILES Analyst: RAA Benzene 1.86 0.113 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Toluene 0.833 0.116 0.801 6/19/2017 3:57:00 PM 32370 µg/Kg 1 Ethylbenzene 0.264 0.132 0.801 J µg/Kg 1 6/19/2017 3:57:00 PM 32370 0.657 0.340 J Methyl tert-butyl ether (MTBE) 0.801 1 6/19/2017 3:57:00 PM 32370 µg/Kg 1.2.4-Trimethylbenzene ND 0.241 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370 1,3,5-Trimethylbenzene ND 0.219 0.801 6/19/2017 3:57:00 PM µg/Kg 1 32370 1,2-Dichloroethane (EDC) ND 0.162 0.801 1 6/19/2017 3:57:00 PM 32370 µg/Kg 1,2-Dibromoethane (EDB) ND 0.151 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Naphthalene 0.336 0.167 1.60 J 6/19/2017 3:57:00 PM 32370 µg/Kg 1 1-Methylnaphthalene 0.336 0.206 3.20 J µg/Kg 1 6/19/2017 3:57:00 PM 32370 2-Methylnaphthalene 0.368 J 0.168 3.20 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Acetone 11.9 0.485 8.01 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Bromobenzene ND 0.195 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY W	y Client Sample ID: OW-59 (33-34') CY WELLS Collection Date: 6/12/2017 5:00:00 PM								
Lab ID: 1706910-003	Matrix:	SOIL	R	eceived I	Date: 6/15	5/2017	11:15:00 AM		
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA		
Bromodichloromethane	ND	0.184	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Bromoform	ND	0.170	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Bromomethane	ND	0.386	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
2-Butanone	ND	0.600	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Carbon disulfide	ND	0.321	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Carbon tetrachloride	ND	0.148	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Chlorobenzene	ND	0.122	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Chloroethane	ND	0.158	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Chloroform	ND	0.172	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Chloromethane	ND	0.202	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
2-Chlorotoluene	ND	0.170	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
4-Chlorotoluene	ND	0.175	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
cis-1,2-DCE	ND	0.165	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
cis-1,3-Dichloropropene	ND	0.128	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,2-Dibromo-3-chloropropane	ND	0.214	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Dibromochloromethane	ND	0.113	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Dibromomethane	ND	0.129	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,2-Dichlorobenzene	ND	0.172	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,3-Dichlorobenzene	ND	0.164	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,4-Dichlorobenzene	ND	0.169	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Dichlorodifluoromethane	ND	0.164	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,1-Dichloroethane	ND	0.138	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,1-Dichloroethene	ND	0.133	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,2-Dichloropropane	ND	0.160	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,3-Dichloropropane	ND	0.143	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
2,2-Dichloropropane	ND	0.129	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,1-Dichloropropene	ND	0.159	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Hexachlorobutadiene	ND	0.227	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
2-Hexanone	ND	0.281	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Isopropylbenzene	ND	0.195	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
4-Isopropyltoluene	ND	0.234	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
4-Methyl-2-pentanone	ND	0.474	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Methylene chloride	ND	0.319	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
n-Butylbenzene	ND	0.186	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
n-Propylbenzene	ND	0.228	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
sec-Butylbenzene	ND	0.234	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
Styrene	ND	0.147	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
tert-Butylbenzene	ND	0.250	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	
1,1,1,2-Tetrachloroethane	ND	0.133	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370	

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company			Clier	nt Sampl	le ID: OW	/-59 (33	3-34')	
Project: SMW-2 AND BOUNDARY W	ELLS		Со	llection	Date: 6/12	2/2017	5:00:00 PM	
Lab ID: 1706910-003	Matrix:	SOIL	R	11:15:00 AM				
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA	
1,1,2,2-Tetrachloroethane	ND	0.164	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370
Tetrachloroethene (PCE)	ND	0.102	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
trans-1,2-DCE	ND	0.164	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
trans-1,3-Dichloropropene	ND	0.117	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
1,2,3-Trichlorobenzene	ND	0.141	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
1,2,4-Trichlorobenzene	ND	0.165	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
1,1,1-Trichloroethane	ND	0.139	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
1,1,2-Trichloroethane	ND	0.113	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
Trichloroethene (TCE)	ND	0.130	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
Trichlorofluoromethane	ND	0.114	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
1,2,3-Trichloropropane	ND	0.326	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370
Vinyl chloride	ND	0.146	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370
Xylenes, Total	1.00	0.439	1.60	J	µg/Kg	1	6/19/2017 3:57:00 PM	32370
Surr: 1,2-Dichloroethane-d4	147	0	70-130	S	%Rec	1	6/19/2017 3:57:00 PM	32370
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	6/19/2017 3:57:00 PM	32370
Surr: Dibromofluoromethane	129	0	70-130		%Rec	1	6/19/2017 3:57:00 PM	32370
Surr: Toluene-d8	96.5	0	70-130		%Rec	1	6/19/2017 3:57:00 PM	32370

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В
	D	Sample Diluted Due to Matrix	Е

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Analytical Report
Lab Order 1706910

Date Reported: 7/11/2017

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY V Lab ID: 1706910-004	WELLS Matrix:	Client Sample ID: OW-60 (20-22') ELLS Collection Date: 6/13/2017 4:05:00 PM Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM										
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS						Analyst: TOM					
Diesel Range Organics (DRO)	ND	1.5	9.5		ma/Ka	1	6/20/2017 11:28:46 AM	32362				
Motor Oil Range Organics (MRO)	ND	47	47		ma/Ka	1	6/20/2017 11:28:46 AM	32362				
Surr: DNOP	90.7	0	70-130		%Rec	1	6/20/2017 11:28:46 AM	32362				
EPA METHOD 8015D: GASOLINE RANG	ЭE						Analyst: NSB					
Gasoline Range Organics (GRO)	ND	1.1	5.0		ma/Ka	1	6/19/2017 5:04:24 PM	32325				
Surr: BFB	95.7	0	54-150		%Rec	1	6/19/2017 5:04:24 PM	32325				
		-			,	-	Analyst: FI S					
	ND	0.0063	0.031		ma/Ka	1	6/20/2017 11:32:38 AM	32380				
		0.0000	0.001		iiig/itg		Analyst: MED	02000				
		1.0	25		ma/Ka	1	6/20/2017 12:26:26 DM	22240				
Arsenic	13	0.88	2.5		mg/Kg	1	6/20/2017 12:30:20 PM	32349				
Barium	1.0	0.00	0.099	5	ma/Ka	1	6/20/2017 12:36:26 PM	32349				
Bervllium	0.52	0.071	0.000		ma/Ka	1	6/20/2017 12:36:26 PM	32349				
Cadmium	ND	0.063	0.099		ma/Ka	1	6/20/2017 12:36:26 PM	32349				
Chromium	6.4	0.094	0.30		ma/Ka	1	6/20/2017 12:36:26 PM	32349				
Cobalt	3.1	0.11	0.30		ma/Ka	1	6/20/2017 12:36:26 PM	32349				
Iron	10000	38	120		ma/Ka	50	6/26/2017 9:01:24 AM	32349				
Lead	1.6	0.17	0.25		mg/Kg	1	6/20/2017 12:36:26 PM	32349				
Manganese	470	0.27	0.50		mg/Kg	5	6/26/2017 8:59:45 AM	32349				
Nickel	4.9	0.15	0.50		mg/Kg	1	6/20/2017 12:36:26 PM	32349				
Selenium	ND	1.8	2.5		mg/Kg	1	6/20/2017 12:36:26 PM	32349				
Silver	ND	0.062	0.25		mg/Kg	1	6/20/2017 12:36:26 PM	32349				
Vanadium	14	0.17	2.5		mg/Kg	1	6/20/2017 12:36:26 PM	32349				
Zinc	10	0.35	2.5		mg/Kg	1	6/20/2017 12:36:26 PM	32349				
EPA METHOD 8270C: SEMIVOLATILES	i						Analyst: DAM					
Acenaphthene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Acenaphthylene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Aniline	ND	0.11	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Anthracene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Azobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Benz(a)anthracene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Benzo(a)pyrene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Benzo(b)fluoranthene	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Benzo(k)fluoranthene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Benzoic acid	ND	0.15	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411				
Benzyl alcohol	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411				

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

Hall Environmental Analysis Laboratory, Inc.

- 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 Page 16 of 48
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company	Client Sample ID: OW-60 (20-22')									
Project: SMW-2 AND BOUNDARY WI		COL		liection I	ION Daw; 0/15/2017 4:05:00 PM					
Lab ID: 1706910-004	Matrix:	SOIL	R	eceived I	Date: 6/15	/2017	11:15:00 AM			
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM			
Bis(2-chloroethoxy)methane	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Bis(2-chloroethyl)ether	ND	0.13	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Bis(2-chloroisopropyl)ether	ND	0.20	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Bis(2-ethylhexyl)phthalate	0.25	0.19	0.50	J	mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Bromophenyl phenyl ether	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Butyl benzyl phthalate	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Carbazole	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Chloro-3-methylphenol	ND	0.18	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Chloroaniline	ND	0.15	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2-Chloronaphthalene	ND	0.18	0.25		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2-Chlorophenol	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Chlorophenyl phenyl ether	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Chrysene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Di-n-butyl phthalate	0.34	0.11	0.40	J	mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Di-n-octyl phthalate	ND	0.15	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Dibenz(a,h)anthracene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Dibenzofuran	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1,2-Dichlorobenzene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1,3-Dichlorobenzene	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1,4-Dichlorobenzene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Diethyl phthalate	0.26	0.17	0.20	В	mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Dimethyl phthalate	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dichlorophenol	ND	0.16	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dimethylphenol	ND	0.089	0.30		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4,6-Dinitro-2-methylphenol	ND	0.15	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dinitrophenol	ND	0.12	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dinitrotoluene	ND	0.19	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,6-Dinitrotoluene	ND	0.18	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Fluoranthene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Fluorene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachlorobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachlorobutadiene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachlorocyclopentadiene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachloroethane	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Indeno(1,2,3-cd)pyrene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Isophorone	ND	0.19	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1-Methylnaphthalene	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2-Methylnaphthalene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY W	Client Sample ID: OW-60 (20-22') ELLS Collection Date: 6/13/2017 4:05:00 PM										
Lab ID: 1706910-004	Matrix:	SOIL	R	eceived 1	Date: 6/15	5/2017	11:15:00 AM				
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM				
2-Methylphenol	ND	0.15	0.40		ma/Ka	1	6/28/2017 1:04:56 PM	32411			
3+4-Methylphenol	ND	0.13	0.20		ma/Ka	1	6/28/2017 1:04:56 PM	32411			
N-Nitrosodi-n-propylamine	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
N-Nitrosodiphenylamine	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Naphthalene	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2-Nitroaniline	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
3-Nitroaniline	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
4-Nitroaniline	ND	0.17	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Nitrobenzene	ND	0.17	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2-Nitrophenol	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
4-Nitrophenol	ND	0.15	0.25		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Pentachlorophenol	ND	0.17	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Phenanthrene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Phenol	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Pyrene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Pyridine	ND	0.13	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
1,2,4-Trichlorobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2,4,5-Trichlorophenol	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2.4.6-Trichlorophenol	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Surr: 2-Fluorophenol	61.6	0	21.4-101		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: Phenol-d5	66.8	0	32-110		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: 2,4,6-Tribromophenol	76.3	0	38.7-115		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: Nitrobenzene-d5	70.3		26.2-120		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: 2-Fluorobiphenyl	73.0		36.2-124		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: 4-Terphenyl-d14	66.5		15-114		%Rec	1	6/28/2017 1:04:56 PM	32411			
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA				
Benzene	0 728	0 0973	0.687		ua/Ka	1	6/19/2017 4·23·00 PM	32370			
Toluene	0.440	0.0997	0.687	.1	ua/Ka	1	6/19/2017 4·23·00 PM	32370			
Ethylbenzene	0 151	0 113	0.687	.1	ua/Ka	1	6/19/2017 4·23·00 PM	32370			
Methyl tert-butyl ether (MTBE)	ND	0 292	0.687	0	ua/Ka	1	6/19/2017 4·23·00 PM	32370			
1 2 4-Trimethylbenzene	ND	0.207	0.687		ua/Ka	1	6/19/2017 4·23·00 PM	32370			
1 3 5-Trimethylbenzene	ND	0.188	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370			
1 2-Dichloroethane (EDC)	ND	0.100	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370			
1 2-Dibromoethane (EDB)	ND	0.100	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370			
Nanhthalene		0.123	1 37		µg/Kg µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1-Methylnaphthalene	0 261	0.177	2 75	.1	на/Ка	1	6/19/2017 4·23·00 PM	32370			
2-Methylnaphthalene	0.201	0 144	2.75	Т	на/Ка	1	6/19/2017 4·23·00 PM	32370			
Acetone	11 0	0.144	6.87	0	на/Ка	1	6/19/2017 4·23·00 PM	32370			
Bromobenzene		0.167	0.687		на/Ка	1	6/19/2017 1.23.00 PM	32370			
DIOMODELIZENE		0.107	0.007		pg/rtg	1	0/13/2017 4.23.00 FM	32370			

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY WE Lab ID: 1706910-004	Client Sample ID: OW-60 (20-22') ELLS Collection Date: 6/13/2017 4:05:00 PM Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM										
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA				
Bromodichloromethane	ND	0.158	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370			
Bromoform	ND	0.146	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Bromomethane	ND	0.331	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
2-Butanone	ND	0.515	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Carbon disulfide	ND	0.275	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Carbon tetrachloride	ND	0.127	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Chlorobenzene	ND	0.105	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Chloroethane	ND	0.135	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Chloroform	ND	0.147	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Chloromethane	ND	0.173	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
2-Chlorotoluene	ND	0.146	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
4-Chlorotoluene	ND	0.150	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
cis-1,2-DCE	ND	0.142	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
cis-1,3-Dichloropropene	ND	0.110	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,2-Dibromo-3-chloropropane	ND	0.184	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Dibromochloromethane	ND	0.0974	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Dibromomethane	ND	0.111	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,2-Dichlorobenzene	ND	0.147	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,3-Dichlorobenzene	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,4-Dichlorobenzene	ND	0.145	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Dichlorodifluoromethane	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,1-Dichloroethane	ND	0.118	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,1-Dichloroethene	ND	0.114	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,2-Dichloropropane	ND	0.137	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,3-Dichloropropane	ND	0.123	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
2,2-Dichloropropane	ND	0.111	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,1-Dichloropropene	ND	0.136	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Hexachlorobutadiene	ND	0.195	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
2-Hexanone	ND	0.241	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Isopropylbenzene	ND	0.167	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
4-Isopropyltoluene	ND	0.201	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
4-Methyl-2-pentanone	ND	0.406	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Methylene chloride	ND	0.273	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
n-Butylbenzene	ND	0.160	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
n-Propylbenzene	ND	0.196	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
sec-Butylbenzene	ND	0.201	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
Styrene	ND	0.126	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
tert-Butylbenzene	ND	0.214	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1,1,1,2-Tetrachloroethane	ND	0.114	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370			

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order **1706910**

Date Reported: 7/11/2017

CLIENT: Western Refining Company	Client Sample ID: OW-60 (20-22')									
Project: SMW-2 AND BOUNDARY W	ELLS Collection Date: 6/13/2017 4:05:00 PM									
Lab ID: 1706910-004	Matrix:									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA			
1,1,2,2-Tetrachloroethane	ND	0.141	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Tetrachloroethene (PCE)	ND	0.0879	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
trans-1,2-DCE	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
trans-1,3-Dichloropropene	ND	0.101	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,2,3-Trichlorobenzene	ND	0.121	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,2,4-Trichlorobenzene	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,1,1-Trichloroethane	ND	0.119	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,1,2-Trichloroethane	ND	0.0971	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Trichloroethene (TCE)	ND	0.111	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Trichlorofluoromethane	ND	0.0981	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,2,3-Trichloropropane	ND	0.280	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Vinyl chloride	ND	0.125	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Xylenes, Total	0.708	0.376	1.37	J	µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Surr: 1,2-Dichloroethane-d4	153	0	70-130	S	%Rec	1	6/19/2017 4:23:00 PM	32370		
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	6/19/2017 4:23:00 PM	32370		
Surr: Dibromofluoromethane	137	0	70-130	S	%Rec	1	6/19/2017 4:23:00 PM	32370		
Surr: Toluene-d8	98.8	0	70-130		%Rec	1	6/19/2017 4:23:00 PM	32370		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В
	D	Sample Diluted Due to Matrix	Е

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	06/22/2017 17:26	<u>WG991209</u>



ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	06/22/2017 17:27	WG991209

Ϊc	
³ Ss	
^⁴ Cn	
^₅ Sr	
4Qc	
⁷ GI	
Â	Number of Street
⁹ Sc	

*

Wet Chemistry by Method 9012B

•••••••••••••••••••••••••••••••••••••••	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		0
Cyanide	ND		0.250	1	06/23/2017 20:37	WG991279	ΪC



3

Wet Chemistry by Method 9012B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	06/23/2017 20:39	WG991279



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WG991209

QUALITY CONTROL SUMMARY

Wet Chemistry by Met	hod 4500CN	E-2011			L917105-01.02
Method Blank (MB)					
(MB) R3227997-1 06/22/1	7 17:07				
	MB Result	MB Qualifier	MB MOL	MB RDL	
Analyte	l/gm		l/gm	mg/l	
Cyanide	N		0.0018	0.00500	

L917084-01 Original Sample (OS) • Duplicate (DUP)

(OS) L917084-01 06/22/1	17 17:20 • (DUP) R	3227997-4 06	3/22/17 17:2	21		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	l/ɓɯ		%		8
Cyanide	0.00197	0.00245	-	22	67	20

S S S S S

L917108-01 Original Sample (OS) • Duplicate (DUP)

	Original Res	ult DUP Result	Dilution DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	l/Gm	l/ɓɯ	96		88
Syanide	QN	0.000	1		20

Š. G. G.

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3227997-2 06/22/	17 17:08 • (LCSE	C) R3227997-3	06/22/17 17:0	6						
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	Шg/I	l/gm	l∕bm	ж	%	%			%	%
Cyanide	0.100	0.0985	0.105	66	105	85-115			6	20

L917102-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L917102-04 06/22/	17 17:23 • (MS) R3	227997-5 06/2	22/17 17:24 • (N	1SD) R322799.	7-6 06/22/171	7:25						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	l/gm	l∕ɓш	l/gm	l/gm	8	86		~			%	86
Cyanide	0.100	QN	0.0435	0.0896	44	06	-	75-125	<u>9</u>	55	69	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L917105

WG991279 Wet Chemistry by Method 9012B

QUALITY CONTROL SUMMARY

Method Blank (MB)

	MB RDL	mg/kg	0.250	
	MB MDL	mg/kg	0.039	
	MB Qualifier			
06/23/1/ 20:22	MB Result	mg/kg	n	
(MB) K32284(BM)		Analyte	Cyanide	

L917105-03 Original Sample (OS) • Duplicate (DUP)

001 L31/ 100-03 00/ 23/1/	20:37 • (DUP) F	V3ZZ8415-4 0	6/23/1/ 20:5	ω		
	Original Result	DUP Result	Dilution L	UP RPD DL	JP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg	8			8
Cyanide	QN	0.0472	1			20

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Ss

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

Spike Atmonut ELS Result ELSU Result ELS Rec. ELSU Rec.	LCSD Result L	CS Rec. LCSD Re	c. Rec. Limits	LCS Qualifier	LCSD Qualifier RPD	RPD Limits
Analyte mg/kg mg/kg % %	mg/kg %	%	%		ð ^ç	%
Cyanide 2.50 2.52 2.62 101 105	2.62 10	01 105	50-150		4	20

Sc. Sc. Al

L917238-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L917238-03 06/23/17	7 20:48 • (MS) R.	3228415-6 06/	23/17 20:49 • ((MSD) R32284	15-7 06/23/17	20:50						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	тд/кд	mg/kg	mg/kg	8	%		%			%	%
Cyanide	3.33	QN	1.47	1.68	42	49	-	75-125	21	<u> 16</u>	14	20

GLOSSARY OF TERMS

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
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.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



34

WO#:	1706910
	11 7 1 17

Client: Project:	Western SMW-2	n Refining (2 AND BOU	Company UNDAR	y Y WELLS							
Sample ID	MB-A	Samp	Туре: МЕ	BLK	Test	tCode: El	PA Method	200.7: Metals			
Client ID:	PBW	Bato	h ID: A4	3653	R	unNo: 4	3653				
Prep Date:		Analysis I	Date: 6/	20/2017	S	eqNo: 1	375201	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		ND	0.0020	0111110100	0	, <u>-</u> e	201121111		, o. u. 2		
Beryllium		ND	0.0020								
Cadmium		ND	0.0020								
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Iron		ND	0.020								
Manganese		ND	0.0020								
Nickel		ND	0.010								
Silver		ND	0.0050								
Vanadium		ND	0.050								
Zinc		ND	0.010								
Sample ID	LCSLL-A	Samp	Туре: LC	SLL	Test	tCode: El	PA Method	200.7: Metals			
Client ID:	BatchQC	Bato	h ID: A4	3653	R	unNo: 4 :	3653				
Prep Date:		Analysis I	Date: 6/	20/2017	S	eqNo: 1	375202	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.0018	0.0020	0.002000	0	90.0	50	150			J
Beryllium		0.0019	0.0020	0.002000	0	96.0	50	150			J
Cadmium		0.0019	0.0020	0.002000	0	96.0	50	150			J
Chromium		0.0059	0.0060	0.006000	0	97.7	50	150			J
Cobalt		0.0064	0.0060	0.006000	0	107	50	150			
Iron		0.024	0.020	0.02000	0	121	50	150			
Manganese		0.0020	0.0020	0.002000	0	102	50	150			
Nickel		0.0056	0.010	0.005000	0	113	50	150			J
Silver		0.0052	0.0050	0.005000	0	105	50	150			
Vanadium		0.0098	0.050	0.01000	0	98.2	50	150			J
Zinc		0.0055	0.010	0.005000	0	109	50	150			J
Sample ID	LCS-A	Samp	Type: LC	s	Test	tCode: El	PA Method	200.7: Metals			
Client ID:	LCSW	Batc	h ID: A4	3653	R	unNo: 4	3653				
Prep Date:		Analysis I	Date: 6/	20/2017	S	eqNo: 1	375203	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.49	0.0020	0.5000	0	97.0	85	115			
Beryllium		0.50	0.0020	0.5000	0	100	85	115			
Cadmium		0.49	0.0020	0.5000	0	97.7	85	115			
				0 5000	0	070	05	115			
Chromium		0.49	0.0060	0.5000	0	97.0	60	115			
Chromium Cobalt		0.49 0.46	0.0060 0.0060	0.5000 0.5000	0	97.0 91.7	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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID LCS-A	Samp	Туре: LC	S	Tes	tCode: El	PA Method	200.7: Metals			
Client ID: LCSW	Bato	h ID: A4	3653	R	RunNo: 4	3653				
Prep Date:	Analysis I	Date: 6/	20/2017	S	SeqNo: 1	375203	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.47	0.0020	0.5000	0	93.6	85	115			
Nickel	0.46	0.010	0.5000	0	91.8	85	115			
Silver	0.099	0.0050	0.1000	0	99.3	85	115			
Vanadium	0.51	0.050	0.5000	0	102	85	115			
Zinc	0.48	0.010	0.5000	0	95.5	85	115			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Qual

Units: mg/L

HighLimit

115

%RPD

RPDLimit

Client: Western Refining Company **Project:** SMW-2 AND BOUNDARY WELLS Sample ID LCS SampType: LCS TestCode: EPA 200.8: Metals LCSW Client ID: Batch ID: B43799 RunNo: 43799 SeqNo: 1379729 Prep Date: Analysis Date: 6/26/2017 Analyte Result PQL SPK value SPK Ref Val Antimony 0.023 0.0010 0.02500 0

Arsenic		0.024	0.0010	0.02500	0	94.4	85	115			
Lead		0.011	0.00050	0.01250	0	90.6	85	115			
Selenium		0.023	0.0010	0.02500	0	93.4	85	115			
Sample ID	LLLCS	Samp	Type: LC	SLL	Tes	tCode: El	PA 200.8: N	letals			
Client ID:	BatchQC	Bat	ch ID: B4	3799	F	RunNo: 4	3799				
Prep Date:		Analysis	Date: 6/	26/2017	S	SeqNo: 1	379730	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.00094	0.0010	0.001000	0	94.4	50	150			J
Arsenic		0.0011	0.0010	0.001000	0	107	50	150			
Lead		0.00047	0.00050	0.0005000	0	94.9	50	150			J
Selenium		0.0013	0.0010	0.001000	0	134	50	150			
Sample ID	MB	SampType: MBLK			Tes	PA 200.8: N					
Client ID:	PBW	Bat	ch ID: B4	3799	F	RunNo: 4	3799				
Prep Date:		Analysis	Date: 6/	/26/2017	S	SeqNo: 1	379732	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		ND	0.0010								
Arsenic		ND	0.0010								
Lead		ND	0.00050								
Selenium		ND	0.0010								

%REC

91.1

LowLimit

85

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Н 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
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
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Client: Western Refining Company Project: SMW-2 AND BOUNDARY WELLS

Sample ID MB-32504	SampType: MBLK	TestCode: EPA Method	245.1: Mercury	
Client ID: PBW	Batch ID: 32504	RunNo: 43819		
Prep Date: 6/27/2017	Analysis Date: 6/27/2017	SeqNo: 1380679	Units: mg/L	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Mercury	ND 0.00020			
Sample ID LCS-32504	SampType: LCS	TestCode: EPA Method	245.1: Mercury	
Sample ID LCS-32504 Client ID: LCSW	SampType: LCS Batch ID: 32504	TestCode: EPA Method RunNo: 43819	245.1: Mercury	
Sample ID LCS-32504 Client ID: LCSW Prep Date: 6/27/2017	SampType: LCS Batch ID: 32504 Analysis Date: 6/27/2017	TestCode: EPA Method RunNo: 43819 SeqNo: 1380680	245.1: Mercury Units: mg/L	
Sample ID LCS-32504 Client ID: LCSW Prep Date: 6/27/2017 Analyte	SampType: LCS Batch ID: 32504 Analysis Date: 6/27/2017 Result PQL SPK value	TestCode: EPA Method RunNo: 43819 SeqNo: 1380680 SPK Ref Val %REC LowLimit	245.1: Mercury Units: mg/L HighLimit %RPD	RPDLimit Qual

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client: W Project: S	Vestern Refining MW-2 AND BO	Compan <u>y</u> UNDAR	y Y WELLS							
Sample ID LCS-3236	2 Samp	Type: LC	s	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Bate	ch ID: 32	362	R	anNo: 4	3629				
Prep Date: 6/19/201	7 Analysis	Date: 6/	20/2017	S	SeqNo: 1	374617	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DR	0) 46	10	50.00	0	91.4	73.2	114			
Surr: DNOP	4.9		5.000		97.7	70	130			
Sample ID MB-32362	samp	Туре: М	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Bate	ch ID: 32	362	R	unNo: 4	3629				
Prep Date: 6/19/201	7 Analysis	Date: 6/	20/2017	S	SeqNo: 1	374618	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DR	0) ND	10								
Motor Oil Range Organics (1	MRO) ND	50								
Surr: DNOP	10		10.00		100	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1706910
	11-Jul-17

Client:WesternProject:SMW-2	Refining C AND BOU	Company NDAR	y Y WELLS							
Sample ID 1706910-001CMS	S SampT	ype: MS	S	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: EB01	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	ate: 6/	/20/2017	S	SeqNo: 1	375391	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.9	1.0	5.000	0	119	87.2	145			
Surr: DNOP	0.60		0.5000		121	72.4	157			
Sample ID 1706910-001CM	SD SampT	уре: М	SD	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: EB01	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	oate: 6/	/20/2017	S	SeqNo: 1	375392	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	116	87.2	145	2.61	20	
Surr: DNOP	0.60		0.5000		121	72.4	157	0	0	
Sample ID LCS-32351	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: LCSW	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	oate: 6/	/20/2017	S	SeqNo: 1	375408	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	114	82.8	146			
Surr: DNOP	0.59		0.5000		118	72.4	157			
Sample ID MB-32351	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: PBW	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	oate: 6/	/20/2017	S	SeqNo: 1	375409	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.2		1.000		121	72.4	157			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client: Western Project: SMW-2	n Refining C 2 AND BOU	Company NDAR	y Y WELLS							
Sample ID MB-32325	SampT	ype: ME	BLK	Tes	tCode: EF	PA Method	8015D: Gasc	line Rang	e	
Client ID: PBS	Batch	n ID: 32	325	F	unNo: 4	3604				
Prep Date: 6/16/2017	Analysis D	ate: 6/	19/2017	S	SeqNo: 1	374087	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.9	54	150			
Sample ID LCS-32325	SampT	ype: LC	s	Tes	tCode: EF	PA Method	8015D: Gasc	line Rang	е	
Client ID: LCSS	Batch	n ID: 32	325	F	unNo: 4	3604				
Prep Date: 6/16/2017	Analysis D	ate: 6/	19/2017	5	SeqNo: 1	374088	Units: mg/k	ίg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.6	76.4	125			
Surr: BFB	1100		1000		108	54	150			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client: Western Project: SMW-2	Refining C	Compan JNDAR	y Y WELLS							
Sample ID RB	SampT	Гуре: МІ	BLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBW	Batc	h ID: G 4	13605	F	RunNo: 4	3605				
Prep Date:	Analysis E	Date: 6/	/19/2017	S	SeqNo: 1	374131	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	24		20.00		118	52.3	138			
Sample ID 2.5UG GRO LCS	B Samp	Гуре: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSW	Batc	h ID: G 4	13605	F	RunNo: 4	3605				
Prep Date:	Analysis E	Date: 6/	/19/2017	S	SeqNo: 1	374132	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.42	0.050	0.5000	0	84.4	79.1	123			
Surr: BFB	26		20.00		128	52.3	138			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1706910 11-Jul-17

Client: Western Refining Company **Project:**

SMW-2 AND BOUNDARY WELLS

Sample ID Ics-32370	SampType: LCS4 TestCode: Method 8260B/5035LOW: VOLATILES									
Client ID: BatchQC	Batch	ID: 32	370	R	unNo: 43	3615				
Prep Date: 6/19/2017	Analysis Da	ate: 6/	19/2017	S	SeqNo: 13	373913	Units: µg/Kg	I		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	10.8	1.00	10.00	0	108	70	130			
Toluene	9.91	1.00	10.00	0	99.1	70	130			
Ethylbenzene	9.83	1.00	10.00	0	98.3	70	130			
Methyl tert-butyl ether (MTBE)	21.6	1.00	20.00	0	108	70	130			
1,2,4-Trimethylbenzene	10.1	1.00	10.00	0	101	70	130			
1,3,5-Trimethylbenzene	9.91	1.00	10.00	0	99.1	70	130			
1,2-Dichloroethane (EDC)	11.5	1.00	10.00	0	115	70	130			
1,2-Dibromoethane (EDB)	10.1	1.00	10.00	0	101	70	130			
Naphthalene	10.1	2.00	10.00	0	101	73.3	147			
1-Methylnaphthalene	11.2	4.00	10.00	0	112	69.6	154			
2-Methylnaphthalene	9.00	4.00	10.00	0	90.0	67.7	155			
Acetone	22.9	10.0	20.00	0	115	60	140			
Bromobenzene	10.2	1.00	10.00	0	102	70	130			
Bromodichloromethane	11.5	1.00	10.00	0	115	70	130			
Bromoform	9.88	1.00	10.00	0	98.8	70	130			
Bromomethane	8.35	3.00	10.00	0	83.5	70	130			
2-Butanone	24.3	10.0	20.00	0	121	60	140			
Carbon disulfide	21.2	10.0	20.00	0	106	60	140			
Carbon tetrachloride	10.8	1.00	10.00	0	108	70	130			
Chlorobenzene	9.97	1.00	10.00	0	99.7	70	130			
Chloroethane	10.9	2.00	10.00	0	109	70	130			
Chloroform	11.2	1.00	10.00	0	112	70	130			
Chloromethane	9.34	3.00	10.00	0	93.4	66.4	132			
2-Chlorotoluene	10.0	1.00	10.00	0	100	70	130			
4-Chlorotoluene	10.2	1.00	10.00	0	102	70	130			
cis-1,2-DCE	11.3	1.00	10.00	0	113	70	130			
cis-1,3-Dichloropropene	10.1	1.00	10.00	0	101	70	130			
1,2-Dibromo-3-chloropropane	8.90	2.00	10.00	0	89.0	70	130			
Dibromochloromethane	9.57	1.00	10.00	0	95.7	70	130			
Dibromomethane	11.5	1.00	10.00	0	115	70	130			
1,2-Dichlorobenzene	10.1	1.00	10.00	0	101	70	130			
1,3-Dichlorobenzene	10.2	1.00	10.00	0	102	70	130			
1,4-Dichlorobenzene	10.3	1.00	10.00	0	103	70	130			
Dichlorodifluoromethane	11.8	1.00	10.00	0	118	35.6	131			
1,1-Dichloroethane	10.7	1.00	10.00	0	107	63.7	129			
1,1-Dichloroethene	10.6	1.00	10.00	0	106	70	130			
1,2-Dichloropropane	10.6	1.00	10.00	0	106	70	130			
1,3-Dichloropropane	10.1	1.00	10.00	0	101	70	130			
2,2-Dichloropropane	10.4	2.00	10.00	0	104	70	130			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Practical Quanitative Limit PQL
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: **1706910** *11-Jul-17*

Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID Ics-32370	SampType: LCS4 TestCode: Method 8260B/5035LOW: VOLATILES									
Client ID: BatchQC	Batch	ID: 32	370	F	RunNo: 4	3615				
Prep Date: 6/19/2017	Analysis D	ate: 6/	19/2017	S	SeqNo: 1	373913	Units: µg/Kg	9		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	11.0	1.00	10.00	0	110	70	130			
Hexachlorobutadiene	9.23	2.00	10.00	0	92.3	70	130			
2-Hexanone	19.4	10.0	20.00	0	96.8	60	140			
Isopropylbenzene	9.68	1.00	10.00	0	96.8	70	130			
4-Isopropyltoluene	10.2	1.00	10.00	0	102	70	130			
4-Methyl-2-pentanone	21.6	10.0	20.00	0	108	60	140			
Methylene chloride	10.6	3.00	10.00	0	106	70	130			
n-Butylbenzene	9.98	3.00	10.00	0	99.8	70	130			
n-Propylbenzene	9.98	1.00	10.00	0	99.8	70	130			
sec-Butylbenzene	9.62	1.00	10.00	0	96.2	70	130			
Styrene	10.0	1.00	10.00	0	101	70	130			
tert-Butylbenzene	9.54	1.00	10.00	0	95.4	70	130			
1,1,1,2-Tetrachloroethane	9.54	1.00	10.00	0	95.4	70	130			
1,1,2,2-Tetrachloroethane	10.4	2.00	10.00	0	104	70	130			
Tetrachloroethene (PCE)	9.91	1.00	10.00	0	99.1	70	130			
trans-1,2-DCE	10.6	1.00	10.00	0	106	70	130			
trans-1,3-Dichloropropene	8.98	1.00	10.00	0	89.8	70	130			
1,2,3-Trichlorobenzene	10.3	1.00	10.00	0	103	70	130			
1,2,4-Trichlorobenzene	10.4	1.00	10.00	0	104	70	130			
1,1,1-Trichloroethane	10.7	1.00	10.00	0	107	70	130			
1,1,2-Trichloroethane	10.2	1.00	10.00	0	103	70	130			
Trichloroethene (TCE)	10.9	1.00	10.00	0	109	70	130			
Trichlorofluoromethane	11.1	1.00	10.00	0	111	70	130			
1,2,3-Trichloropropane	10.9	2.00	10.00	0	109	70	130			
Vinyl chloride	10.1	1.00	10.00	0	101	70	130			
Xylenes, Total	30.0	2.00	30.00	0	99.9	70	130			
Surr: 1,2-Dichloroethane-d4	11.9		10.00		119	70	130			
Surr: 4-Bromofluorobenzene	10.4		10.00		104	70	130			
Surr: Dibromofluoromethane	11.8		10.00		118	70	130			
Surr: Toluene-d8	10.2		10.00		103	70	130			
Sample ID mb-32370	SampT	ype: ME	BLK	Tes	tCode: M	ethod 8260	B/5035LOW:	VOLATIL	ES	
Client ID: PBS	Batch	ID: 32	370	F	RunNo: 4	3615				
Prep Date: 6/19/2017	Analysis D	ate: 6/	19/2017	S	SeqNo: 1	373982	Units: µg/Kg	9		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.00								
Toluene	ND	1.00								
Ethylbenzene	ND	1.00								

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 30 of 48

WO#: 1706910 11-Jul-17

Qual

J J J J

Western Refining Company **Client: Project:** SMW-2 AND BOUNDARY WELLS Sample ID mb-32370 SampType: MBLK PBS Client ID: Batch ID: 32370 Prep Date: 6/19/2017 Analysis Date: 6/19/2017 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit Acthyl tert-butyl ether (MTRE) 1 00

weary tert-buly ether (WIBE)	ND	1.00
1,2,4-Trimethylbenzene	ND	1.00
1,3,5-Trimethylbenzene	ND	1.00
1,2-Dichloroethane (EDC)	ND	1.00
1,2-Dibromoethane (EDB)	ND	1.00
Naphthalene	0.420	2.00
1-Methylnaphthalene	0.630	4.00
2-Methylnaphthalene	0.620	4.00
Acetone	0.980	10.0
Bromobenzene	ND	1.00
Bromodichloromethane	ND	1.00
Bromoform	ND	1.00
Bromomethane	ND	3.00
2-Butanone	ND	10.0
Carbon disulfide	ND	10.0
Carbon tetrachloride	ND	1.00
Chlorobenzene	ND	1.00
Chloroethane	ND	2.00
Chloroform	ND	1.00
Chloromethane	ND	3.00
2-Chlorotoluene	ND	1.00
4-Chlorotoluene	ND	1.00
cis-1,2-DCE	ND	1.00
cis-1,3-Dichloropropene	ND	1.00
1,2-Dibromo-3-chloropropane	ND	2.00
Dibromochloromethane	ND	1.00
Dibromomethane	ND	1.00
1,2-Dichlorobenzene	ND	1.00
1,3-Dichlorobenzene	ND	1.00
1,4-Dichlorobenzene	ND	1.00
Dichlorodifluoromethane	ND	1.00
1,1-Dichloroethane	ND	1.00
1,1-Dichloroethene	ND	1.00
1,2-Dichloropropane	ND	1.00
1,3-Dichloropropane	ND	1.00
2,2-Dichloropropane	ND	2.00
1,1-Dichloropropene	ND	1.00
Hexachlorobutadiene	ND	2.00

Qualifiers:

2-Hexanone

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded

ND

10.0

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

TestCode: Method 8260B/5035LOW: VOLATILES

Units: µg/Kg

%RPD

RPDLimit

HighLimit

RunNo: 43615

SeqNo: 1373982

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WO#: **1706910** *11-Jul-17*

Client: Project:	Western R SMW-2 A	efining C ND BOU	ompany NDAR	y Y WELLS							
Sample ID mb-323	370	SampT	ype: ME	BLK	Tes	tCode: M	ethod 8260	B/5035LOW:	VOLATILE	ES	
Client ID: PBS		Batch	D: 32	370	F	unNo: 4	3615				
Bron Data: 6/10/2	017			40/2017	c		272092	Unite: ua/Ka			
Fiep Date. 0/19/2		Analysis D	ale. 0	19/2017			57 5902				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Isopropylbenzene		ND	1.00								
4-Isopropyltoluene		ND	1.00								
4-Methyl-2-pentanone		ND	10.0								
Methylene chloride		ND	3.00								
n-Butylbenzene		ND	3.00								
n-Propylbenzene		ND	1.00								
sec-Butylbenzene		ND	1.00								
Styrene		ND	1.00								
tert-Butylbenzene		ND	1.00								
1,1,1,2-Tetrachloroethan	е	ND	1.00								
1,1,2,2-Tetrachloroethan	е	ND	2.00								
Tetrachloroethene (PCE)		ND	1.00								
trans-1,2-DCE		ND	1.00								
trans-1,3-Dichloropropen	e	ND	1.00								
1,2,3-Trichlorobenzene		ND	1.00								
1,2,4-Trichlorobenzene		ND	1.00								
1,1,1-Trichloroethane		ND	1.00								
1,1,2-Trichloroethane		ND	1.00								
Trichloroethene (TCE)		ND	1.00								
Trichlorofluoromethane		ND	1.00								
1.2.3-Trichloropropane		ND	2.00								
Vinvl chloride		ND	1.00								
Xvlenes. Total		ND	2.00								
Surr: 1.2-Dichloroetha	ne-d4	13.1	2.00	10.00		131	70	130			s
Surr: 4-Bromofluorobe	nzene	10.2		10.00		102	70	130			Ŭ
Surr: Dibromofluorome	thane	12.6		10.00		126	70	130			
Surr: Toluene-d8		9.94		10.00		99.4	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 32 of 48
 - .

WO#: **1706910** *11-Jul-17*

Client:	Western Refini	ng Compa	iny							
Project:	SMW-2 AND I	BOUNDA	RY WELLS							
Sample ID rb1	Sa	ampType:	MBLK	Те	estCode: I	EPA Method	8260B: VOL	ATILES		
Client ID: PBW	I	Batch ID:	B43587		RunNo:	43587				
Prep Date:	Analy	sis Date:	6/16/2017		SeqNo:	1373146	Units: µg/L			
Analyte	Res	ult PQI	_ SPK value	SPK Ref Va	I %REC	CowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	Ν	ND 1	0							
Toluene	Ν	ND 1	.0							
Ethylbenzene	Ν	ND 1	.0							
Methyl tert-butyl ether (M	TBE) N	ND 1	.0							
1,2,4-Trimethylbenzene	Ν	ND 1	.0							
1,3,5-Trimethylbenzene	Ν	ND 1	0							
1,2-Dichloroethane (EDC)) N	ND 1	.0							
1,2-Dibromoethane (EDB) N	ND 1	.0							
Naphthalene	Ν	ND 2	.0							
1-Methylnaphthalene	Ν	ND 4	0							
2-Methylnaphthalene	Ν	ND 4	0							
Acetone	Ν	ND 1	0							
Bromobenzene	Ν	ND 1	0							
Bromodichloromethane	Ν	ND 1	0							
Bromoform	Ν	ND 1	0							
Bromomethane	Ν	ND 3	0							
2-Butanone	Ν	ND 1	0							
Carbon disulfide	Ν	ND 1	0							
Carbon Tetrachloride	Ν	ND 1	0							
Chlorobenzene	Ν	ND 1	0							
Chloroethane	Ν	ND 2	0							
Chloroform	Ν	ND 1	0							
Chloromethane	Ν	ND 3	0							
2-Chlorotoluene	Ν	ND 1	0							
4-Chlorotoluene	Ν	ND 1	.0							
cis-1.2-DCE	Ν	ND 1	.0							
cis-1.3-Dichloropropene	Ν	ND 1	.0							
1.2-Dibromo-3-chloropror	oane N	ND 2	.0							
Dibromochloromethane	N	ND 1	.0							
Dibromomethane	N	ND 1	.0							
1.2-Dichlorobenzene	N	ND 1	.0							
1.3-Dichlorobenzene	N	ND 1	0							
1.4-Dichlorobenzene	N	ND 1	0							
Dichlorodifluoromethane	N	ND 1	.0							
1.1-Dichloroethane		11	0							
1.1-Dichloroethene		11	0							
1.2-Dichloropropane		11	0							
1 3-Dichloropropane		11	0							
2,2-Dichloropropane	N	ND 2	0							

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 33 of 48

WO#: **1706910** *11-Jul-17*

Client: V Project: S	Western Refining SMW-2 AND BC	Compan OUNDAR	y Y WELLS										
Sample ID rb1	Sam	рТуре: М	BLK	Tes	tCode: El	PA Method	A Method 8260B: VOLATILES						
Client ID: PBW	Ba	tch ID: B4	3587	F	RunNo: 4	3587							
Prep Date:	Analysis	B Date: 6/	16/2017	Ş	SeqNo: 1	373146	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											
Vinvl chloride	ND	1.0											
Xvlenes, Total	ND	1.5											
Surr: 1.2-Dichloroethane	e-d4 11	-	10.00		107	70	130						
Surr: 4-Bromofluorobenz	zene 10		10.00		101	70	130						
Surr: Dibromofluorometh	nane 11		10.00		105	70	130						
Surr: Toluene-d8	10		10.00		102	70	130						
Sample ID 100ng Ic	s2 Sam	рТуре: LC	S	Tes	tCode: El	PA Method	8260B: VOL	ATILES					
Client ID: LCSW	Ba	tch ID: B4	3587	F	RunNo: 4	3587							
Prep Date:	Analysis	a Date: 6/	16/2017	S	SeqNo: 1	373147	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Benzene	21	1.0	20.00	0	104	70	130						
Toluene	19	1.0	20.00	0	95.1	70	130						

Qualifiers:

Chlorobenzene

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

20

1.0

20.00

- 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

101

- J Analyte detected below quantitation limits
- P Sample pH Not In Range

0

- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

70

130

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Client:WesterProject:SMW-2	n Refining C 2 AND BOU	ompany NDAR	y Y WELLS							
Sample ID 100ng lcs2	SampT	ype: LC	s	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	n ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis D	ate: 6/	16/2017	S	SeqNo: 1	373147	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21	1.0	20.00	0	103	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.9	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.7	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			
Sample ID 1706910-001a n	ns2 SampT	ype: M	3	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: EB01	Batch	n ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis D	ate: 6/	17/2017	S	SeqNo: 1	373151	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	0.07200	96.4	70	130			
Chlorobenzene	20	1.0	20.00	0	101	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	90.1	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.1	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			
Sample ID 1706910-001a n	nsd2 SampT	ype: MS	SD	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: EB01	Batch	n ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis D	ate: 6/	17/2017	S	SeqNo: 1	373152	Units: µg/L			
Apolyto	Booult		SDK volve			Loud imit	Llight insit	0/ חחח		Quel

Prep Date:	Analysis Date: 6/17/2017			S	SeqNo: 1	373152	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130	2.31	20	
Toluene	18	1.0	20.00	0.07200	91.7	70	130	5.02	20	
Chlorobenzene	19	1.0	20.00	0	96.4	70	130	4.50	20	
1,1-Dichloroethene	19	1.0	20.00	0	96.9	70	130	4.98	20	
Trichloroethene (TCE)	18	1.0	20.00	0	88.5	70	130	1.74	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.4		10.00		94.3	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		104	70	130	0	0	
Surr: Toluene-d8	10		10.00		102	70	130	0	0	

Qualifiers:

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

Р

- W Sample container temperature is out of limit as specified
- Page 35 of 48

Client: Wester Project: SMW-	rn Refining C 2 AND BOU	Compan JNDAR	y RY WELLS							
Sample ID rb	SampT	уре: М	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	n ID: W	43599	F	RunNo: 4	3599				
Prep Date:	Analysis D	ate: 6	/19/2017	S	SeqNo: 1	374263	Units: %Re	C		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.3		10.00		93.0	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.1	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.8	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			
Sample ID 100ng Ics	SampT	ype: LC	cs	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	n ID: W	43599	F	RunNo: 4	3599				
Prep Date:	Analysis D	Date: 6	/19/2017	5	SeqNo: 1	374264	Units: %Re	C		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.1	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.6	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 36 of 48

Client: Project:

Western Refining Company SMW-2 AND BOUNDARY WELLS

Sample ID 1706910-003ams	Samp	Гуре: МS	3	TestCode: EPA Method 8270C: Semivolatiles						
Client ID: OW-59 (33-34')	Batc	h ID: 32	411	RunNo: 43869						
Prep Date: 6/21/2017	Analysis Date: 6/28/2017			SeqNo: 1382769			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.667	0	64.3	24.7	111			
4-Chloro-3-methylphenol	2.3	0.50	3.323	0	70.3	21.7	108			
2-Chlorophenol	1.9	0.20	3.323	0	58.5	21.9	103			
1,4-Dichlorobenzene	0.99	0.20	1.667	0	59.5	15.8	93.9			
2,4-Dinitrotoluene	0.91	0.50	1.667	0	54.5	19.9	101			
N-Nitrosodi-n-propylamine	1.0	0.20	1.667	0	62.4	17.7	100			
4-Nitrophenol	2.1	0.25	3.323	0	61.7	19.3	112			
Pentachlorophenol	2.0	0.40	3.323	0	60.5	20.5	105			
Phenol	2.2	0.20	3.323	0	65.1	23.1	101			
Pyrene	1.2	0.20	1.667	0	70.8	18.3	113			
1,2,4-Trichlorobenzene	1.2	0.20	1.667	0	70.0	21.8	108			
Surr: 2-Fluorophenol	1.9		3.323		57.9	21.4	101			
Surr: Phenol-d5	2.3		3.323		68.6	32	110			
Surr: 2,4,6-Tribromophenol	2.4		3.323		72.8	38.7	115			
Surr: Nitrobenzene-d5	1.2		1.667		74.2	26.2	120			
Surr: 2-Fluorobiphenyl	1.2		1.667		72.9	36.2	124			
Surr: 4-Terphenyl-d14	0.98		1.667		58.9	15	114			
Sample ID 1706910-003amsd	I Samp⊺	Гуре: МS	SD	TestCode: EPA Method 8270C: Semivolatiles						
Client ID: OW-59 (33-34')	Batch ID: 32411			F	anNo: 4					
Prep Date: 6/21/2017	Analysis Date: 6/28/2017			5	SeqNo: 1	382770	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.0	0.20	1.664	0	61.7	24.7	111	4.25	30.2	
4-Chloro-3-methylphenol	2.0	0.50	3.319	0	61.3	21.7	108	13.8	37.2	
2-Chlorophenol	1.9	0.20	3.319	0	57.4	21.9	103	2.14	48	
1,4-Dichlorobenzene	1.0	0.20	1.664	0	60.0	15.8	93.9	0.736	40.6	
2,4-Dinitrotoluene	0.86	0.50	1.664	0	51.5	19.9	101	5.90	47.7	
N-Nitrosodi-n-propylamine	0.95	0.20	1.664	0	57.0	17.7	100	9.26	52.5	
4-Nitrophenol	2.0	0.25	3.319	0	61.7	19.3	112	0.0843	36.6	
Pentachlorophenol	1.9	0.40	3.319	0	57.6	20.5	105	4.98	65.5	
Phenol	2.0	0.20	3.319	0	60.7	23.1	101	7.15	44	
Pyrene	1.2	0.20	1.664	0	73.1	18.3	113	2.97	42.1	
1,2,4-Trichlorobenzene	12	0.20	1.664	0	73.5	21.8	108	4.68	31.5	
0 051 1	1.2	0.20								
Surr: 2-Fluorophenol	1.8	0.20	3.319		54.3	21.4	101	0	0	
Surr: 2-Fluorophenol Surr: Phenol-d5	1.8 2.1	0.20	3.319 3.319		54.3 62.2	21.4 32	101 110	0 0	0 0	
Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol	1.8 2.1 2.3	0.20	3.319 3.319 3.319		54.3 62.2 67.9	21.4 32 38.7	101 110 115	0 0 0	0 0 0	
Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5	1.2 1.8 2.1 2.3 1.2	0.20	3.319 3.319 3.319 1.664		54.3 62.2 67.9 72.9	21.4 32 38.7 26.2	101 110 115 120	0 0 0	0 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
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

W Sample container temperature is out of limit as specified

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WO#: **1706910** *11-Jul-17*

WO#:	1706910				
	11-Jul-17				

Client: Western Refining Company Project: SMW-2 AND BOUNDARY WELLS											
Sample ID 1706910-003ams	d SampT	ype: M	SD	TestCode: EPA Method 8270C: Semivolatiles							
Client ID: OW-59 (33-34')	Batch ID: 32411			RunNo: 43869							
Pren Date: 6/21/2017	Analysis Date: 6/28/2017			Seallo: 1382770 Unite: malka							
	Analysis Date. 0/20/2017			Seque. 1302110			onna. mg/ng				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: 4-Terphenyl-d14	0.97		1.664		58.3	15	114	0	0		
Sample ID Ics-32411	SampT	ype: LC	s	TestCode: EPA Method 8270C: Semivolatiles							
Client ID: LCSS	Batch ID: 32411			RunNo: 43869							
Pren Date: 6/21/2017	Analysis F		28/2017	SocNo: 1292772			Inite: ma/k				
	Analysis L	ale. 0/	20/2017			302113	onits. mg/r	Ŋ			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Acenaphthene	1.0	0.20	1.670	0	61.7	39.4	110				
4-Chloro-3-methylphenol	1.9	0.50	3.330	0	56.2	41.6	108				
2-Chlorophenol	1.8	0.20	3.330	0	55.1	35	107				
1,4-Dichlorobenzene	0.96	0.20	1.670	0	57.7	31	105				
2,4-Dinitrotoluene	0.86	0.50	1.670	0	51.7	35.6	101				
N-Nitrosodi-n-propylamine	0.86	0.20	1.670	0	51.2	26	100				
4-Nitrophenol	1.6	0.25	3.330	0	48.6	34.1	106				
Pentachlorophenol	1.7	0.40	3.330	0	51.9	35.3	95.4				
Phenol	1.9	0.20	3.330	0	55.6	39.3	96.5				
Pyrene	1.2	0.20	1.670	0	70.3	47.8	95.7				
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	69.5	36.6	117				
Surr: 2-Fluorophenol	1.7		3.330		49.8	21.4	101				
Surr: Phenol-d5	1.9		3.330		58.1	32	110				
Surr: 2,4,6-Tribromophenol	2.1		3.330		64.4	38.7	115				
Surr: Nitrobenzene-d5	1.1		1.670		67.2	26.2	120				
Surr: 2-Fluorobiphenyl	1.2		1.670		70.9	36.2	124				
Surr: 4-Terphenyl-d14	0.96		1.670		57.3	15	114				
Sample ID mb-32411	SampType: MBLK			TestCode: EPA Method 8270C: Semivolatiles							
Client ID: PBS	Batch ID: 32411			RunNo: 43869							
Prep Date: 6/21/2017	Analysis D	oate: 6/	28/2017	5	SeqNo: 1	382774	Units: mg/h	(g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Acenaphthene	ND	0.20									
Acenaphthylene	ND	0.20									
Aniline	ND	0.20									
Anthracene	ND	0.20									
Azobenzene	ND	0.20									
Benz(a)anthracene	ND	0.20									
Benzo(a)pyrene	ND	0.20									
Benzo(b)fluoranthene	ND	0.20									
Benzo(a.h.i)pervlene	ND	0.20									
Benzo(k)fluoranthene	ND	0.20									
		0.20									

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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: **1706910** *11-Jul-17*

Qual

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Client: Western Refining Company SMW-2 AND BOUNDARY WELLS **Project:** Sample ID mb-32411 SampType: MBLK PBS Client ID: Batch ID: 32411 Analysis Date: 6/28/2017 Prep Date: 6/21/2017 Analyte Result PQL SPK value SPK Ref Val Benzoic acid ND 0.50 Benzyl alcohol ND 0.20 ND 0.20 Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether ND 0.20

ND

0.27

ND

ND

ND

ND

ND

ND

ND

ND

ND

0.32

ND

ND

ND

ND

ND

ND

ND

0.23

ND

0.20

0.50

0.20

0.20

0.20

0.50

0.50

0.25

0.20

0.20

0.20

0.40

0.40

0.20

0.20

0.20

0.20

0.20

0.25

0.20

0.20

0.40

0.30

0.40

0.50

0.50

0.50

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.40

Bis(2-chloroisopropyl)ether

Bis(2-ethylhexyl)phthalate

Butyl benzyl phthalate

4-Chloro-3-methylphenol

4-Chlorophenyl phenyl ether

2-Chloronaphthalene 2-Chlorophenol

Di-n-octyl phthalate

Dibenzofuran

Dibenz(a,h)anthracene

1,2-Dichlorobenzene 1,3-Dichlorobenzene

1.4-Dichlorobenzene

3,3⁻Dichlorobenzidine

Diethyl phthalate

Dimethyl phthalate

2,4-Dichlorophenol

2,4-Dimethylphenol

2,4-Dinitrophenol

2,4-Dinitrotoluene

2.6-Dinitrotoluene

Hexachlorobenzene

Hexachlorobutadiene

Hexachloroethane

Indeno(1,2,3-cd)pyrene

Hexachlorocyclopentadiene

Fluoranthene Fluorene

4,6-Dinitro-2-methylphenol

Carbazole

Chrysene Di-n-butyl phthalate

4-Chloroaniline

4-Bromophenyl phenyl ether

J

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Qualifiers:

Isophorone

- * Value exceeds Maximum Contaminant Level.
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- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

TestCode: EPA Method 8270C: Semivolatiles

LowLimit

Units: mg/Kg

%RPD

RPDLimit

HighLimit

RunNo: 43869

%REC

SeqNo: 1382774

WO#: **1706910** *11-Jul-17*

Client:WesterProject:SMW-	rn Refining C 2 AND BOU	Company	Y WELLS							
Sample ID mb-32411	SampT	уре: МВ	LK	Test	tCode: El	PA Method	8270C: Semi	ivolatiles		
Client ID: PBS	Batch	n ID: 324	11	R	RunNo: 4	3869				
Prep Date: 6/21/2017	Analysis D	ate: 6/2	28/2017	s	SeaNo: 1	382774	Units: ma/k	Ka		
Analista	Desult				N DEO	L avril insit		- J		Qual
1 Methylpanbthalene	Result	PQL	SPK value	SPK Ref Val	%REC	LOWLIMIT	HighLimit	%RPD	RPDLIMIt	Quai
2-Methylnaphthalene	ND	0.20								
2-Methylnhenol	ND	0.20								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.0		3.330		59.6	21.4	101			
Surr: Phenol-d5	2.1		3.330		64.2	32	110			
Surr: 2,4,6-Tribromophenol	2.3		3.330		68.5	38.7	115			
Surr: Nitrobenzene-d5	1.3		1.670		77.5	26.2	120			
Surr: 2-Fluorobiphenyl	1.3		1.670		77.5	36.2	124			
Surr: 4-Terphenyl-d14	1.0		1.670		60.9	15	114			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 40 of 48

WO#: **1706910** *11-Jul-17*

Client: Project:

Western Refining Company SMW-2 AND BOUNDARY WELLS

Sample ID mb-32356	SampT	уре: М	BLK	Tes	tCode: El	PA Method	8270C: Semi	volatiles		
Client ID: PBW	Batch	ID: 32	356	F	RunNo: 4	3713				
Prep Date: 6/19/2017	Analysis D	ate: 6	21/2017	S	SeqNo: 1	376917	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	12	20								J
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	5.2	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3 ⁻ Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 41 of 48

WO#: **1706910** *11-Jul-17*

Client:WesterProject:SMW-	rn Refining C -2 AND BOU	ompany NDAR`	/ Y WELLS							
Sample ID mb-32356	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8270C: Semiv	volatiles		
Client ID: PBW	Batch	ID: 323	356	F	RunNo: 4	3713				
Prep Date: 6/19/2017	Analysis D	ate: 6/2	21/2017	S	SeqNo: 1	376917	Units: µg/L			
Analvte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HiahLimit	%RPD	RPDLimit	Qual
2.4-Dinitrotoluene	ND	10			,		· · · g· · _ · · · ·			-,
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	110		200.0		53.6	15	98.1			
Surr: Phenol-d5	80		200.0		39.9	15	80.7			
Surr: 2,4,6-Tribromophenol	170		200.0		84.0	15	112			
Surr: Nitrobenzene-d5	87		100.0		87.3	27.2	90.7			
Surr: 2-Fluorobiphenyl	71		100.0		70.6	23.3	85.6			
Surr: 4-Terphenyl-d14	71		100.0		70.8	27.6	107			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 42 of 48

WO#: 1706910 11-Jul-17

Client: Western Refining Company **Project:**

SMW-2 AND BOUNDARY WELLS

Sample ID Ics-32356	SampType: LCS TestCode: EPA Method 8270C: Semivolatiles									
Client ID: LCSW	Batc	h ID: 32:	356	R	anNo: 4	3713				
Prep Date: 6/19/2017	Analysis [Date: 6/	21/2017	S	SeqNo: 1	376918	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	70	10	100.0	0	70.2	41.2	98.9			
4-Chloro-3-methylphenol	150	10	200.0	0	75.0	29.1	111			
2-Chlorophenol	150	10	200.0	0	73.2	23.3	108			
1,4-Dichlorobenzene	49	10	100.0	0	48.6	29.4	84.5			
2,4-Dinitrotoluene	71	10	100.0	0	70.9	36.6	88.7			
N-Nitrosodi-n-propylamine	79	10	100.0	0	79.1	46.9	106			
4-Nitrophenol	90	10	200.0	0	44.8	15	74.7			
Pentachlorophenol	150	20	200.0	0	72.8	28.1	85.4			
Phenol	91	10	200.0	0	45.4	15	78.2			
Pyrene	80	10	100.0	0	80.1	44.4	96.8			
1,2,4-Trichlorobenzene	63	10	100.0	0	63.2	34.3	89			
Surr: 2-Fluorophenol	94		200.0		47.2	15	98.1			
Surr: Phenol-d5	72		200.0		35.8	15	80.7			
Surr: 2,4,6-Tribromophenol	160		200.0		77.8	15	112			
Surr: Nitrobenzene-d5	80		100.0		80.1	27.2	90.7			
Surr: 2-Fluorobiphenyl	67		100.0		67.2	23.3	85.6			
Surr: 4-Terphenyl-d14	65		100.0		64 7	27.6	107			
					0	21.0	107			
Sample ID Icsd-32356	Samp	Гуре: LC	SD	Tes	tCode: El	PA Method	8270C: Semi	volatiles		
Sample ID Icsd-32356 Client ID: LCSS02	Samp [¬] Batc	Гуре: LC h ID: 32 :	SD 356	Tes	tCode: El	PA Method 3713	8270C: Semi	volatiles		
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017	Samp Batc Analysis [Гуре: LC h ID: 32: Date: 6/	SD 356 21/2017	Tes R S	tCode: El RunNo: 4 SeqNo: 1	PA Method 3713 376919	8270C: Semi Units: μg/L	volatiles		
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte	Samp ⁻ Batc Analysis I Result	Type: LC h ID: 32: Date: 6 / PQL	SD 356 21/2017 SPK value	Tes R S SPK Ref Val	tCode: El RunNo: 4 SeqNo: 1 %REC	PA Method 3713 376919 LowLimit	8270C: Semi Units: µg/L HighLimit	volatiles %RPD	RPDLimit	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene	Samp Batc Analysis I Result 56	Type: LC h ID: 32 Date: 6 / PQL 10	SD 356 21/2017 SPK value 100.0	Tes R S SPK Ref Val 0	tCode: El RunNo: 4: GeqNo: 1: <u>%REC</u> 56.1	PA Method 3713 376919 LowLimit 41.2	8270C: Semi Units: µg/L HighLimit 98.9	volatiles %RPD 22.2	RPDLimit 37.4	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol	Samp Batc Analysis I Result 56 120	Type: LC h ID: 32 Date: 6 / PQL 10 10	SD 356 21/2017 SPK value 100.0 200.0	Tes F S SPK Ref Val 0 0	tCode: El RunNo: 4 SeqNo: 1: <u>%REC</u> 56.1 59.2	PA Method 3713 376919 LowLimit 41.2 29.1	8270C: Semi Units: µg/L HighLimit 98.9 111	volatiles %RPD 22.2 23.5	RPDLimit 37.4 26.8	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol	Samp Batc Analysis I Result 56 120 110	Гуре: LC h ID: 32 : Date: 6/ PQL 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0	Tes F SPK Ref Val 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9	PA Method 3713 376919 LowLimit 41.2 29.1 23.3	8270C: Semi Units: µg/L HighLimit 98.9 111 108	volatiles %RPD 22.2 23.5 26.8	RPDLimit 37.4 26.8 30.3	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene	Samp Batc Analysis I Result 56 120 110 35	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0	Tes R SPK Ref Val 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5	volatiles %RPD 22.2 23.5 26.8 32.2	RPDLimit 37.4 26.8 30.3 32	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene	Samp Batc Analysis I Result 56 120 110 35 54	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7	<pre>volatiles %RPD 22.2 23.5 26.8 32.2 27.9</pre>	RPDLimit 37.4 26.8 30.3 32 36.7	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine	Samp Batc Analysis I Result 56 120 110 35 54 63	Type: LC h ID: 32 Date: 6 PQL 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0	Tes: F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5 62.7	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1	RPDLimit 37.4 26.8 30.3 32 36.7 29.9	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0	Tes: F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7	%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110	Type: LC h ID: 32 : Date: 6 /2 10 10 10 10 10 10 10 20	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 200.0	Tes: F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4	%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol	Samp ⁻ Batc Analysis I Result 56 120 110 35 54 63 70 110 62	Type: LC h ID: 32 : Date: 6 /2 10 10 10 10 10 10 10 20 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0	Tes: R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene	Samp ⁻ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : SeqNo: 1 : 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8	<pre>%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene	Samp ⁻ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0 100.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4: SeqNo: 1: 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89	wolatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Sur: 2-Fluorophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81	Type: LC h ID: 32 Date: 6 10 10 10 10 10 10 10 20 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 200.0 100.0 200.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4: SeqNo: 1: 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1	<pre>%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8 0	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81 63	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 20 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0	Tes SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4: SeqNo: 1: %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6 31.5	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 44.4 34.3 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7	%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8 0 0 0	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81 63 130	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 20 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0	Tes:	tCode: EI RunNo: 4: SeqNo: 1: %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6 31.5 65.0	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 44.4 34.3 15 15	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81 63 130 70	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0	Tes R S SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6 31.5 65.0 70.2	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 44.4 34.3 15 15 15 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112 90.7	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0 0 0	Qual R

Qualifiers:

Value exceeds Maximum Contaminant Level. *

Sample Diluted Due to Matrix D

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

- Practical Quanitative Limit PQL
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank

Е Value above quantitation range

- J Analyte detected below quantitation limits
 - Sample pH Not In Range

Р

W Sample container temperature is out of limit as specified Page 43 of 48

RL Reporting Detection Limit

Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID Icsd-32356	SampTyp	pe: LC	SD	Test	tCode: El	PA Method	8270C: Semi	volatiles		
Client ID: LCSS02	Batch I	D: 32	356	R	anNo: 4	3713				
Prep Date: 6/19/2017	Analysis Dat	te: 6/	21/2017	S	SeqNo: 1	376919	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	56		100.0		56.3	27.6	107	0	0	

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 44 of 48

Client: Western Refining Company Project: SMW-2 AND BOUNDARY WELLS

Sample ID MB-32380	SampType	MBLK	Tes	tCode: EP	A Method	7471: Mercu	ry		
Client ID: PBS	Batch ID:	32380	F	RunNo: 43	637				
Prep Date: 6/20/2017	Analysis Date:	6/20/2017	S	SeqNo: 13	74889	Units: mg/K	g		
Analyte	Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND 0.	033							
Sample ID LCS-32380	SampType	LCS	Tes	tCode: EP	A Method	7471: Mercu	гy		
Sample ID LCS-32380 Client ID: LCSS	SampType Batch ID:	LCS 32380	Tes	tCode: EP	A Method 637	7471: Mercu	гу		
Sample ID LCS-32380 Client ID: LCSS Prep Date: 6/20/2017	SampType Batch ID: Analysis Date:	LCS 32380 6/20/2017	Tes F S	tCode: EP RunNo: 43 SeqNo: 13	A Method 637 74890	7471: Mercui Units: mg/K	ry g		
Sample ID LCS-32380 Client ID: LCSS Prep Date: 6/20/2017 Analyte	SampType Batch ID: Analysis Date: Result P	: LCS 32380 6/20/2017 QL SPK value	Tes F S SPK Ref Val	tCode: EP RunNo: 43 SeqNo: 13 %REC	A Method 637 74890 LowLimit	7471: Mercur Units: mg/K HighLimit	ry g %RPD	RPDLimit	Qual

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 45 of 48

Hall Environ	mental Ana	lysis I	Laborat	ory, Inc.					WO#:	1706910 11-Jul-17
Client: Project:	Western Refining SMW-2 AND BO	Compan UNDAR	y Y WELLS							
Sample ID MB-3234	19 Samp	Туре: М	BLK	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID: PBS	Bate	ch ID: 32	349	F	RunNo: 4	3643				
Prep Date: 6/19/20	17 Analysis	Date: 6/	/20/2017	S	SeqNo: 1	374994	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	0.91	2.5								J
Lead	ND	0.25								
Manganese	0.065	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.51	2.5								J
Sample ID LCS-323	349 Samp	Type: LC	s	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID: LCSS	Bate	ch ID: 32	349	F	RunNo: 4	3643				
Prep Date: 6/19/20	17 Analysis	Date: 6/	/20/2017	S	SeqNo: 1	374995	Units: mg/ł	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	97.7	80	120			
Arsenic	25	2.5	25.00	0	102	80	120			
Barium	25	0.10	25.00	0	99.7	80	120			
Beryllium	26	0.15	25.00	0	103	80	120			
Cadmium	25	0.10	25.00	0	99.2	80	120			
Chromium	25	0.30	25.00	0	98.5	80	120			
Cobalt	23	0.30	25.00	0	93.9	80	120			
Iron	29	2.5	25.00	0	117	80	120			
Lead	23	0.25	25.00	0	93.7	80	120			
Manganese	24	0.10	25.00	0	97.8	80	120			
Nickel	24	0.50	25.00	0	94.3	80	120			
Selenium	24	2.5	25.00	0	96.6	80	120			
Silver	5.0	0.25	5.000	0	101	80	120			
Vanadium	26	2.5	25.00	0	103	80	120			

Qualifiers:

Zinc

* Value exceeds Maximum Contaminant Level.

OC SUMMARY REPORT

- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded

24

2.5

25.00

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range

95.6

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

0

- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

80

120

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Client: Western Refining Company

Project: SMW-2 AND BOUNDARY WELLS

Sample ID	1706910-003BMS	SampT	ype: M \$	3 3	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	OW-59 (33-34')	Batch	ו ID: 32 :	349	F	≀unNo: 4 :	3643				
Prep Date:	6/19/2017	Analysis D	ate: 6/	20/2017	٤	SeqNo: 1:	375007	Units: mg/r	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		22	2.4	24.39	0	90.9	75	125			
Beryllium		22	0.15	24.39	0.3383	90.7	75	125			
Cadmium		21	0.098	24.39	0	87.0	75	125			
Chromium		26	0.29	24.39	4.643	85.5	75	125			
Cobalt		21	0.29	24.39	2.130	78.1	75	125			
Lead		19	0.24	24.39	0.7202	76.2	75	125			
Manganese		200	0.098	24.39	180.8	94.5	75	125			
Nickel		22	0.49	24.39	3.504	77.1	75	125			
Silver		4.3	0.24	4.878	0	88.1	75	125			
Vanadium		33	2.4	24.39	10.95	92.4	75	125			
Zinc		27	2.4	24.39	7.461	79.0	75	125			
Sample ID	1706910-003BMSI	D SampT	ype: M	3D	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	OW-59 (33-34')	Batch	ı ID: 32 :	349	F	≀unNo: 4 :	3643				
Prep Date:	6/19/2017	Analysis D	Date: 6/	/20/2017	ç	SeaNo: 1	375008	Units: ma/ł	۲a		I

	Analysis L		20/2017	C C		57 5000	orinto. Ing/r	v g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	23	2.5	24.89	0	90.7	75	125	1.74	20	
Beryllium	23	0.15	24.89	0.3383	89.5	75	125	0.681	20	
Cadmium	21	0.10	24.89	0	86.3	75	125	1.17	20	
Chromium	26	0.30	24.89	4.643	86.9	75	125	2.93	20	
Cobalt	21	0.30	24.89	2.130	77.6	75	125	1.21	20	
Lead	19	0.25	24.89	0.7202	75.1	75	125	0.552	20	
Manganese	200	0.10	24.89	180.8	93.0	75	125	0.0506	20	
Nickel	23	0.50	24.89	3.504	77.0	75	125	1.60	20	
Silver	4.3	0.25	4.977	0	86.9	75	125	0.614	20	
Vanadium	33	2.5	24.89	10.95	89.5	75	125	0.802	20	
Zinc	27	2.5	24.89	7.461	79.2	75	125	1.62	20	
Sample ID 1706910-003BMS	SampT	Гуре: М S	\$	Tes	tCode: E	PA Method	6010B: Soil	Metals		
			- <i>·</i> -							I

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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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID	1706910-003BMSD	SampT	ype: MS	SD.	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	OW-59 (33-34')	Batch	n ID: 32	349	R	RunNo: 4	3774				
Prep Date:	6/19/2017	Analysis D	ate: 6/	26/2017	S	SeqNo: 1	378920	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		7.8	2.5	24.89	0	31.5	75	125	7.50	20	S
Barium		180	0.10	24.89	132.5	185	75	125	1.56	20	S
Selenium		14	2.5	24.89	0	56.1	75	125	13.6	20	S

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 48 of 48

HALL ENVIE ANAL LABO	RONMENTAL YSIS Ratory	Hall Environmental Albu Albu TEL: 505-345-3975 Website: www.hai	Analysis Laborato 4901 Hawkins I querque, NM 871 FAX: 505-345-41 Ilenvironmental.co	wy NE 09 Sam 07 07	ple Log-In C	heck List
Client Name:	Western Refining Gallup	Work Order Number:	1706910		RcptNo:	1
Received By:	Anne Thorne	6/15/2017 11:15:00 AM	I	Anne Arm		
Completed By:	Anne Thorne	6/16/2017 12:41:46 PM	l	A. M		
Reviewed By:	ENM	06/16/17		anna ma		
Chain of Cus	stody					
1. Custody sea	als intact on sample bottles?		Yes 🗌	No 🗌	Not Present 🗹	
2. Is Chain of (Custody complete?		Yes 🗹	No 🗌	Not Present	
3. How was the	e sample delivered?		<u>Client</u>			
<u>Log In</u>						
4. Was an atte	empt made to cool the sample	es?	Yes 🗹	No 🗌	NA 🗍	
5. Were all sar	mples received at a temperatu	∎re of >0° C to 6.0°C	Yes 🗹	No 🗌		
6. Sample(s) i	n proper container(s)?		Yes 🗹	No 🗌		
7. Sufficient sa	ample volume for indicated tes	it(s)?	Yes 🗹	No 🗌		
8. Are samples	s (except VOA and ONG) prop	erly preserved?	Yes 🔽	No 🗌		
9. Was preserv	vative added to bottles?		Yes 🗌	No 🗹	NA 🗆	
10.VOA vials h	ave zero headspace?		Yes 🗹	No 🗆	No VOA Vials 🗌	
11. Were any s	ample containers received bro	oken?	Yes 🗌	No 🗹	# of preserved	
12. Does paper (Note discre	work match bottle labels? pancies on chain of custody)		Yes 🗹	No 🗌	bottles checked for pH:	Z, Z
13. Are matrices	s correctly identified on Chain	of Custody?	Yes 🗹	No 🖾	Adjusted?	<i>wo</i>
14. Is it clear wh	nat analyses were requested?		Yes 🗹	No 🗌		ko,
15. Were all hole (If no, notify	ding times able to be met? customer for authorization.)		Yes 🗹	No 🗌	Checked by:	
Special Hand	lling (if applicable)					

16.1	Was client notified of all o	liscrepancies with this order?	Yes	No 🗌	NA 🗹
	Person Notified:		Date		
	By Whom:		Via: 🗌 eMail 🗌 Ph	none 🗌 Fax 🛛	In Person
	Regarding:	[······································
	Client Instructions:		//////////////////////////////////////		

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17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

		www.hallenvironmental.com	A901 Hawkins NE - Albuquerque, NM 87109	Tel. 505-345-3975 Fax 505-345-4107	Analysis Request	() () () () ()	Э 8 В, ² 3) (1 20 1) 2)	s (8 (Gai SIMS) 085 005 10 50 6 11 10 11 10 10 10 10 10 10 10 10 10 10	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(C) (C) (C) (C) (C) (C) (C) (C) (C) (C)	TEX + MTE BTEX + MTE BTEX + MTE BTEX + MTE BE BE CORE CORE CORE CORE CORE CORE CORE COR												Remarks:			f this possibility. Any sub-contracted data will be clearly notated on the analytical report.
urn-Around Time:	KStandard 🗆 Rush	roject Name:	MW-Z AND BOUNDARY WELL	roject #:		roject Manager:		CHERYL JOHNSON	ampler: TRACY PAYNE	in Ice: X Yes 🗆 No	ample Temperature: 10	Container Preservative HEAL No.	40 ML HCL 70	HBER-1 NEAT	HER-1 NEAT 20	Destre 1 HNO- DY 20	1 ASTIC-1 HND3	ASTIC-1 NAOH	DATS HCL TC	HBER-1 NEAT 20	AMBER-1 NEAT -00	LASTIC-1 HNO3	Come-1 NAOH	ceived by: Date Time	cever by Marcare Date Time	Ultra Chan IIIS	acted to other accredited laboratories. This serves as notice o
Chain-of-Custody Record	Client: WESTERN REFINING SW, TNC.	GALLUP REFINERY	Mailing Address: 92 GTANT CROSSING RD 3	GALUP NM 87301	Phone #: 505-722-0231	email or Fax#: CHERYL. JOHNSON @	QA/QC Package: WNR.CON	□ Standard 🗙 Level 4 (Full Validation)	Accreditation	O NELAP Other O	K EDD (Type) EXCEL	Date Time Matrix Sample Request ID	6/17/1810 WATER EBO1 Vc				<u>5</u>		6/13/7 1715 MATER EBOZ				イマイ	Date: Time: Relinquished by:	Date: Time: Relinquished by: Re-	1115/22/SIN F/ISIIO	If necessary, samples submitted to Hall Environmental may be subcontra

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l Time:	d 🗆 Rush	e:	AND BOUN			ager:		DANSON	RACY PAY	KYes	perature:	Preservative Type	NEAT	MEDH	SOBI	NEAT	MEDH	3081						1) nu (ccredited laboratorie
Turn-Around	X Standard	Project Nam	SMM-2	Project #:		Project Man		CHERYL	Sampler: 1	On Ice;	Sample Tem	Container Type and #	.Tars-3	VIALS-2	VIALS-2	JARS-3	VIALS-2	VIALS-2	2				Received by:	Received by:	ontracted to other a
Chain-of-Custody Record	Client: WESTERN REFINING SW, INC.	GALUP REFINERY	Mailing Address: 92 BIANT CROSSING RD	GALLUP NM 87301	Phone #: 505-722-0231	Email or Fax#. CHERYL, JOHNSON (2)	QA/QC Package: WNR.COM	□ Standard	Accreditation	NELAP Other	K EDD (Type) EXEL	Date Time Matrix Sample Request ID	6/12/1700 3011 ON-59 (33-34')			eha/17/605 Soll ON-40 (20-22')		x x x					Date: Time: Relinquished by:	dSITTIS AND 2	If necessary, samples submitted to Hall Environmental may be subor

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WESTERN REFINING SOUTHWEST, INC. GALLUP REFINERY - GALLUP, NEW MEXICO SMW-2 AND BOUNDARY WELLS - JUNE 2016 METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES AND WATER QA/QC SAMPLES

TOTAL METALS ANALYSIS AND DISCOLVED METALS ANALYSIS

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES

Analyte	Analytical Method
Chloride	EPA method 3 00.0
Fluende	EPA method 300.0
 Sulfate	EPA method 300.0

WESTERN REFINING SOUTHWEST, INC. GALLUP REFINERY - GALLUP, NEW MEXICO SMW-2 AND BOUNDARY WELLS - JUNE 2016 METALS AND CYANIDE ANALYSES FOR SOIL SAMPLES

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

Appendix E Groundwater Analytical Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 03, 2017 Cheryl Johnson Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-3833 FAX (505) 722-0210

RE: SMW 2 and Boundary Wells

OrderNo.: 1706G62

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 8 sample(s) on 6/30/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order 1706G62

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 8/3/2017 **CLIENT:** Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM Diesel Range Organics (DRO) ND 0.36 1.0 mg/L 1 7/5/2017 10:10:22 AM 32608 Motor Oil Range Organics (MRO) ND 5.0 5.0 mg/L 1 7/5/2017 10:10:22 AM 32608 Surr: DNOP 72.4-157 %Rec 7/5/2017 10:10:22 AM 32608 115 0 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) 0.025 ND 0.050 mg/L 1 7/6/2017 1:51:07 PM G44019 Surr: BFB 295 0 52.3-138 S %Rec 1 7/6/2017 1:51:07 PM G44019 **EPA METHOD 300.0: ANIONS** Analyst: MRA 0.22 7/3/2017 6:30:12 PM Fluoride ND 0.50 mg/L 5 R43973 Chloride 1600 50 100 * mg/L 200 7/19/2017 1:32:26 PM R44381 Bromide 2.4 0.072 0.50 mg/L 5 7/3/2017 6:30:12 PM R43973 Phosphorus, Orthophosphate (As P) ND 1.2 2.5 Н mg/L 5 7/3/2017 6:30:12 PM R43973 740 1.9 10 mg/L 20 7/3/2017 6:42:37 PM R43973 Sulfate 5 0.13 1.0 7/3/2017 9:23:59 PM R43973 Nitrate+Nitrite as N 3.0 mg/L EPA METHOD 200.7: DISSOLVED METALS Analyst: pmf Barium 0.044 0.00093 0.0020 mg/L 1 7/18/2017 1:13:37 PM A44298 Beryllium 0.00045 0.00026 0.0020 J mg/L 1 7/18/2017 1:13:37 PM A44298 0.0020 Cadmium 0.00058 7/18/2017 1:13:37 PM A44298 ND mg/L 1 Calcium 170 0.45 mg/L 10 7/18/2017 1:21:54 PM A44298 10 Chromium ND 0.0011 0.0060 mg/L 1 7/18/2017 1:13:37 PM A44298 7/18/2017 1:13:37 PM Cobalt 0.0019 0.00076 0.0060 A44298 J mg/L 1 Iron ND 0.010 0.020 mg/L 1 7/18/2017 1:13:37 PM A44298 Magnesium 33 0.12 1.0 mg/L 1 7/18/2017 1:13:37 PM A44298 Manganese 0.55 0.0011 0.0020 * mg/L 1 7/18/2017 1:13:37 PM A44298 Nickel 0.0061 0.0036 0.010 J mg/L 1 7/18/2017 1:13:37 PM A44298 A44298 Potassium 5.0 0.071 1.0 mg/L 1 7/18/2017 1:13:37 PM Silver ND 0.00042 0.0050 mg/L 1 7/18/2017 1:13:37 PM A44298 Sodium 1100 3.2 20 mg/L 20 7/18/2017 1:39:26 PM A44298 Vanadium 0.0066 0.00076 0.050 J mg/L 1 7/18/2017 1:13:37 PM A44298 7/18/2017 1:13:37 PM A44298 **Zinc** 0.011 0.0028 0.010 mg/L 1 **EPA METHOD 200.7: TOTAL METALS** Analyst: pmf Barium 1.6 0.0093 0.020 mg/L 10 7/6/2017 5:42:54 PM 32644 Beryllium 0.0046 0.00026 0.0020 * mg/L 7/6/2017 5:41:00 PM 32644 1 Cadmium ND 0.00058 0.0020 7/6/2017 5:41:00 PM 32644 mg/L 1 Chromium 0.048 0.0011 0.0060 mg/L 1 7/6/2017 5:41:00 PM 32644 Cobalt 0.021 0.00076 0.0060 mg/L 1 7/6/2017 5:41:00 PM 32644 50 Iron 28 0.51 1.0 mg/L 7/7/2017 1:25:13 PM 32644 Manganese 2.2 0.011 0.020 * mg/L 10 7/6/2017 5:42:54 PM 32644

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

Practical Quanitative Limit PQL

Oualifiers:

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 1 of 61

Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 200.7: TOTAL METALS** Analyst: pmf Nickel 0.047 0.0036 0.010 mg/L 1 7/6/2017 5:41:00 PM 32644 Silver ND 0.00042 0.0050 mg/L 1 7/6/2017 5:41:00 PM 32644 Vanadium 0.070 0.00076 0.050 mg/L 7/6/2017 5:41:00 PM 32644 1 7/6/2017 5:41:00 PM 32644 Zinc 0.071 0.0028 0.010 mg/L 1 EPA 200.8: DISSOLVED METALS Analyst: JLF 7/19/2017 7:14:45 PM Antimony 0.00028 0.00017 0.0010 J mg/L 1 C44340 Arsenic 0.0044 0.00089 0.0050 mg/L 5 7/21/2017 7:52:57 PM A44430 J Lead 5 ND 0.00084 mg/L 7/21/2017 7:52:57 PM A44430 0.0025 Selenium 0.014 0.0019 0.0050 mg/L 5 7/21/2017 7:52:57 PM A44430 200.8 ICPMS METALS:TOTAL Analyst: JLF Antimony ND 0.0019 0.0050 mg/L 5 7/14/2017 1:06:08 PM 32644 Arsenic 0.0081 0.0015 0.0050 mg/L 5 7/14/2017 1:06:08 PM 32644 * 5 Lead 0.031 0.00048 0.0025 mg/L 7/14/2017 1:06:08 PM 32644 0.013 0.0036 0.0050 mg/L 5 7/14/2017 1:06:08 PM 32644 Selenium **EPA METHOD 245.1: MERCURY** Analyst: MED 0.000099 0.000037 0.00020 J mg/L 1 7/14/2017 4:10:26 PM 32802 Mercury **EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 7/6/2017 8:24:22 PM Acenaphthene ND 3.6 10 µg/L 1 32619 ND 3.5 10 1 7/6/2017 8:24:22 PM 32619 Acenaphthylene µg/L Aniline ND 3.1 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Anthracene ND 3.5 10 1 32619 µg/L 7/6/2017 8:24:22 PM ND 4.5 7/6/2017 8:24:22 PM 32619 Azobenzene 10 µg/L 1 ND 3.9 Benz(a)anthracene 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Benzo(a)pyrene ND 4.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Benzo(b)fluoranthene ND 4.0 7/6/2017 8:24:22 PM 32619 10 µg/L 1 Benzo(g,h,i)perylene ND 4.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND Benzo(k)fluoranthene 4.4 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Benzoic acid 7.8 3.9 20 J 1 7/6/2017 8:24:22 PM 32619 µg/L Benzyl alcohol ND 4.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Bis(2-chloroethoxy)methane ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Bis(2-chloroethyl)ether ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Bis(2-chloroisopropyl)ether ND 3.9 10 7/6/2017 8:24:22 PM 32619 µg/L 1 Bis(2-ethylhexyl)phthalate 4.8 10 J 7/6/2017 8:24:22 PM 32619 5.1 µg/L 1 ND 4.6 4-Bromophenyl phenyl ether 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Butyl benzyl phthalate ND 4.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Carbazole 7/6/2017 8:24:22 PM ND 4.6 10 32619 µg/L 1 4-Chloro-3-methylphenol ND 6.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619

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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 2 of 61

Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 7/6/2017 8:24:22 PM 4-Chloroaniline ND 3.5 10 µg/L 1 32619 2-Chloronaphthalene ND 3.7 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2-Chlorophenol ND 7.5 10 7/6/2017 8:24:22 PM µg/L 1 32619 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND Chrysene 3.8 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Di-n-butyl phthalate ND 5.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Di-n-octyl phthalate ND 4.7 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Dibenzofuran ND 4.1 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND 2.0 10 7/6/2017 8:24:22 PM 1,2-Dichlorobenzene µg/L 1 32619 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 7/6/2017 8:24:22 PM 32619 1.4-Dichlorobenzene ND 2.1 10 µg/L 1 7/6/2017 8:24:22 PM 32619 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND 4.0 10 1 Diethyl phthalate µg/L 7/6/2017 8:24:22 PM 32619 ND 3.6 10 1 Dimethyl phthalate µg/L 7/6/2017 8:24:22 PM 32619 ND 2,4-Dichlorophenol 5.7 20 µg/L 1 7/6/2017 8:24:22 PM 32619 2,4-Dimethylphenol ND 2.8 10 µg/L 1 7/6/2017 8:24:22 PM 32619 4,6-Dinitro-2-methylphenol ND 3.9 20 µg/L 1 7/6/2017 8:24:22 PM 32619 2,4-Dinitrophenol ND 2.6 20 1 7/6/2017 8:24:22 PM 32619 µg/L 2,4-Dinitrotoluene ND 4.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2.6-Dinitrotoluene ND 4.5 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Fluoranthene ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Fluorene ND 4.0 10 1 32619 µg/L 7/6/2017 8:24:22 PM ND 3.8 7/6/2017 8:24:22 PM 32619 Hexachlorobenzene 10 µg/L 1 ND 1.3 Hexachlorobutadiene 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND Hexachlorocvclopentadiene 1.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Hexachloroethane ND 1.2 7/6/2017 8:24:22 PM 32619 10 µg/L 1 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND 4.4 Isophorone 10 µg/L 1 7/6/2017 8:24:22 PM 32619 1-Methylnaphthalene ND 3.3 10 1 7/6/2017 8:24:22 PM 32619 µg/L 2-Methylnaphthalene ND 3.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2-Methylphenol ND 3.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 3+4-Methylphenol ND 3.2 10 µg/L 1 7/6/2017 8:24:22 PM 32619 N-Nitrosodi-n-propylamine ND 4.6 10 µg/L 7/6/2017 8:24:22 PM 32619 1 N-Nitrosodimethylamine ND 3.5 10 7/6/2017 8:24:22 PM 32619 µg/L 1 N-Nitrosodiphenylamine ND 3.9 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Naphthalene ND 2.9 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2-Nitroaniline ND 4.9 10 32619 µg/L 1 7/6/2017 8:24:22 PM 3-Nitroaniline ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619

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

* 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 3 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GaProject:SMW 2 and Boundary WellsLab ID:1706G62-001	llup Matrix:	AQUEOUS	Clier Col S Ro	nt Sampl llection 1 eceived 1	e ID: OW Date: 6/28 Date: 6/30	7-60 3/2017 0/2017	11:10:00 AM 10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	4.0	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Nitrobenzene	ND	3.6	10		μg/L	1	7/6/2017 8:24:22 PM	32619
2-Nitrophenol	ND	5.2	10		µg/L	1	7/6/2017 8:24:22 PM	32619
4-Nitrophenol	ND	5.5	10		μg/L	1	7/6/2017 8:24:22 PM	32619
Pentachlorophenol	ND	4.9	20		μg/L	1	7/6/2017 8:24:22 PM	32619
Phenanthrene	ND	4.3	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Phenol	ND	3.1	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Pyrene	ND	4.4	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Pyridine	ND	2.3	10		µg/L	1	7/6/2017 8:24:22 PM	32619
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	7/6/2017 8:24:22 PM	32619
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	7/6/2017 8:24:22 PM	32619
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Surr: 2-Fluorophenol	19.2	0	15-98.1		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: Phenol-d5	34.8	0	15-80.7		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: 2,4,6-Tribromophenol	23.3	0	15-112		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: Nitrobenzene-d5	79.1	0 2	7.2-90.7		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: 2-Fluorobiphenyl	68.5	0 2	3.3-85.6		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: 4-Terphenyl-d14	64.8	0 2	27.6-107		%Rec	1	7/6/2017 8:24:22 PM	32619
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Benzene	ND	0.062	1.0		µg/L	1	7/5/2017 6:12:00 PM	R44015
Toluene	0.24	0.064	1.0	J	ug/L	1	7/5/2017 6:12:00 PM	R44015
Ethylbenzene	ND	0.093	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Methyl tert-butyl ether (MTBE)	0.86	0.24	1.0	J	ug/L	1	7/5/2017 6:12:00 PM	R44015
1.2.4-Trimethylbenzene	ND	0.11	1.0	-	ug/L	1	7/5/2017 6:12:00 PM	R44015
1.3.5-Trimethylbenzene	ND	0.087	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	7/5/2017 6:12:00 PM	R44015
1.2-Dibromoethane (EDB)	ND	0.13	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Naphthalene	ND	0.11	2.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
1-Methylnaphthalene	ND	0.16	4.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
2-Methylnaphthalene	ND	0.15	4.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Acetone	13	0.82	10		µg/L	1	7/5/2017 6:12:00 PM	R44015
Bromobenzene	ND	0.14	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Bromodichloromethane	ND	0.18	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Bromoform	ND	0.21	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Bromomethane	ND	0.26	3.0		µg/L	1	7/5/2017 6:12:00 PM	R44015
2-Butanone	ND	1.1	10		ug/L	1	7/5/2017 6:12:00 PM	R44015
Carbon disulfide	ND	0.40	10		ua/l	1	7/5/2017 6:12:00 PM	R44015
Carbon Tetrachloride	ND	0.11	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Chlorobenzene	ND	0.11	1.0		μg/L	1	7/5/2017 6:12:00 PM	R44015

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA Chloroethane ND 0.23 2.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Chloromethane ND 0.29 3.0 R44015 µg/L 1 7/5/2017 6:12:00 PM 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 7/5/2017 6:12:00 PM 4-Chlorotoluene 0.40 1.0 µg/L 1 R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.091 1.0 R44015 Dibromomethane µg/L 1 7/5/2017 6:12:00 PM 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.40 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,4-Dichlorobenzene ND 1.0 1.0 1 R44015 Dichlorodifluoromethane µg/L 7/5/2017 6:12:00 PM ND 0.40 1.0 1 1,1-Dichloroethane µg/L 7/5/2017 6:12:00 PM R44015 ND 1,1-Dichloroethene 0.081 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1.2-Dichloropropane ND 0.10 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.17 1,3-Dichloropropane 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.16 2.0 1 7/5/2017 6:12:00 PM R44015 2,2-Dichloropropane µg/L 1,1-Dichloropropene ND 0.093 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Hexachlorobutadiene ND 0.80 R44015 1.0 µg/L 1 7/5/2017 6:12:00 PM 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.051 1.0 1 R44015 Isopropylbenzene µg/L 7/5/2017 6:12:00 PM 0.21 0.096 7/5/2017 6:12:00 PM R44015 4-Isopropyltoluene 1.0 J µg/L 1 ND R44015 4-Methyl-2-pentanone 0.71 10 µg/L 1 7/5/2017 6:12:00 PM Methylene Chloride ND 0.11 3.0 µg/L 1 7/5/2017 6:12:00 PM R44015 n-Butylbenzene ND 0.13 3.0 7/5/2017 6:12:00 PM R44015 µg/L 1 n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 sec-Butylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Styrene ND 0.16 1.0 1 7/5/2017 6:12:00 PM R44015 µg/L tert-Butylbenzene ND 0.10 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.10 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Tetrachloroethene (PCE) ND 0.13 1.0 µg/L 7/5/2017 6:12:00 PM R44015 1 trans-1,2-DCE ND 0.18 7/5/2017 6:12:00 PM R44015 1.0 µg/L 1 ND 0.22 1.0 R44015 trans-1,3-Dichloropropene µg/L 1 7/5/2017 6:12:00 PM 1.2.3-Trichlorobenzene ND 0.12 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.14 1.0 R44015 1,2,4-Trichlorobenzene µg/L 1 7/5/2017 6:12:00 PM 1,1,1-Trichloroethane ND 0.073 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015

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

* 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

Oualifiers:

- 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 Detection Limit

W Sample container temperature is out of limit as specified

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Analytical Report Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Analyses Result PQL Qual Units DF **Date Analyzed Batch ID MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 1,1,2-Trichloroethane ND 0.14 1.0 µg/L 7/5/2017 6:12:00 PM R44015 1 Trichloroethene (TCE) ND 0.11 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Trichlorofluoromethane ND 0.18 7/5/2017 6:12:00 PM R44015 1.0 µg/L 1 1,2,3-Trichloropropane ND 0.39 7/5/2017 6:12:00 PM R44015 2.0 µg/L 1 Vinyl chloride ND 0.18 7/5/2017 6:12:00 PM R44015 1.0 µg/L 1 Xylenes, Total ND 0.32 1.5 µg/L 1 7/5/2017 6:12:00 PM R44015 Surr: 1,2-Dichloroethane-d4 112 0 70-130 %Rec 1 7/5/2017 6:12:00 PM R44015 Surr: 4-Bromofluorobenzene 112 0 70-130 %Rec 1 7/5/2017 6:12:00 PM R44015 Surr: Dibromofluoromethane 0 R44015 112 70-130 %Rec 1 7/5/2017 6:12:00 PM Surr: Toluene-d8 103 0 70-130 %Rec 7/5/2017 6:12:00 PM R44015 1

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above c

- Η
- Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- ted in the associated Method Blank
- alue above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells Lab ID: 1706G62-002	llup Matrix:	AQUEOU	Clier Col US R	nt Sampl llection I eceived I	e ID: GW Date: 6/28 Date: 6/30	DUP03 3/2017 0/2017 1	1 0:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: TOM	
Diesel Range Organics (DRO)	ND	0.36	10		ma/l	1	7/5/2017 11:34:25 AM	32608
Motor Oil Range Organics (MRO)	ND	5.0	5.0		ma/L	1	7/5/2017 11:34:25 AM	32608
Surr: DNOP	111	0	72.4-157		%Rec	1	7/5/2017 11:34:25 AM	32608
EPA METHOD 8015D: GASOLINE RANGE		-					Analyst: NSB	
Gasoline Range Organics (GRO)	0.035	0 025	0.050		ma/l	1	7/6/2017 2:16:13 PM	G44019
Surr: BEB	105	0.025	52 3-138	5	%Rec	1	7/6/2017 2:16:13 PM	G44019
	100	0	52.5 150		/01/00			01010
EPA METHOD 300.0: ANIONS						_	Analyst: MRA	
Fluoride	ND	0.22	0.50		mg/L	5	7/3/2017 6:55:02 PM	R43973
Chloride	1300	25	50	*	mg/L	100	7/19/2017 1:44:51 PM	R44381
Bromide	1.2	0.072	0.50		mg/L	5	7/3/2017 6:55:02 PM	R43973
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5	н	mg/L	5	7/3/2017 6:55:02 PM	R43973
Sulfate	230	0.48	2.5		mg/L	5	7/3/2017 6:55:02 PM	R43973
Nitrate+Nitrite as N	ND	0.13	1.0		mg/L	5	7/3/2017 9:36:24 PM	R43973
EPA METHOD 200.7: DISSOLVED METAL	S						Analyst: pmf	
Barium	0.21	0.00085	0.0020		mg/L	1	7/18/2017 1:23:49 PM	A44298
Beryllium	0.00033	0.00029	0.0020	J	mg/L	1	7/18/2017 1:23:49 PM	A44298
Cadmium	ND	0.0010	0.0020		mg/L	1	7/18/2017 1:23:49 PM	A44298
Calcium	64	0.078	1.0		mg/L	1	7/18/2017 1:23:49 PM	A44298
Chromium	ND	0.0010	0.0060		mg/L	1	7/18/2017 1:23:49 PM	A44298
Cobalt	ND	0.0016	0.0060		mg/L	1	7/18/2017 1:23:49 PM	A44298
Iron	ND	0.016	0.020		mg/L	1	7/18/2017 1:23:49 PM	A44298
Magnesium	8.5	0.25	1.0		mg/L	1	7/18/2017 1:23:49 PM	A44298
Manganese	0.12	0.00038	0.0020	*	mg/L	1	7/18/2017 1:23:49 PM	A44298
Nickel	0.0028	0.0011	0.010	J	mg/L	1	7/18/2017 1:23:49 PM	A44298
Potassium	3.6	0.11	1.0		mg/L	1	7/18/2017 1:23:49 PM	A44298
Silver	ND	0.00088	0.0050		mg/L	1	7/18/2017 1:23:49 PM	A44298
Sodium	980	1.6	10		mg/L	10	7/18/2017 1:25:45 PM	A44298
Vanadium	ND	0.0019	0.050		mg/L	1	7/18/2017 1:23:49 PM	A44298
Zinc	0.012	0.0011	0.010		mg/L	1	7/18/2017 1:23:49 PM	A44298
EPA METHOD 200.7: TOTAL METALS							Analyst: pmf	
Barium	0.21	0.00093	0.0020		mg/L	1	7/6/2017 5:44:41 PM	32644
Beryllium	ND	0.00026	0.0020		mg/L	1	7/6/2017 5:44:41 PM	32644
Cadmium	ND	0.00058	0.0020		mg/L	1	7/6/2017 5:44:41 PM	32644
Chromium	ND	0.0011	0.0060		mg/L	1	7/6/2017 5:44:41 PM	32644
Cobalt	0.0010	0.00076	0.0060	J	mg/L	1	7/6/2017 5:44:41 PM	32644
Iron	0.81	0.010	0.020	*	mg/L	1	7/6/2017 5:44:41 PM	32644
Manganese	0.13	0.0011	0.0020	*	mg/L	1	7/6/2017 5:44:41 PM	32644

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: SMW 2 and Boundary Wells	allup		Clier Col	t Sampl llection I	e ID: GW Date: 6/28	DUP0 3/2017	1	
Lab ID: 1706G62-002	Matrix:	AQUEOU	S R	eceived I	Date: 6/30)/2017	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: pmf	
Nickel	ND	0.0036	0.010		mg/L	1	7/6/2017 5:44:41 PM	32644
Silver	ND	0.00042	0.0050		mg/L	1	7/6/2017 5:44:41 PM	32644
Vanadium	0.0025	0.00076	0.050	J	mg/L	1	7/6/2017 5:44:41 PM	32644
Zinc	ND	0.0028	0.010		mg/L	1	7/6/2017 5:44:41 PM	32644
EPA 200.8: DISSOLVED METALS							Analyst: JLF	
Antimony	ND	0.00017	0.0010		mg/L	1	7/19/2017 7:19:54 PM	C44340
Arsenic	0.0019	0.00089	0.0050	J	mg/L	5	7/21/2017 8:13:34 PM	A44430
Lead	ND	0.00084	0.0025		mg/L	5	7/21/2017 8:13:34 PM	A44430
Selenium	0.0067	0.0019	0.0050		mg/L	5	7/21/2017 8:13:34 PM	A44430
200.8 ICPMS METALS:TOTAL							Analyst: JLF	
Antimony	ND	0.0019	0.0050		mg/L	5	7/14/2017 1:11:16 PM	32644
Arsenic	0.0017	0.0015	0.0050	J	mg/L	5	7/14/2017 1:11:16 PM	32644
Lead	ND	0.00048	0.0025		mg/L	5	7/14/2017 1:11:16 PM	32644
Selenium	0.0065	0.0036	0.0050		mg/L	5	7/14/2017 1:11:16 PM	32644
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	0.00018	0.000037	0.00020	J	mg/L	1	7/14/2017 4:12:25 PM	32802
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	3.6	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Acenaphthylene	ND	3.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Aniline	ND	3.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Anthracene	ND	3.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Azobenzene	ND	4.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benz(a)anthracene	ND	3.9	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(a)pyrene	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(k)fluoranthene	ND	4.4	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzoic acid	22	3.9	20		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzyl alcohol	ND	4.6	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-chloroethoxy)methane	ND	4.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-chloroethyl)ether	ND	4.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-etnyinexyi)phthalate		4.8	10		µg/∟ 	1	7/6/2017 8:52:57 PM	32619
4-Dromopnenyi pnenyi etner		4.6	10		µg/∟	1	7/0/2017 0:52:57 PM	32019
Dutyi benzyi prinalate		4.6	10		µg/∟	1	7/0/2017 0:52:57 PM	32019
Calud2018 4-Chloro-3-methylphenol		4.0 6.2	10		µg/∟ ug/l	1	7/6/2017 8:52:57 PM	32019 32610
	ND	0.5	10		µg/∟	I	1/0/2017 0.32.37 FIVI	52015

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: GW DUP01 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 Lab ID: 1706G62-002 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 7/6/2017 8:52:57 PM 4-Chloroaniline ND 3.5 10 µg/L 1 32619 2-Chloronaphthalene ND 3.7 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2-Chlorophenol ND 7.5 10 µg/L 1 7/6/2017 8:52:57 PM 32619 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND Chrysene 3.8 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Di-n-butyl phthalate ND 5.0 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Di-n-octyl phthalate 5.0 4.7 10 J µg/L 1 7/6/2017 8:52:57 PM 32619 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Dibenzofuran ND 4.1 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND 2.0 10 7/6/2017 8:52:57 PM 32619 1,2-Dichlorobenzene µg/L 1 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 7/6/2017 8:52:57 PM 32619 1.4-Dichlorobenzene ND 2.1 10 µg/L 1 7/6/2017 8:52:57 PM 32619 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND 4.0 10 1 Diethyl phthalate µg/L 7/6/2017 8:52:57 PM 32619 ND 3.6 10 1 Dimethyl phthalate µg/L 7/6/2017 8:52:57 PM 32619 ND 2,4-Dichlorophenol 5.7 20 µg/L 1 7/6/2017 8:52:57 PM 32619 2,4-Dimethylphenol ND 2.8 10 µg/L 1 7/6/2017 8:52:57 PM 32619 4,6-Dinitro-2-methylphenol ND 3.9 20 µg/L 1 7/6/2017 8:52:57 PM 32619 2,4-Dinitrophenol ND 2.6 20 1 7/6/2017 8:52:57 PM 32619 µg/L 2,4-Dinitrotoluene ND 4.0 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2.6-Dinitrotoluene ND 4.5 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Fluoranthene ND 4.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Fluorene ND 4.0 10 1 32619 µg/L 7/6/2017 8:52:57 PM ND 3.8 7/6/2017 8:52:57 PM 32619 Hexachlorobenzene 10 µg/L 1 ND 1.3 Hexachlorobutadiene 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND Hexachlorocvclopentadiene 1.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Hexachloroethane ND 1.2 7/6/2017 8:52:57 PM 32619 10 µg/L 1 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND 4.4 Isophorone 10 µg/L 1 7/6/2017 8:52:57 PM 32619 1-Methylnaphthalene ND 3.3 10 1 7/6/2017 8:52:57 PM 32619 µg/L 2-Methylnaphthalene ND 3.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2-Methylphenol ND 3.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 3+4-Methylphenol ND 3.2 10 µg/L 1 7/6/2017 8:52:57 PM 32619 N-Nitrosodi-n-propylamine ND 4.6 10 µg/L 7/6/2017 8:52:57 PM 32619 1 N-Nitrosodimethylamine ND 3.5 10 7/6/2017 8:52:57 PM 32619 µg/L 1 N-Nitrosodiphenylamine ND 3.9 32619 10 µg/L 1 7/6/2017 8:52:57 PM Naphthalene ND 2.9 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2-Nitroaniline ND 4.9 10 32619 µg/L 1 7/6/2017 8:52:57 PM 3-Nitroaniline ND 4.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619

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

* 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

Oualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining SouthwesProject:SMW 2 and Boundary WellLab ID:1706G62-002	t, Gallup ls Matrix:	allup Client Sample ID: GW DUP01 Collection Date: 6/28/2017 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILI	ES						Analyst: JDC		
4-Nitroaniline	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Nitrobenzene	ND	3.6	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
2-Nitrophenol	ND	5.2	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
4-Nitrophenol	ND	5.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Pentachlorophenol	ND	4.9	20		µg/L	1	7/6/2017 8:52:57 PM	32619	
Phenanthrene	ND	4.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Phenol	ND	3.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Pyrene	ND	4.4	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Pyridine	ND	2.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Surr: 2-Fluorophenol	53.9	0	15-98.1		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: Phenol-d5	56.5	0	15-80.7		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: 2,4,6-Tribromophenol	71.7	0	15-112		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: Nitrobenzene-d5	83.9	0	27.2-90.7		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: 2-Fluorobiphenyl	75.2	0	23.3-85.6		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: 4-Terphenyl-d14	65.2	0	27.6-107		%Rec	1	7/6/2017 8:52:57 PM	32619	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
Benzene	ND	0.062	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Toluene	ND	0.064	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Ethylbenzene	ND	0.093	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Methyl tert-butyl ether (MTBE)	37	0.24	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.2.4-Trimethylbenzene	ND	0.11	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.3.5-Trimethylbenzene	ND	0.087	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.2-Dichloroethane (EDC)	0.54	0.40	1.0	J	ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.2-Dibromoethane (EDB)	ND	0.13	1.0	-	ua/L	1	7/5/2017 6:36:00 PM	R44015	
Naphthalene	ND	0.11	2.0		µ9/= ua/l	1	7/5/2017 6:36:00 PM	R44015	
1-Methylnaphthalene	ND	0.16	4.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
2-Methylnaphthalene	ND	0.15	4.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Acetone	15	0.82	10		ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromobenzene		0.14	1.0		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromodichloromethane	ND	0.14	1.0		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromoform	ND	0.21	1.0		ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromomethane	ND	0.21	3.0		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
2-Butanone	ND	1 1	10		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Carbon disulfide	ND	0.40	10		₽9/⊏ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Carbon Tetrachloride		0. 4 0 0.11	10		µg/⊑ ⊔a/l	1	7/5/2017 6:36:00 PM	R44015	
		0.11	1.0		µg/∟ ug/l	1	7/5/2017 6:26:00 PM	D4015	

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: GW DUP01 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 Lab ID: 1706G62-002 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 7/5/2017 6:36:00 PM Chloroethane ND 0.23 2.0 µg/L 1 R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 Chloromethane ND 0.29 3.0 R44015 µg/L 1 7/5/2017 6:36:00 PM 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 7/5/2017 6:36:00 PM 4-Chlorotoluene 0.40 1.0 µg/L 1 R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 6:36:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.091 1.0 R44015 Dibromomethane µg/L 1 7/5/2017 6:36:00 PM 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.40 1.0 1 7/5/2017 6:36:00 PM R44015 1,4-Dichlorobenzene µg/L ND 1.0 1.0 1 R44015 Dichlorodifluoromethane µg/L 7/5/2017 6:36:00 PM 0.61 0.40 J 1 R44015 1,1-Dichloroethane 1.0 µg/L 7/5/2017 6:36:00 PM 1,1-Dichloroethene ND 0.081 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,2-Dichloropropane ND 0.10 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.17 1,3-Dichloropropane 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.16 2.0 1 7/5/2017 6:36:00 PM R44015 2,2-Dichloropropane µg/L 1,1-Dichloropropene ND 0.093 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.80 R44015 Hexachlorobutadiene 1.0 µg/L 1 7/5/2017 6:36:00 PM 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.051 1.0 1 R44015 Isopropylbenzene µg/L 7/5/2017 6:36:00 PM ND 0.096 7/5/2017 6:36:00 PM R44015 4-Isopropyltoluene 1.0 µg/L 1 ND 4-Methyl-2-pentanone 0.71 10 µg/L 1 7/5/2017 6:36:00 PM R44015 ND Methylene Chloride 0.11 3.0 µg/L 1 7/5/2017 6:36:00 PM R44015 n-Butylbenzene ND 0.13 3.0 R44015 µg/L 1 7/5/2017 6:36:00 PM n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.11 sec-Butylbenzene 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 7/5/2017 6:36:00 PM Styrene ND 0.16 1.0 1 R44015 µg/L tert-Butylbenzene ND 0.10 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.10 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 6:36:00 PM R44015 Tetrachloroethene (PCE) ND 0.13 1.0 µg/L 7/5/2017 6:36:00 PM R44015 1 trans-1,2-DCE ND 0.18 R44015 1.0 µg/L 1 7/5/2017 6:36:00 PM ND 0.22 1.0 R44015 trans-1,3-Dichloropropene µg/L 1 7/5/2017 6:36:00 PM 1.2.3-Trichlorobenzene ND 0.12 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.14 1.0 R44015 1,2,4-Trichlorobenzene µg/L 1 7/5/2017 6:36:00 PM 1,1,1-Trichloroethane ND 0.073 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest, G SMW 2 and Boundary Wells	allup	lup Client Sample ID: GW DUP01 Collection Date: 6/28/2017									
Lab ID:	1706G62-002	Matrix:	AQUEOUS	R	Received Date: 6/30/2017 10:30:00 AM							
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
	HOD 8260B: VOLATILES							Analyst: RAA				
1,1,2-Trich	hloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Trichloroe	thene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Trichlorofl	uoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
1,2,3-Trich	hloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Vinyl chloi	ride	ND	0.18	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Xylenes, 1	Total	ND	0.32	1.5		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Surr: 1,	2-Dichloroethane-d4	110	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			
Surr: 4-	Bromofluorobenzene	107	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			
Surr: Di	ibromofluoromethane	115	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			
Surr: To	oluene-d8	104	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detecte
	D	Sample Diluted Due to Matrix	Е	Value above qu

- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 12 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT.		11		Cline	4.01								
CLIENI:	western Refining Southwest, Ga	nup	Collection Date: 6/28/2017 10:20:00 AM										
Project:	SMW 2 and Boundary Wells			Co	llection	Date: 6/28	3/2017 1	0:30:00 AM					
Lab ID:	1706G62-003	Matrix:	Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM										
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA METH	HOD 8015M/D: DIESEL RANGE							Analyst: TOM					
Diesel Ra	inge Organics (DRO)	0.47	0.36	1.0	J	mg/L	1	7/5/2017 12:02:35 PM	32608				
Motor Oil	Range Organics (MRO)	ND	5.0	5.0		mg/L	1	7/5/2017 12:02:35 PM	32608				
Surr: D	NOP	113	0	72.4-157		%Rec	1	7/5/2017 12:02:35 PM	32608				
EPA METH	HOD 8015D: GASOLINE RANGE							Analyst: NSB					
Gasoline	Range Organics (GRO)	ND	0.050	0.10	D	mg/L	2	7/6/2017 2:41:39 PM	G44019				
Surr: B	FB	114	0	52.3-138	D	%Rec	2	7/6/2017 2:41:39 PM	G44019				
EPA METH	HOD 300.0: ANIONS							Analyst: MRA					
Fluoride		1.3	0.22	0.50		mg/L	5	7/3/2017 7:19:51 PM	R43973				
Chloride		73	1.2	2.5		mg/L	5	7/3/2017 7:19:51 PM	R43973				
Bromide		0.33	0.072	0.50	J	mg/L	5	7/3/2017 7:19:51 PM	R43973				
Phosphor	rus, Orthophosphate (As P)	ND	1.2	2.5	Н	mg/L	5	7/3/2017 7:19:51 PM	R43973				
Sulfate		230	0.48	2.5		mg/L	5	7/3/2017 7:19:51 PM	R43973				
Nitrate+N	itrite as N	ND	0.13	1.0		mg/L	5	7/3/2017 9:48:48 PM	R43973				
EPA METH	HOD 200.7: TOTAL METALS							Analyst: pmf					
Barium		4.7	0.0047	0.010	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Beryllium		0.048	0.0013	0.010	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Cadmium		ND	0.0029	0.010		mg/L	5	7/18/2017 3:30:19 PM	32644				
Chromium	n	0.17	0.0055	0.030	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Cobalt		0.079	0.0038	0.030		mg/L	5	7/18/2017 3:30:19 PM	32644				
Iron		82	1.0	2.0	*	mg/L	100	7/7/2017 1:33:40 PM	32644				
Manganes	se	5.6	0.055	0.10	*	mg/L	50	7/18/2017 3:32:08 PM	32644				
Nickel		0.54	0.018	0.050	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Silver		ND	0.0021	0.025		mg/L	5	7/18/2017 3:30:19 PM	32644				
Vanadium	1	0.14	0.0038	0.25	J	mg/L	5	7/18/2017 3:30:19 PM	32644				
Zinc		3.4	0.014	0.050		mg/L	5	7/18/2017 3:30:19 PM	32644				
200.8 ICPI	MS METALS:TOTAL							Analyst: JLF					
Antimony		ND	0.0019	0.0050		mg/L	5	7/14/2017 1:26:41 PM	32644				
Arsenic		0.012	0.0030	0.010	*	mg/L	10	7/14/2017 1:31:50 PM	32644				
Lead		0.20	0.00095	0.0050	*	mg/L	10	7/14/2017 1:31:50 PM	32644				
Selenium		ND	0.0071	0.010		mg/L	10	7/14/2017 1:31:50 PM	32644				
EPA METH	HOD 245.1: MERCURY							Analyst: MED					
Mercury		0.00024	0.000037	0.00020		mg/L	1	7/14/2017 4:14:24 PM	32802				
EPA METH	HOD 8270C: SEMIVOLATILES							Analyst: JDC					
Acenapht	hene	ND	36	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619				
Acenapht	hylene	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619				
Aniline		ND	31	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619				

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

* 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

Qualifiers:

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 Page 13 of 61

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells Lab ID: 1706G62-003	allup Matrix:	AQUEOUS	10:30:00 AM 10:30:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Anthracene	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Azobenzene	ND	45	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
Benz(a)anthracene	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(a)pyrene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(b)fluoranthene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(g,h,i)perylene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(k)fluoranthene	ND	44	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzoic acid	93	39	200	JD	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzyl alcohol	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-chloroethoxy)methane	ND	43	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-chloroethyl)ether	ND	43	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-chloroisopropyl)ether	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-ethylhexyl)phthalate	ND	48	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Bromophenyl phenyl ether	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Butyl benzyl phthalate	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Carbazole	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Chloro-3-methylphenol	ND	63	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Chloroaniline	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2-Chloronaphthalene	ND	37	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2-Chlorophenol	ND	75	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Chlorophenyl phenyl ether	ND	36	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Chrysene	ND	38	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Di-n-butyl phthalate	ND	50	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Di-n-octyl phthalate	ND	47	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Dibenz(a,h)anthracene	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Dibenzofuran	ND	41	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
1,2-Dichlorobenzene	ND	20	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
1,3-Dichlorobenzene	ND	18	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
1,4-Dichlorobenzene	ND	21	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
3,3´-Dichlorobenzidine	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Diethyl phthalate	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Dimethyl phthalate	ND	36	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dichlorophenol	ND	57	200	D	μg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dimethylphenol	ND	28	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
4,6-Dinitro-2-methylphenol	ND	39	200	D	μg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dinitrophenol	ND	26	200	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dinitrotoluene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2,6-Dinitrotoluene	ND	45	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Fluoranthene	ND	43	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619

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

* 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

Qualifiers:

- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells	Allup Client Sample ID: BW-4B Collection Date: 6/28/2017 10:30:00 AM										
Lab ID: 1706G62-003	Matrix:	10:30:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC				
Fluorene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachlorobenzene	ND	38	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachlorobutadiene	ND	13	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachlorocyclopentadiene	ND	13	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachloroethane	ND	12	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Indeno(1,2,3-cd)pyrene	ND	42	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Isophorone	ND	44	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
1-Methylnaphthalene	ND	33	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
2-Methylnaphthalene	ND	33	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
2-Methylphenol	ND	33	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
3+4-Methylphenol	ND	32	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
N-Nitrosodi-n-propylamine	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
N-Nitrosodimethylamine	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
N-Nitrosodiphenylamine	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Naphthalene	ND	29	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
2-Nitroaniline	ND	49	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
3-Nitroaniline	ND	43	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
4-Nitroaniline	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Nitrobenzene	ND	36	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619			
2-Nitrophenol	ND	52	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
4-Nitrophenol	ND	55	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Pentachlorophenol	ND	49	200	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Phenanthrene	ND	43	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619			
Phenol	ND	31	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Pvrene	ND	44	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619			
Pyridine	ND	23	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
1,2,4-Trichlorobenzene	ND	21	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
2,4,5-Trichlorophenol	ND	51	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
2,4,6-Trichlorophenol	ND	55	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Surr: 2-Fluorophenol	57.6	0	15-98.1	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: Phenol-d5	47.6	0	15-80.7	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: 2,4,6-Tribromophenol	76.5	0	15-112	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: Nitrobenzene-d5	87.2	0 27	7.2-90.7	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: 2-Fluorobiphenvl	76.1	0 23	3.3-85.6	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: 4-Terphenyl-d14	75.7	0 2	7.6-107	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
EPA METHOD 8260B: VOLATILES			-				Analyst: RAA				
Benzene	ND	0.12	2.0	Л	ua/l	2	7/5/2017 7:00:00 PM	R44015			
Toluene	ND	0.12	2.0	D	r9′⊏ ua/l	2	7/5/2017 7·00·00 PM	R44015			
Ethylbenzene	ND	0.10	2.0	n	P9′⊏ ua/l	2	7/5/2017 7·00·00 PM	R44015			
		0.13	2.0	D	µ9/⊏	2					

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

* 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

Qualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

				~	. ~ .					
CLIENT:	LIENT: Western Refining Southwest, Gallup Client Sample ID: BW-4B									
Project:	SMW 2 and Boundary Wells	Collection Date: 6/28/2017 10:30:00 AM								
Lab ID:	1706G62-003	Matrix:	AQUEOUS	R	eceived l	Date: 6/30)/2017	10:30:00 AM		
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA MET	HOD 8260B: VOLATILES							Analyst: RAA		
Methyl te	rt-butyl ether (MTBE)	ND	0.48	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2,4-Trin	nethylbenzene	ND	0.23	2.0	D	μg/L	2	7/5/2017 7:00:00 PM	R44015	
1,3,5-Trin	nethylbenzene	ND	0.17	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dichle	proethane (EDC)	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dibro	moethane (EDB)	ND	0.26	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Naphthale	ene	ND	0.23	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1-Methylr	naphthalene	ND	0.32	8.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Methylr	naphthalene	ND	0.30	8.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Acetone		10	1.6	20	JD	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromobe	nzene	ND	0.28	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromodic	chloromethane	ND	0.35	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromofor	m	ND	0.42	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromome	ethane	ND	0.51	6.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Butano	ne	ND	2.3	20	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Carbon d	isulfide	ND	0.80	20	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Carbon T	etrachloride	ND	0.22	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chlorobe	nzene	ND	0.21	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chloroeth	nane	ND	0.47	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chlorofor	m	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chlorome	ethane	ND	0.59	6.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Chlorot	oluene	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
4-Chlorot	oluene	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
cis-1,2-D	CE	ND	0.41	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
cis-1,3-Di	ichloropropene	ND	0.16	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dibro	mo-3-chloropropane	ND	2.8	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Dibromoc	chloromethane	ND	0.14	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Dibromor	nethane	ND	0.18	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dichlo	orobenzene	ND	0.18	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,3-Dichlo	orobenzene	ND	0.30	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,4-Dichlo	orobenzene	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Dichlorod	Dichlorodifluoromethane		2.0	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,1-Dichlo	oroethane	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,1-Dichloroethene		ND	0.16	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dichloropropane		ND	0.20	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,3-Dichlo	oropropane	ND	0.33	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2,2-Dichlo	oropropane	ND	0.31	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,1-Dichlo	oropropene	ND	0.19	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Hexachlo	robutadiene	ND	1.6	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Hexanone		ND	1.3	20	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	

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

* 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

Qualifiers:

- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup **Client Sample ID: BW-4B Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 10:30:00 AM Lab ID: 1706G62-003 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA Isopropylbenzene ND 0.10 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 4-Isopropyltoluene ND 0.19 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 ND 1.4 20 D 2 R44015 4-Methyl-2-pentanone µg/L 7/5/2017 7:00:00 PM Methylene Chloride ND 0.22 D 2 R44015 6.0 µg/L 7/5/2017 7:00:00 PM D 2 n-Butylbenzene ND 0.26 6.0 µg/L 7/5/2017 7:00:00 PM R44015 n-Propylbenzene ND 0.15 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 2 sec-Butylbenzene ND 0.22 2.0 D µg/L 7/5/2017 7:00:00 PM R44015 Styrene ND 0.31 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 D 2 tert-Butylbenzene ND 0.21 2.0 µg/L 7/5/2017 7:00:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.21 2.0 D 2 R44015 µg/L 7/5/2017 7:00:00 PM 1,1,2,2-Tetrachloroethane ND 0.27 4.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 Tetrachloroethene (PCE) ND 0.26 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 trans-1,2-DCE ND 0.37 2.0 D 2 7/5/2017 7:00:00 PM R44015 µg/L D 2 ND 0.44 2.0 R44015 trans-1,3-Dichloropropene µg/L 7/5/2017 7:00:00 PM ND 2.0 D 2 R44015 1,2,3-Trichlorobenzene 0.23 µg/L 7/5/2017 7:00:00 PM D 2 1,2,4-Trichlorobenzene ND 0.28 2.0 µg/L 7/5/2017 7:00:00 PM R44015 1,1,1-Trichloroethane ND 0.15 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 ND 2.0 D 2 1,1,2-Trichloroethane 0.28 µg/L 7/5/2017 7:00:00 PM R44015 Trichloroethene (TCE) ND 0.22 2.0 D 2 7/5/2017 7:00:00 PM R44015 µg/L 2 Trichlorofluoromethane ND 0.37 2.0 D µg/L 7/5/2017 7:00:00 PM R44015 ND 0.78 4.0 D 2 R44015 1,2,3-Trichloropropane µg/L 7/5/2017 7:00:00 PM Vinyl chloride ND 0.36 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 Xylenes, Total ND 0.64 3.0 D 2 R44015 µg/L 7/5/2017 7:00:00 PM Surr: 1,2-Dichloroethane-d4 108 0 70-130 D %Rec 2 R44015 7/5/2017 7:00:00 PM Surr: 4-Bromofluorobenzene 0 70-130 D %Rec 2 109 7/5/2017 7:00:00 PM R44015 Surr: Dibromofluoromethane 0 70-130 D 2 110 %Rec 7/5/2017 7:00:00 PM R44015 Surr: Toluene-d8 0 70-130 D %Rec 2 7/5/2017 7:00:00 PM R44015 104

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

% Recovery outside of range due to dilution or matrix

S

- W Sample container temperature is out of limit as specified
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Analytical Report
Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Defining Southwest	Callup		Clier	at Samn	o ID. DW	1.50						
CLIENT: Western Renning Southwest,	Ganup	Collection Date: 6/28/2017 0.10.00 AM										
Project: SMW 2 and Boundary Wells												
Lab ID: 1706G62-004	Matrix:	AQUEOU	JS R	eceived 1	Date: 6/30)/2017 1	0:30:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA METHOD 8015M/D: DIESEL RANG	Ε						Analyst: TOM					
Diesel Range Organics (DRO)	ND	0.36	1.0		mg/L	1	7/5/2017 12:30:40 PM	32608				
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	7/5/2017 12:30:40 PM	32608				
Surr: DNOP	114	0	72.4-157		%Rec	1	7/5/2017 12:30:40 PM	32608				
EPA METHOD 8015D: GASOLINE RAN	GE						Analyst: NSB					
Gasoline Range Organics (GRO)	0.039	0.025	0.050	J	mg/L	1	7/6/2017 3:07:27 PM	G44019				
Surr: BFB	115	0	52.3-138		%Rec	1	7/6/2017 3:07:27 PM	G44019				
EPA METHOD 300.0: ANIONS							Analyst: MRA					
Fluoride	ND	0.22	0.50		mg/L	5	7/3/2017 7:44:41 PM	R43973				
Chloride	1400	25	50	*	mg/L	100	7/19/2017 1:57:16 PM	R44381				
Bromide	1.7	0.072	0.50		mg/L	5	7/3/2017 7:44:41 PM	R43973				
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5	н	mg/L	5	7/3/2017 7:44:41 PM	R43973				
Sulfate	220	0.48	2.5		mg/L	5	7/3/2017 7:44:41 PM	R43973				
Nitrate+Nitrite as N	ND	0.13	1.0		mg/L	5	7/3/2017 10:01:12 PM	R43973				
EPA METHOD 200.7: DISSOLVED MET	ALS						Analyst: pmf					
Barium	0.21	0.00085	0.0020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Beryllium	ND	0.00029	0.0020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Cadmium	ND	0.0010	0.0020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Calcium	64	0.078	1.0		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Chromium	0.0016	0.0010	0.0060	J	mg/L	1	7/18/2017 1:27:39 PM	A44298				
Cobalt	ND	0.0016	0.0060		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Iron	ND	0.016	0.020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Magnesium	8.3	0.25	1.0		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Manganese	0.12	0.00038	0.0020	*	mg/L	1	7/18/2017 1:27:39 PM	A44298				
Nickel	0.0049	0.0011	0.010	J	mg/L	1	7/18/2017 1:27:39 PM	A44298				
Potassium	3.5	0.11	1.0		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Silver	ND	0.00088	0.0050		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Sodium	950	1.6	10		mg/∟	10	7/18/2017 1:29:36 PM	A44298				
Zine	ND 0.011	0.0019	0.050		mg/L	1	7/10/2017 1.27.39 PM	A44290				
	0.011	0.0011	0.010		mg/∟	1	1/10/2017 1.27.39 FW	A44290				
EPA METHOD 200.7: TOTAL METALS	0.04		0.0000				Analyst: pmf	00044				
Barium	0.21	0.00093	0.0020		mg/L	1	7/6/2017 6:04:03 PM	32644				
Beryllium	ND	0.00026	0.0020		mg/L	1	7/6/2017 6:04:03 PM	32644				
Caomium	ND	0.00058	0.0020		mg/L	1	7/6/2017 6:04:03 PM	32644				
Coholt		0.0011	0.0060		mg/∟	1	7/0/2017 0:04:03 PM	32044				
lion	0.0012	0.00076	0.000	J *	mg/L	1	7/6/2017 6:04:03 PM	32044 32644				
Mangapasa	0.74	0.010	0.020	*	mg/L	1	7/6/2017 6:04:03 PM	32044				
wanganese	0.13	0.0011	0.0020		mg/∟	I	1/0/2017 0:04:03 PM	32044				

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

* 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

Qualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Analytical Report
Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, C Project: SMW 2 and Boundary Wells	Allup Client Sample ID: BW-5C Collection Date: 6/28/2017 9:10:00 AM Matrix: AOUEOUS Received Date: 6/30/2017 10:30:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 200.7: TOTAL METALS				-			Analyst: pmf			
Nickel	ND	0.0036	0.010		ma/l	1	7/6/2017 6·04·03 PM	32644		
Silver	ND	0.00042	0.0050		ma/l	1	7/6/2017 6:04:03 PM	32644		
Vanadium	0.0029	0.00076	0.050	J	ma/L	1	7/6/2017 6:04:03 PM	32644		
Zinc	0.0036	0.0028	0.010	J	mg/L	1	7/6/2017 6:04:03 PM	32644		
EPA 200.8: DISSOLVED METALS					-		Analyst: JLF			
Antimony	ND	0.00017	0.0010		ma/L	1	7/19/2017 7:25:02 PM	C44340		
Arsenic	0.0019	0.00089	0.0050	J	ma/L	5	7/21/2017 8:18:42 PM	A44430		
Lead	ND	0.00084	0.0025	-	mg/L	5	7/21/2017 8:18:42 PM	A44430		
Selenium	0.0068	0.0019	0.0050		mg/L	5	7/21/2017 8:18:42 PM	A44430		
200.8 ICPMS METALS:TOTAL					-		Analyst: JLF			
Antimony	ND	0.0019	0.0050		ma/L	5	7/14/2017 1:47:18 PM	32644		
Arsenic	ND	0.0015	0.0050		mg/L	5	7/14/2017 1:47:18 PM	32644		
Lead	ND	0.00048	0.0025		mg/L	5	7/14/2017 1:47:18 PM	32644		
Selenium	0.0049	0.0036	0.0050	J	mg/L	5	7/14/2017 1:47:18 PM	32644		
EPA METHOD 245.1: MERCURY							Analyst: MED			
Mercury	0.00018	0.000037	0.00020	J	mg/L	1	7/14/2017 4:16:25 PM	32802		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC			
Acenaphthene	ND	3.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Acenaphthylene	ND	3.5	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Aniline	ND	3.1	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Anthracene	ND	3.5	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Azobenzene	ND	4.5	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benz(a)anthracene	ND	3.9	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(a)pyrene	ND	4.0	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(k)fluoranthene	ND	4.4	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzoic acid	7.9	3.9	20	J	µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzyl alcohol	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-chloroethoxy)methane	ND	4.3	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-chloroethyl)ether	ND	4.3	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-ethylhexyl)phthalate	ND	4.8	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
4-Bromophenyl phenyl ether	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Butyl benzyl phthalate	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Carbazole	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
4-Chloro-3-methylphenol	ND	6.3	10		µg/L	1	7/7/2017 2:20:13 PM	32619		

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5C **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:10:00 AM Lab ID: 1706G62-004 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 4-Chloroaniline ND 3.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Chloronaphthalene ND 3.7 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Chlorophenol ND 7.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND Chrysene 3.8 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Di-n-butyl phthalate ND 5.0 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Di-n-octyl phthalate 5.0 4.7 10 J µg/L 1 7/7/2017 2:20:13 PM 32619 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Dibenzofuran ND 4.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 2.0 10 7/7/2017 2:20:13 PM 1,2-Dichlorobenzene µg/L 1 32619 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 7/7/2017 2:20:13 PM 32619 1.4-Dichlorobenzene ND 2.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 4.0 10 1 Diethyl phthalate µg/L 7/7/2017 2:20:13 PM 32619 ND 3.6 10 1 Dimethyl phthalate µg/L 7/7/2017 2:20:13 PM 32619 ND 2,4-Dichlorophenol 5.7 20 µg/L 1 7/7/2017 2:20:13 PM 32619 2,4-Dimethylphenol ND 2.8 10 µg/L 1 7/7/2017 2:20:13 PM 32619 4,6-Dinitro-2-methylphenol ND 3.9 20 µg/L 1 7/7/2017 2:20:13 PM 32619 2,4-Dinitrophenol ND 2.6 20 1 7/7/2017 2:20:13 PM 32619 µg/L 2,4-Dinitrotoluene ND 4.0 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2.6-Dinitrotoluene ND 4.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Fluoranthene ND 4.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Fluorene ND 4.0 10 1 32619 µg/L 7/7/2017 2:20:13 PM ND 3.8 7/7/2017 2:20:13 PM 32619 Hexachlorobenzene 10 µg/L 1 ND 1.3 Hexachlorobutadiene 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND Hexachlorocvclopentadiene 1.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Hexachloroethane ND 1.2 7/7/2017 2:20:13 PM 32619 10 µg/L 1 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 4.4 Isophorone 10 µg/L 1 7/7/2017 2:20:13 PM 32619 1-Methylnaphthalene ND 3.3 10 1 7/7/2017 2:20:13 PM 32619 µg/L 2-Methylnaphthalene ND 3.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Methylphenol ND 3.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 3+4-Methylphenol ND 3.2 10 µg/L 1 7/7/2017 2:20:13 PM 32619 N-Nitrosodi-n-propylamine ND 4.6 10 µg/L 7/7/2017 2:20:13 PM 32619 1 N-Nitrosodimethylamine ND 3.5 7/7/2017 2:20:13 PM 32619 10 µg/L 1 N-Nitrosodiphenylamine ND 3.9 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Naphthalene ND 2.9 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Nitroaniline ND 4.9 10 32619 µg/L 1 7/7/2017 2:20:13 PM 3-Nitroaniline ND 4.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5C **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:10:00 AM Lab ID: 1706G62-004 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 4-Nitroaniline ND 4.0 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Nitrobenzene ND 3.6 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 5.2 10 2-Nitrophenol µg/L 1 7/7/2017 2:20:13 PM 32619 4-Nitrophenol ND 5.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND Pentachlorophenol 4.9 20 µg/L 1 7/7/2017 2:20:13 PM 32619 Phenanthrene ND 4.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Phenol ND 3.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Pyrene ND 4.4 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Pyridine ND 2.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 2.1 10 7/7/2017 2:20:13 PM 1,2,4-Trichlorobenzene µg/L 1 32619 2,4,5-Trichlorophenol ND 5.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2,4,6-Trichlorophenol ND 5.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Surr: 2-Fluorophenol 66.2 0 15-98.1 %Rec 1 7/7/2017 2:20:13 PM 32619 0 Surr: Phenol-d5 51.2 1 15-80.7 %Rec 7/7/2017 2:20:13 PM 32619 Surr: 2,4,6-Tribromophenol 0 %Rec 84.6 15-112 1 7/7/2017 2:20:13 PM 32619 Surr: Nitrobenzene-d5 97.0 0 27.2-90.7 S %Rec 1 7/7/2017 2:20:13 PM 32619 Surr: 2-Fluorobiphenyl 88.8 0 23.3-85.6 S %Rec 1 7/7/2017 2:20:13 PM 32619 Surr: 4-Terphenyl-d14 78.7 27.6-107 %Rec 7/7/2017 2:20:13 PM 0 1 32619 EPA METHOD 8260B: VOLATILES Analyst: RAA ND 0.062 7/5/2017 7:24:00 PM R44015 Benzene 1.0 µg/L 1 7/5/2017 7:24:00 PM Toluene ND 0.064 1.0 R44015 µg/L 1 Ethylbenzene ND 0.093 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 R44015 Methyl tert-butyl ether (MTBE) 38 0.24 1.0 µg/L 1 7/5/2017 7:24:00 PM 1,2,4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 1,3,5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 0.57 0.40 µg/L R44015 1,2-Dichloroethane (EDC) 1.0 J 1 7/5/2017 7:24:00 PM 1,2-Dibromoethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Naphthalene ND 0.11 2.0 7/5/2017 7:24:00 PM R44015 µg/L 1 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 7:24:00 PM R44015 ND 0.15 R44015 2-Methylnaphthalene 4.0 µg/L 1 7/5/2017 7:24:00 PM 0.82 R44015 Acetone 5.4 10 J µg/L 1 7/5/2017 7:24:00 PM ND 0.14 1.0 1 7/5/2017 7:24:00 PM R44015 Bromobenzene µg/L Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Bromoform ND 0.21 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Bromomethane ND 0.26 3.0 7/5/2017 7:24:00 PM R44015 µg/L 1 2-Butanone ND 1.1 10 µg/L 1 7/5/2017 7:24:00 PM R44015 Carbon disulfide ND 0.40 10 R44015 µg/L 1 7/5/2017 7:24:00 PM Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015

Hall Environmental Analysis Laboratory, Inc.

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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project: Lab ID:	Western Refining Southwest, G SMW 2 and Boundary Wells 1706G62-004	allup Matrix:	Illup Client Sample ID: BW-5C Collection Date: 6/28/2017 9:10:00 AM Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM										
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA MET	HOD 8260B: VOLATILES							Analyst: RAA					
Chloroeth	nane	ND	0.23	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Chlorofor	m	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Chlorome	ethane	ND	0.29	3.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
2-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
4-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
cis-1,2-D0	CE	ND	0.20	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
cis-1,3-Di	ichloropropene	ND	0.082	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2-Dibro	mo-3-chloropropane	ND	1.4	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Dibromoc	chloromethane	ND	0.072	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Dibromon	nethane	ND	0.091	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2-Dichlo	orobenzene	ND	0.090	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,3-Dichlo	orobenzene	ND	0.15	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,4-Dichlo	orobenzene	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Dichlorod	lifluoromethane	ND	1.0	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1-Dichlo	oroethane	0.61	0.40	1.0	J	µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1-Dichlo	oroethene	ND	0.081	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2-Dichlo	oropropane	ND	0.10	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,3-Dichlo	oropropane	ND	0.17	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
2,2-Dichlo	oropropane	ND	0.16	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1-Dichlo	oropropene	ND	0.093	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Hexachlo	robutadiene	ND	0.80	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
2-Hexano	one	ND	0.66	10		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Isopropyll	benzene	ND	0.051	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
4-Isoprop	yltoluene	ND	0.096	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
4-Methyl-	2-pentanone	ND	0.71	10		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Methylene	e Chloride	ND	0.11	3.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
n-Butylbe	enzene	ND	0.13	3.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
n-Propylb	benzene	ND	0.074	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
sec-Butyl	benzene	ND	0.11	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Styrene		ND	0.16	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
tert-Butyl	benzene	ND	0.10	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1,1,2-Te	etrachloroethane	ND	0.10	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1,2,2-Te	etrachloroethane	ND	0.14	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Tetrachlo	roethene (PCE)	ND	0.13	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
trans-1,2-	-DCE	ND	0.18	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
trans-1,3-	Dichloropropene	ND	0.22	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2,3-Tric	hlorobenzene	ND	0.12	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2,4-Tric	hlorobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1,1-Tric	hloroethane	ND	0.073	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				

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

* 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

Qualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

CLIENT: Western Refining Southwest, 0 Project: SMW 2 and Boundary Wells Lab ID: 1706G62-004	GallupClient Sample ID: BW-5CCollection Date: 6/28/2017 9:10:00 AMMatrix: AQUEOUSReceived Date: 6/30/2017 10:30:00 AM								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Vinyl chloride	ND	0.18	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Surr: 1,2-Dichloroethane-d4	113	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	
Surr: 4-Bromofluorobenzene	107	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	
Surr: Toluene-d8	103	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above q

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5B **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:40:00 AM Lab ID: 1706G62-005 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM 7/5/2017 12:58:49 PM Diesel Range Organics (DRO) 0.74 0.36 1.0 J mg/L 1 32608 Motor Oil Range Organics (MRO) ND 5.0 5.0 mg/L 1 7/5/2017 12:58:49 PM 32608 Surr: DNOP 72.4-157 %Rec 7/5/2017 12:58:49 PM 32608 112 0 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 7/6/2017 3:33:25 PM G44019 7/6/2017 3:33:25 PM Surr: BFB 117 0 52.3-138 %Rec 1 G44019 **EPA METHOD 300.0: ANIONS** Analyst: MRA 0.22 7/3/2017 8:09:30 PM Fluoride 0.28 0.50 J mg/L 5 R43973 50 mg/L Chloride 1.2 2.5 5 7/3/2017 8:09:30 PM R43973 Bromide 0.43 0.072 0.50 J mg/L 5 7/3/2017 8:09:30 PM R43973 Phosphorus, Orthophosphate (As P) ND 1.2 2.5 н mg/L 5 7/3/2017 8:09:30 PM R43973 100 0.48 2.5 mg/L 5 7/3/2017 8:09:30 PM R43973 Sulfate 5 0.20 0.13 1.0 J 7/3/2017 10:13:37 PM R43973 Nitrate+Nitrite as N mg/L EPA METHOD 200.7: DISSOLVED METALS Analyst: pmf Barium 0.052 0.00085 0.0020 mg/L 1 7/18/2017 1:31:31 PM A44298 Beryllium ND 0.00029 0.0020 mg/L 1 7/18/2017 1:31:31 PM A44298 Cadmium 0.0010 0.0020 7/18/2017 1:31:31 PM A44298 ND mg/L 1 Calcium 2.8 0.078 mg/L 1 7/18/2017 1:31:31 PM A44298 1.0 0.0018 Chromium 0.0010 0.0060 J mg/L 1 7/18/2017 1:31:31 PM A44298 Cobalt ND 0.0016 A44298 0.0060 mg/L 1 7/18/2017 1:31:31 PM Iron 0.11 0.016 0.020 mg/L 1 7/18/2017 1:31:31 PM A44298 Magnesium 0.35 0.25 1.0 J mg/L 1 7/18/2017 1:31:31 PM A44298 Manganese 0.0082 0.00038 0.0020 mg/L 1 7/18/2017 1:31:31 PM A44298 Nickel ND 0.0011 0.010 mg/L 1 7/18/2017 1:31:31 PM A44298 0.85 A44298 Potassium 0.11 1.0 mg/L 1 7/18/2017 1:31:31 PM J Silver ND 0.00088 0.0050 mg/L 1 7/18/2017 1:31:31 PM A44298 Sodium 260 mg/L 10 7/18/2017 1:33:34 PM A44298 1.6 10 Vanadium 0.018 0.0019 0.050 J mg/L 1 7/18/2017 1:31:31 PM A44298 Zinc 7/18/2017 1:31:31 PM A44298 0.012 0.0011 0.010 mg/L 1 **EPA METHOD 200.7: TOTAL METALS** Analyst: pmf Barium 0.073 0.00093 0.0020 mg/L 1 7/6/2017 6:07:46 PM 32644 Beryllium ND 0.00026 0.0020 mg/L 7/6/2017 6:07:46 PM 32644 1 Cadmium ND 0.00058 0.0020 7/6/2017 6:07:46 PM 32644 mg/L 1 Chromium 0.0030 0.0011 0.0060 J mg/L 1 7/6/2017 6:07:46 PM 32644 Cobalt 0.0010 0.00076 0.0060 J mg/L 1 7/6/2017 6:07:46 PM 32644 mg/L 10 Iron 1.5 0.10 0.20 7/6/2017 6:09:43 PM 32644 Manganese 0.026 0.0011 0.0020 mg/L 1 7/6/2017 6:07:46 PM 32644

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

* 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

Oualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest.	Gallup		Clier	nt Sampl	le ID: BW	′-5B					
Project:	SMW 2 and Boundary Wells	- · · · F	Collection Date: 6/28/2017 9:40:00 AM									
Lab ID:	1706G62-005	Matrix:	AQUEOU	IS R	eceived 1	Date: 6/30)/2017	10:30:00 AM				
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METH	HOD 200.7: TOTAL METALS							Analyst: pmf				
Nickel		ND	0.0036	0.010		mg/L	1	7/6/2017 6:07:46 PM	32644			
Silver		ND	0.00042	0.0050		mg/L	1	7/6/2017 6:07:46 PM	32644			
Vanadium	1	0.022	0.00076	0.050	J	mg/L	1	7/6/2017 6:07:46 PM	32644			
Zinc		0.0038	0.0028	0.010	J	mg/L	1	7/6/2017 6:07:46 PM	32644			
EPA 200.8	: DISSOLVED METALS							Analyst: JLF				
Antimony		ND	0.00017	0.0010		mg/L	1	7/19/2017 7:30:11 PM	C44340			
Arsenic		0.0024	0.00018	0.0010		mg/L	1	7/19/2017 7:30:11 PM	C44340			
Lead		0.00023	0.00017	0.00050	J	mg/L	1	7/19/2017 7:30:11 PM	C44340			
Selenium		0.0053	0.00039	0.0010		mg/L	1	7/19/2017 7:30:11 PM	C44340			
200.8 ICPI	MS METALS:TOTAL							Analyst: JLF				
Antimony		ND	0.0019	0.0050		mg/L	5	7/14/2017 1:52:27 PM	32644			
Arsenic		0.0028	0.0015	0.0050	J	mg/L	5	7/14/2017 1:52:27 PM	32644			
Lead		0.00093	0.00048	0.0025	J	mg/L	5	7/14/2017 1:52:27 PM	32644			
Selenium		0.0044	0.0036	0.0050	J	mg/L	5	7/14/2017 1:52:27 PM	32644			
EPA METH	HOD 245.1: MERCURY							Analyst: MED				
Mercury		0.000074	0.000037	0.00020	J	mg/L	1	7/14/2017 4:22:28 PM	32802			
EPA METH	HOD 8270C: SEMIVOLATILES							Analyst: JDC				
Acenaphth	hene	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Acenaphth	hylene	ND	3.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Aniline		ND	3.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Anthracen	ie	ND	3.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Azobenze	ne	ND	4.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benz(a)an	nthracene	ND	3.9	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(a)p	byrene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(b)fl	luoranthene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(g,h	n,i)perylene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(k)fl	luoranthene	ND	4.4	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzoic a	cid	8.2	3.9	20	J	µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzyl ald	cohol	ND	4.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Bis(2-chlo	roethoxy)methane	ND	4.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Bis(2-chlo	roethyl)ether	ND	4.3	10		µg/L	1	//7/2017 2:48:15 PM	32619			
Bis(2-chlo	roisopropyl)ether	ND	3.9	10		µg/L	1	////2017 2:48:15 PM	32619			
Bis(2-ethy	nexyl)phthalate	ND	4.8	10		µg/L	1	////2017 2:48:15 PM	32619			
4-Bromop	nenyi phenyi ether	ND	4.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
			4.6	10		µg/∟	ן א	7/7/2017 2:48:15 PM	32019			
	e mothylahoaol		4.6	10		µg/∟	ן א	7/7/2017 2:48:15 PM	32019			
4-Unioro-3	s-methylphenol	ND	6.3	10		µg/∟	1	7/7/2017 2:48:15 PM	32619			

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

- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 25 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

		11		<u>cu</u>	4 G 1				
CLIENT:	Western Refining Southwest, Ga	llup		Cher	it Sampl	e ID: BW	-5B		
Project:	SMW 2 and Boundary Wells			Co	llection	Date: 6/28	8/2017	9:40:00 AM	
Lab ID:	1706G62-005	Matrix:	AQUEOUS	R	eceived l	Date: 6/30)/2017	10:30:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METI	HOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Chloroa	Iniline	ND	3.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2-Chloron	aphthalene	ND	3.7	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2-Chlorop	henol	ND	7.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
4-Chlorop	henyl phenyl ether	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Chrysene		ND	3.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Di-n-butyl	phthalate	ND	5.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Di-n-octyl	phthalate	ND	4.7	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Dibenz(a,	h)anthracene	ND	4.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Dibenzofu	Iran	ND	4.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619
1,2-Dichlo	probenzene	ND	2.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
1,3-Dichlo	probenzene	ND	1.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
1,4-Dichlo	probenzene	ND	2.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619
3,3´-Dichl	orobenzidine	ND	3.9	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Diethyl ph	nthalate	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Dimethyl	phthalate	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dichlo	prophenol	ND	5.7	20		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dimet	thylphenol	ND	2.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
4,6-Dinitro	p-2-methylphenol	ND	3.9	20		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dinitro	ophenol	ND	2.6	20		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dinitro	otoluene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2,6-Dinitro	otoluene	ND	4.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Fluoranth	ene	ND	4.3	10		µg/L	1	////2017 2:48:15 PM	32619
Fluorene		ND	4.0	10		µg/L	1	////2017 2:48:15 PM	32619
Hexachlo	robenzene	ND	3.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Hexachio	robutadiene	ND	1.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Hexachio	rocyclopentadiene	ND	1.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Hexachio		ND	1.2	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Indeno(1,	2,3-ca)pyrene	ND	4.2	10		µg/∟	1	7/7/2017 2:48:15 PM	32619
Isophoron		ND	4.4	10		µg/∟	1	7/7/2017 2:48:15 PM	32619
1-Methyln		ND	3.3	10		µg/∟	1	7/7/2017 2:48:15 PM	32619
2-Ivietnyin	laphthalene		3.3	10		µg/∟ α/l	1	7/7/2017 2:48:15 PM	32619
2-ivietnyip	vinenci		3.3	10		µg/∟ α/l	1	7/7/2017 2:48:15 PM	32619
S+4-IVIEIN			3.Z	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
IN-INITIOSO	dimethylamine		4.0	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
IN-INITIOSO	dinhenvlemine		3.5	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
Norbthele			3.9	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
Naphthalene			2.9	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
2 Nitroani			4.9	10		µg/∟	1	7/7/2017 2.40.10 PW	32019 33610
3-INITroahl		ND	4.3	10		µg/L	1	1/1/2017 2:48:15 PM	32019

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

* 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga	allup		Clien	nt Sampl	e ID: BW	′-5B		
Project: SMW 2 and Boundary Wells			Col	llection 1	Date: 6/28	8/2017	9:40:00 AM	
Lab ID: 1706G62-005	Matrix:	AQUEOUS	R	eceived l	Date: 6/30	0/2017	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Nitrobenzene	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2-Nitrophenol	ND	5.2	10		µg/L	1	7/7/2017 2:48:15 PM	32619
4-Nitrophenol	ND	5.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Pentachlorophenol	ND	4.9	20		µg/L	1	7/7/2017 2:48:15 PM	32619
Phenanthrene	ND	4.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Phenol	ND	3.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Pyrene	ND	4.4	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Pyridine	ND	2.3	10		μg/L	1	7/7/2017 2:48:15 PM	32619
1,2,4-Trichlorobenzene	ND	2.1	10		μg/L	1	7/7/2017 2:48:15 PM	32619
2,4,5-Trichlorophenol	ND	5.1	10		μg/L	1	7/7/2017 2:48:15 PM	32619
2,4,6-Trichlorophenol	ND	5.5	10		μg/L	1	7/7/2017 2:48:15 PM	32619
Surr: 2-Fluorophenol	56.7	0	15-98.1		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: Phenol-d5	43.8	0	15-80.7		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: 2,4,6-Tribromophenol	77.5	0	15-112		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: Nitrobenzene-d5	95.0	0 27	7.2-90.7	S	%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: 2-Fluorobiphenyl	82.5	0 23	3.3-85.6		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: 4-Terphenyl-d14	64.3	0 2	7.6-107		%Rec	1	7/7/2017 2:48:15 PM	32619
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Benzene	ND	0.062	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
Toluene	0.23	0.064	1.0	J	µg/L	1	7/5/2017 7:48:00 PM	R44015
Ethylbenzene	ND	0.093	1.0		μg/L	1	7/5/2017 7:48:00 PM	R44015
Methyl tert-butyl ether (MTBE)	ND	0.24	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1,2,4-Trimethylbenzene	ND	0.11	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1,3,5-Trimethylbenzene	ND	0.087	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1.2-Dibromoethane (EDB)	ND	0.13	1.0		ua/L	1	7/5/2017 7:48:00 PM	R44015
Naphthalene	ND	0.11	2.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
1-Methylnaphthalene	ND	0.16	4.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
2-Methylnaphthalene	ND	0.15	4.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
Acetone	3.1	0.82	10	J	µa/L	1	7/5/2017 7:48:00 PM	R44015
Bromobenzene	ND	0.14	1.0	-	µ=9	1	7/5/2017 7:48:00 PM	R44015
Bromodichloromethane	ND	0.18	1.0		µg/=	1	7/5/2017 7:48:00 PM	R44015
Bromoform	ND	0.21	1.0		μα/L	1	7/5/2017 7:48:00 PM	R44015
Bromomethane	ND	0.26	3.0		ua/l	1	7/5/2017 7:48:00 PM	R44015
2-Butanone	ND	1.1	10		на/I	1	7/5/2017 7:48:00 PM	R44015
Carbon disulfide	ND	0.40	10		µa/L	1	7/5/2017 7:48:00 PM	R44015
Carbon Tetrachloride	ND	0.11	1.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
Chlorobenzene	ND	0.11	1.0		r-∍, – ⊔a/l	1	7/5/2017 7·48·00 PM	R44015
5		0.11	1.0		м9 [,] н			

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5B **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:40:00 AM Lab ID: 1706G62-005 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 7/5/2017 7:48:00 PM Chloroethane ND 0.23 2.0 µg/L 1 R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Chloromethane ND 0.29 3.0 R44015 µg/L 1 7/5/2017 7:48:00 PM 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 7/5/2017 7:48:00 PM 4-Chlorotoluene 0.40 1.0 µg/L 1 R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.091 1.0 R44015 Dibromomethane µg/L 1 7/5/2017 7:48:00 PM 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.40 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,4-Dichlorobenzene ND 1.0 1.0 1 R44015 Dichlorodifluoromethane µg/L 7/5/2017 7:48:00 PM ND 0.40 1.0 1 R44015 1,1-Dichloroethane µg/L 7/5/2017 7:48:00 PM ND 1,1-Dichloroethene 0.081 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1.2-Dichloropropane ND 0.10 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.17 1,3-Dichloropropane 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.16 2.0 1 7/5/2017 7:48:00 PM R44015 2,2-Dichloropropane µg/L 1,1-Dichloropropene ND 0.093 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Hexachlorobutadiene ND 0.80 R44015 1.0 µg/L 1 7/5/2017 7:48:00 PM 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.051 1.0 1 R44015 Isopropylbenzene µg/L 7/5/2017 7:48:00 PM ND 0.096 7/5/2017 7:48:00 PM R44015 4-Isopropyltoluene 1.0 µg/L 1 ND R44015 4-Methyl-2-pentanone 0.71 10 µg/L 1 7/5/2017 7:48:00 PM Methylene Chloride ND 0.11 3.0 µg/L 1 7/5/2017 7:48:00 PM R44015 n-Butylbenzene ND 0.13 3.0 7/5/2017 7:48:00 PM R44015 µg/L 1 n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 sec-Butylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 7/5/2017 7:48:00 PM Styrene ND 0.16 1.0 1 R44015 µg/L tert-Butylbenzene ND 0.10 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.10 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Tetrachloroethene (PCE) ND 0.13 1.0 µg/L 7/5/2017 7:48:00 PM R44015 1 trans-1,2-DCE ND 0.18 7/5/2017 7:48:00 PM R44015 1.0 µg/L 1 ND 0.22 1.0 R44015 trans-1,3-Dichloropropene µg/L 1 7/5/2017 7:48:00 PM 1.2.3-Trichlorobenzene ND 0.12 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.14 1.0 R44015 1,2,4-Trichlorobenzene µg/L 1 7/5/2017 7:48:00 PM 1,1,1-Trichloroethane ND 0.073 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

CLIENT: Western Refining Southwest, Ga	allup		Clier	nt Sampl	e ID: BW	′-5B			
Project: SMW 2 and Boundary Wells			Co	llection 1	Date: 6/28	8/2017	9:40:00 AM		
Lab ID: 1706G62-005	Matrix:	trix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Vinyl chloride	ND	0.18	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	
Surr: Toluene-d8	102	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above c

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

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Hall Environmental Analysis	Labora	itory, II	1C.				Date Reported	l: 8/3/2017			
CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells	llup	P Client Sample ID: TRIP BLANK Collection Date:									
Lab ID: 1706G62-006	Matrix:	TRIP BLA	ANK R	eceived l	Date: 6/30)/2017	10:30:00 AM				
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB				
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	7/6/2017 3:59:34 PM	G44019			
Surr: BFB	118	0	52.3-138		%Rec	1	7/6/2017 3:59:34 PM	G44019			
EPA METHOD 8260B: VOLATILES							Analyst: RAA				
Benzene	ND	0.062	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Toluene	ND	0.064	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
Ethylbenzene	ND	0.093	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
Methyl tert-butyl ether (MTBE)	ND	0.24	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1,2,4-Trimethylbenzene	ND	0.11	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1,3,5-Trimethylbenzene	ND	0.087	1.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
Naphthalene	ND	0.11	2.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1-Methylnaphthalene	ND	0.16	4.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
2-Methvlnaphthalene	ND	0.15	4.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Acetone	2.7	0.82	10	J	ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromobenzene	ND	0.14	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromodichloromethane	ND	0.18	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromoform	ND	0.21	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromomethane	ND	0.26	3.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
2-Butanone	ND	1.1	10		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Carbon disulfide	ND	0.40	10		ua/l	1	7/5/2017 8:12:00 PM	R44015			
Carbon Tetrachloride	ND	0.11	1.0		µg/=	1	7/5/2017 8:12:00 PM	R44015			
Chlorobenzene	ND	0.11	1.0		µg/= ua/l	1	7/5/2017 8·12·00 PM	R44015			
Chloroethane	ND	0.23	2.0		µg/=	1	7/5/2017 8:12:00 PM	R44015			
Chloroform	ND	0.40	1.0		µg/= ua/l	1	7/5/2017 8·12·00 PM	R44015			
Chloromethane	ND	0.29	3.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
2-Chlorotoluene	ND	0.40	1.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
4-Chlorotoluene	ND	0.40	1.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
cis-1 2-DCF	ND	0.40	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
cis-1 3-Dichloropropene	ND	0.20	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
1 2-Dibromo-3-chloropropane	ND	1 4	2.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
Dibromochloromethane		0.072	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
Dibromomethane	ND	0.072	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
1 2-Dichlorobenzene	ND	0.001	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
1.3-Dichlorobenzene	ND	0.000	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
1 4-Dichlorobenzene		0.10	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
Dichlorodifluoromethane		1 0	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
1 1-Dichloroethane	ND	0.40	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
1 1-Dichloroethene		0.40	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
		0.001	1.0		P9/⊏		1,0/2011 0.12.00110				

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

Н 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

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 30 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

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Hall Environmental Analysis Laboratory, Inc. **CLIENT:** Western Refining Southwest, Gallup **Client Sample ID: TRIP BLANK Project:** SMW 2 and Boundary Wells **Collection Date:** Lab ID: 1706G62-006 Matrix: TRIP BLANK Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 7/5/2017 8:12:00 PM ND 0.10 1.0 µg/L 1 R44015 1,2-Dichloropropane 1,3-Dichloropropane ND 0.17 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 2.0 2,2-Dichloropropane 0.16 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.093 1,1-Dichloropropene 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 Hexachlorobutadiene ND 0.80 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 8:12:00 PM R44015 Isopropylbenzene ND 0.051 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 4-Isopropyltoluene ND 0.096 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 4-Methyl-2-pentanone ND 0.71 10 µg/L 1 7/5/2017 8:12:00 PM R44015 Methylene Chloride ND 0.11 3.0 R44015 µg/L 1 7/5/2017 8:12:00 PM n-Butylbenzene ND 0.13 3.0 µg/L 1 7/5/2017 8:12:00 PM R44015 n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 sec-Butylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.16 1.0 1 R44015 Styrene µg/L 7/5/2017 8:12:00 PM ND 1.0 1 tert-Butylbenzene 0.10 µg/L 7/5/2017 8:12:00 PM R44015 ND 1,1,1,2-Tetrachloroethane 0.10 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.13 Tetrachloroethene (PCE) 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 trans-1,2-DCE ND 0.18 1.0 1 7/5/2017 8:12:00 PM R44015 µg/L trans-1,3-Dichloropropene ND 0.22 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.12 R44015 1,2,3-Trichlorobenzene 1.0 µg/L 1 7/5/2017 8:12:00 PM 1,2,4-Trichlorobenzene ND 0.14 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.073 1.0 1 R44015 1,1,1-Trichloroethane µg/L 7/5/2017 8:12:00 PM ND 0.14 7/5/2017 8:12:00 PM R44015 1,1,2-Trichloroethane 1.0 µg/L 1 ND 0.11 Trichloroethene (TCE) 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND Trichlorofluoromethane 0.18 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 1,2,3-Trichloropropane ND 0.39 2.0 7/5/2017 8:12:00 PM R44015 µg/L 1 Vinyl chloride ND 0.18 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.32 Xylenes, Total 1.5 µg/L 1 7/5/2017 8:12:00 PM R44015 Surr: 1,2-Dichloroethane-d4 111 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015 Surr: 4-Bromofluorobenzene 108 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015 Surr: Dibromofluoromethane 115 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015 Surr: Toluene-d8 103 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest, G	Gallup		Clier	nt Sampl	e ID: OW	7-59		
Project:	SMW 2 and Boundary Wells			Co	llection]	Date: 6/28	8/2017 1	2:40:00 PM	
Lab ID:	1706G62-007	Matrix:	AQUEOU	US R	eceived]	Date: 6/30	0/2017 1	10:30:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	HOD 8015M/D: DIESEL RANG	E						Analyst: TOM	
Diesel Ra	nge Organics (DRO)	0.56	0.36	1.0	J	mg/L	1	7/5/2017 1:27:11 PM	32608
Motor Oil	Range Organics (MRO)	ND	5.0	5.0		mg/L	1	7/5/2017 1:27:11 PM	32608
Surr: DI	NOP	115	0	72.4-157		%Rec	1	7/5/2017 1:27:11 PM	32608
EPA METH	HOD 8015D: GASOLINE RANG	θE						Analyst: NSB	
Gasoline F	Range Organics (GRO)	0.23	0.025	0.050		mg/L	1	7/6/2017 4:26:01 PM	G44019
Surr: Bl	FB	3950	0	52.3-138	S	%Rec	1	7/6/2017 4:26:01 PM	G44019
EPA METH	HOD 300.0: ANIONS							Analyst: MRA	
Fluoride		ND	0.22	0.50		mg/L	5	7/3/2017 8:59:09 PM	R43973
Chloride		2000	50	100	*	mg/L	200	7/19/2017 2:09:41 PM	R44381
Bromide		3.6	0.072	0.50		mg/L	5	7/3/2017 8:59:09 PM	R43973
Phosphoru	us, Orthophosphate (As P)	ND	5.0	10	н	mg/L	20	7/3/2017 9:11:34 PM	R43973
Sulfate		3000	19	100	*	mg/L	200	7/19/2017 2:09:41 PM	R44381
Nitrate+Ni	trite as N	ND	0.26	2.0		mg/L	10	7/26/2017 3:44:57 PM	R44528
EPA METH	HOD 200.7: DISSOLVED META	ALS						Analyst: pmf	
Barium		0.014	0.00085	0.0020		mg/L	1	7/18/2017 1:35:22 PM	A44298
Beryllium		0.00039	0.00029	0.0020	J	mg/L	1	7/18/2017 1:35:22 PM	A44298
Cadmium		ND	0.0010	0.0020		mg/L	1	7/18/2017 1:35:22 PM	A44298
Calcium		210	0.78	10		mg/L	10	7/18/2017 1:37:23 PM	A44298
Chromium	1	ND	0.0010	0.0060		mg/L	1	7/18/2017 1:35:22 PM	A44298
Cobalt		0.0035	0.0016	0.0060	J	mg/L	1	7/18/2017 1:35:22 PM	A44298
Iron		0.030	0.016	0.020		mg/L	1	7/18/2017 1:35:22 PM	A44298
Magnesiu	m	65	0.25	1.0		mg/L	1	7/18/2017 1:35:22 PM	A44298
Manganes	Se	0.67	0.00038	0.0020	*	mg/L	1	7/18/2017 1:35:22 PM	A44298
Nickel		0.010	0.0011	0.010		mg/L	1	7/18/2017 1:35:22 PM	A44298
Potassium	1	1.7	0.11	1.0		mg/L	1	7/18/2017 1:35:22 PM	A44298
Silver		ND	0.00088	0.0050		mg/L	1	7/18/2017 1:35:22 PM	A44298
Sodium		2400	8.2	50		mg/L	50	7/18/2017 1:47:36 PM	A44298
Vanadium	I Contraction of the second	0.0042	0.0019	0.050	J	mg/L	1	7/18/2017 1:35:22 PM	A44298
Zinc		0.013	0.0011	0.010		mg/L	1	7/18/2017 1:35:22 PM	A44298
EPA METH	HOD 200.7: TOTAL METALS							Analyst: pmf	
Barium		0.35	0.00093	0.0020		mg/L	1	7/6/2017 6:11:30 PM	32644
Beryllium		0.0015	0.00026	0.0020	J	mg/L	1	7/6/2017 6:11:30 PM	32644
Cadmium		ND	0.00058	0.0020		mg/L	1	7/6/2017 6:11:30 PM	32644
Chromium	1	0.014	0.0011	0.0060		mg/L	1	7/6/2017 6:11:30 PM	32644
Cobalt		0.0080	0.00076	0.0060		mg/L	1	7/6/2017 6:11:30 PM	32644
Iron		9.7	0.20	0.40	*	mg/L	20	7/7/2017 1:35:46 PM	32644
Manganes	se	1.2	0.011	0.020	*	mg/L	10	7/6/2017 6:13:16 PM	32644

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

* 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

Qualifiers:

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

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P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Project: SMW 2 and Boundary Wells	Gallup		Clier Co	nt Sampl llection l	e ID: OW Date: 6/28	7-59 8/2017	12:40:00 PM	
Lab ID: 1706G62-007	Matrix:	AQUEOU	S R	eceived l	Date: 6/30)/2017	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: pmf	
Nickel	0.020	0.0036	0.010		mg/L	1	7/6/2017 6:11:30 PM	32644
Silver	ND	0.00042	0.0050		mg/L	1	7/6/2017 6:11:30 PM	32644
Vanadium	0.026	0.00076	0.050	J	mg/L	1	7/6/2017 6:11:30 PM	32644
Zinc	0.032	0.0028	0.010		mg/L	1	7/6/2017 6:11:30 PM	32644
EPA 200.8: DISSOLVED METALS							Analyst: JLF	
Antimony	0.0010	0.00084	0.0050	J	mg/L	5	7/21/2017 4:42:33 PM	A44430
Arsenic	0.0094	0.0018	0.010	J	mg/L	10	7/21/2017 4:47:42 PM	A44430
Lead	ND	0.00084	0.0025		mg/L	5	7/21/2017 4:42:33 PM	A44430
Selenium	0.023	0.0019	0.0050		mg/L	5	7/21/2017 4:42:33 PM	A44430
200.8 ICPMS METALS:TOTAL							Analyst: JLF	
Antimony	ND	0.0019	0.0050		mg/L	5	7/14/2017 1:57:35 PM	32644
Arsenic	0.011	0.0015	0.0050	*	mg/L	5	7/14/2017 1:57:35 PM	32644
Lead	0.0094	0.00095	0.0050		mg/L	10	7/14/2017 3:08:09 PM	32644
Selenium	0.015	0.0036	0.0050		mg/L	5	7/14/2017 1:57:35 PM	32644
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	0.000082	0.000037	0.00020	J	mg/L	1	7/14/2017 4:24:22 PM	32802
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Acenaphthylene	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Aniline	ND	3.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Anthracene	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Azobenzene	ND	4.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benz(a)anthracene	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(a)pyrene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(k)fluoranthene	ND	4.4	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzoic acid	8.3	3.9	20	J	µg/L	1	7/7/2017 3:16:16 PM	32619
Benzyl alcohol	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-chloroethoxy)methane	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-chloroethyl)ether	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-ethylhexyl)phthalate	ND	4.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619
4-Bromophenyl phenyl ether	ND	4.6	10		µg/L	1	//7/2017 3:16:16 PM	32619
Butyl benzyl phthalate	ND	4.6	10		µg/L	1	////201/ 3:16:16 PM	32619
	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619
4-Unioro-3-metnyipnenoi	ND	6.3	10		µg/L	1	///2017 3:16:16 PM	32619

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project: Lab ID:	Western Refining Southwest, Ga SMW 2 and Boundary Wells 1706G62-007	Ilup Client Sample ID: OW-59 Collection Date: 6/28/2017 12:40:00 PM Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM										
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METH	OD 8270C: SEMIVOLATILES							Analyst: JDC				
4-Chloroani	iline	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Chlorona	phthalene	ND	3.7	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Chloroph	enol	ND	7.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
4-Chloroph	enyl phenyl ether	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Chrysene		ND	3.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Di-n-butyl p	ohthalate	ND	5.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Di-n-octyl p	hthalate	ND	4.7	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Dibenz(a,h))anthracene	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Dibenzofura	an	ND	4.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1,2-Dichloro	obenzene	ND	2.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1,3-Dichloro	obenzene	ND	1.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1,4-Dichloro	obenzene	ND	2.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
3,3'-Dichlor	robenzidine	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Diethyl phth	nalate	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Dimethyl ph	hthalate	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dichloro	ophenol	ND	5.7	20		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dimethy	ylphenol	ND	2.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
4,6-Dinitro-2	2-methylphenol	ND	3.9	20		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dinitrop	bhenol	ND	2.6	20		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dinitroto	oluene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,6-Dinitroto	oluene	ND	4.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Fluoranther	ne	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Fluorene		ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	benzene	ND	3.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	butadiene	ND	1.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	ocyclopentadiene	ND	1.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	bethane	ND	1.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Indeno(1,2,	,3-cd)pyrene	ND	4.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Isophorone)	ND	4.4	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1-Methylna	phthalene	ND	3.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Methylna	phthalene	ND	3.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Methylph	enol	ND	3.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
3+4-Methyl	phenol	ND	3.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
N-Nitrosodi	i-n-propylamine	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
N-Nitrosodi	imethylamine	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
N-Nitrosodi	iphenylamine	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Naphthalen	ne	ND	2.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Nitroanilir	ne	ND	4.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
3-Nitroanilir	ne	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			

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

* 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

Qualifiers:

- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: SMW 2 and Boundary Wells Lab ID: 1706G62-007	AllupClient Sample ID: OW-59Collection Date: 6/28/2017 12:40:00 PMMatrix: AQUEOUSReceived Date: 6/30/2017 10:30:00 AM								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC		
4-Nitroaniline	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Nitrobenzene	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
2-Nitrophenol	ND	5.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
4-Nitrophenol	ND	5.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Pentachlorophenol	ND	4.9	20		µg/L	1	7/7/2017 3:16:16 PM	32619	
Phenanthrene	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Phenol	ND	3.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Pyrene	ND	4.4	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Pyridine	ND	2.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Surr: 2-Fluorophenol	55.0	0	15-98.1		%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: Phenol-d5	44.8	0	15-80.7		%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: 2,4,6-Tribromophenol	70.3	0	15-112		%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: Nitrobenzene-d5	90.7	0 2	7.2-90.7	S	%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: 2-Fluorobiphenyl	85.7	0 2	3.3-85.6	S	%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: 4-Terphenyl-d14	69.0	0 2	27.6-107		%Rec	1	7/7/2017 3:16:16 PM	32619	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
Benzene	ND	0.062	1.0		ua/L	1	7/5/2017 8:36:00 PM	R44015	
Toluene	ND	0.064	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
Ethylbenzene	ND	0.093	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
Methyl tert-butyl ether (MTBE)	6.8	0.24	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
1,2,4-Trimethylbenzene	0.13	0.11	1.0	J	µq/L	1	7/5/2017 8:36:00 PM	R44015	
1,3,5-Trimethylbenzene	ND	0.087	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
1.2-Dibromoethane (EDB)	ND	0.13	1.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
Naphthalene	ND	0.11	2.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
1-Methylnaphthalene	ND	0.16	4.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
2-Methylnaphthalene	ND	0.15	4.0		µg/L	1	7/5/2017 8:36:00 PM	R44015	
Acetone	6.0	0.82	10	J	µg/L	1	7/5/2017 8:36:00 PM	R44015	
Bromobenzene	ND	0.14	1.0	-	µg/L	1	7/5/2017 8:36:00 PM	R44015	
Bromodichloromethane	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015	
Bromoform	ND	0.21	1.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
Bromomethane	ND	0.26	3.0		µa/l	1	7/5/2017 8:36:00 PM	R44015	
2-Butanone	ND	1.1	10		ua/l	1	7/5/2017 8:36:00 PM	R44015	
Carbon disulfide	ND	0.40	10		ua/l	1	7/5/2017 8:36:00 PM	R44015	
Carbon Tetrachloride	ND	0.11	1.0		ua/l	1	7/5/2017 8:36:00 PM	R44015	
		0.11	1.0		M 9' L				

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest, Ga	llup		Clier	nt Sampl	e ID: OW	7-59		
Project.	SMW 2 and Boundary Wells	F		Col	llection 1	Date: 6/28	8/2017	12·40·00 PM	
I of ID.		Matuinu	AOUEOUS			Date: $0/20$	0/2017	10.20.00 AM	
Lab ID:	1/06G62-007		AQUEOUS	K	eceivea	Date: 0/30)/2017	10:30:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA MET	HOD 8260B: VOLATILES							Analyst: RAA	
Chloroeth	nane	ND	0.23	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Chlorofor	m	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Chloromethane		ND	0.29	3.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
2-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
4-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
cis-1,2-D	CE	ND	0.20	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
cis-1,3-Di	ichloropropene	ND	0.082	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2-Dibro	mo-3-chloropropane	ND	1.4	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Dibromoc	chloromethane	ND	0.072	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Dibromor	nethane	ND	0.091	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2-Dichlo	orobenzene	ND	0.090	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,3-Dichlo	orobenzene	ND	0.15	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,4-Dichlo	orobenzene	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Dichlorod	lifluoromethane	ND	1.0	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1-Dichlo	oroethane	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1-Dichlo	oroethene	ND	0.081	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2-Dichlo	oropropane	ND	0.10	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,3-Dichlo	oropropane	ND	0.17	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
2,2-Dichlo	oropropane	ND	0.16	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1-Dichlo	oropropene	ND	0.093	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Hexachlo	robutadiene	ND	0.80	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
2-Hexand	one	ND	0.66	10		µg/L	1	7/5/2017 8:36:00 PM	R44015
Isopropyll	benzene	ND	0.051	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
4-Isoprop	yltoluene	ND	0.096	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
4-Methyl-	2-pentanone	ND	0.71	10		µg/L	1	7/5/2017 8:36:00 PM	R44015
Methylen	e Chloride	ND	0.11	3.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
n-Butylbe	nzene	ND	0.13	3.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
n-Propylb	penzene	ND	0.074	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
sec-Butyl	benzene	ND	0.11	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Styrene		ND	0.16	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
tert-Butyll	benzene	ND	0.10	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1,1,2-Te	etrachloroethane	ND	0.10	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1,2,2-Te	etrachloroethane	ND	0.14	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Tetrachlo	roethene (PCE)	ND	0.13	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
trans-1,2-	-DCE	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
trans-1,3-Dichloropropene		ND	0.22	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2,3-Trichlorobenzene		ND	0.12	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2,4-Tric	hlorobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1,1-Tric	hloroethane	ND	0.073	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015

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

* 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

Qualifiers:

- 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

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P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Lab Order **1706G62** Date Reported: **8/3/2017**

CLIENT: Western Refining Southwest, C	Gallup		Clie	nt Sampl	e ID: OW	7-59					
Project: SMW 2 and Boundary Wells			Со	llection]	Date: 6/28	8/2017	12:40:00 PM				
Lab ID: 1706G62-007	Matrix:	Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8260B: VOLATILES							Analyst: RAA				
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Vinyl chloride	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			
Surr: 4-Bromofluorobenzene	110	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			
Surr: Dibromofluoromethane	110	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			
Surr: Toluene-d8	101	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above o

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

11

CHENT: Western Refining Southwest, Gallup Client Sample ID: TRIP BLANK Collection Date: Collection Colspan="2">Collection Colspan="2">Collection Colspan= 2" Collection Colspan= 2" Coll	Hall Environmental Analysis		Date Reported	: 8/3/2017							
Analyses Result MDL PQL Qual Units DF Date Analysed Batch ID EPA METHOD 8015D: GASOLINE RANGE Gasoline Range Organics (GRO) ND 0.025 0.050 mgl_L 1 7/10/2017 2:53:57 PM WG440 Sur: BFB 116 0 52.3:138 %Rec 1 7/10/2017 2:53:57 PM WG440 EPA METHOD 8260E: VOLATILES Analyse: RAA Analyse: RAA Benzene ND 0.064 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 Ethybenzene ND 0.083 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 12.4-Timethybenzene ND 0.047 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 1.2-Dibromethane (EDC) ND 0.40 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 1.2-Dibromethane (EDC) ND 0.11 2.0 µgl_L 1 7/52017 9:00:00 PM R44015 2-Metryinaphthalene ND <t< th=""><th>CLIENT: Western Refining Southwest, Gal Project: SMW 2 and Boundary Wells Lab ID: 1706G62-008</th><th>llup Matrix:</th><th colspan="9">ap Client Sample ID: TRIP BLANK Collection Date: Matrix: TRIP BLANK Received Date: 6/30/2017 10:30:00 AM</th></t<>	CLIENT: Western Refining Southwest, Gal Project: SMW 2 and Boundary Wells Lab ID: 1706G62-008	llup Matrix:	ap Client Sample ID: TRIP BLANK Collection Date: Matrix: TRIP BLANK Received Date: 6/30/2017 10:30:00 AM								
PA METHOD 8015D: GASOLINE RANGE Analyst: NSB Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 7/10/2017 2:53:57 PM WG440 Sur:: BFB 116 0 52.3:138 %Rec 1 7/10/2017 2:53:57 PM WG440 EPA METHOD 8260B: VOLATILES Enzene ND 0.066 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Ethyberzene ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.4.Trimethyberzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.5-Trimethyberzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromethane (EDB) ND 0.16 4.0 µg/L	Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 7/10/2017 2:35:7 PM WG440 EPA mETHOD 8260B: VOLATILES	EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB			
Sur: BFB 118 0.020 1192 117(102117 2:035.7 M) WG440 EPA METHOD 8260B: VOLATILES Factor Analyst: RAA Benzene ND 0.062 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Enzene ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Ethylbenzene ND 0.024 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2,4-Trimethylbenzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2,2-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobanae (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 <	Gasoline Range Organics (GRO)	ND	0.025	0.050		ma/l	1	7/10/2017 2:53:57 PM	WG440		
Detail of the second	Surr: BEB	116	0.020	52 3-138		%Rec	1	7/10/2017 2:53:57 PM	WG440		
Benzene ND 0.062 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Toluene ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Einylbenzene ND 0.093 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2,4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3,5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dichloroethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dichloroethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acatone ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND <t< td=""><td></td><td>110</td><td>0</td><td>02.0 100</td><td></td><td>,01100</td><td>•</td><td>Analyst: RAA</td><td></td></t<>		110	0	02.0 100		,01100	•	Analyst: RAA			
Delization ND 0.064 1.0 µg/L 1 7/32/17 90:000 PM R44015 Ethylbenzene ND 0.064 1.0 µg/L 1 7/52/17 90:000 PM R44015 Ethylbenzene ND 0.24 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2.4-Trimethylbenzene ND 0.047 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2.4-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2-Dibromethane (EDC) ND 0.40 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2-Dibromethane (EDB) ND 0.16 4.0 µg/L 1 7/52/17 90:000 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/52/017 90:000 PM R44015 Bromodorinomsthane ND 0.14 1.0 µg/L 1 7/52/017 90:000 PM R44015 Bromodorbinormethane ND	Descent		0.000	4.0			4		DAADAE		
Indication ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44013 Ethylbenzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.5-Trimethylbenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromoethane (EDC) ND 0.41 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichorenthane ND <t< td=""><td>Benzene</td><td></td><td>0.062</td><td>1.0</td><td></td><td>µg/∟ α/l</td><td>1</td><td>7/5/2017 9:00:00 PM</td><td>R44015</td></t<>	Benzene		0.062	1.0		µg/∟ α/l	1	7/5/2017 9:00:00 PM	R44015		
Ethylenzene ND 0.093 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.3.4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.3.5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.2.Dichloroethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.2.Dichloroethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:000 PM R44015 1.Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:000 PM R44015 2.Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:000 PM R44015 Bromoberzene ND 0.14 1.0 µg/L 1 7/5/2017 9:000 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:000 PM R44015 Bromodichloromethane ND <td></td> <td>ND</td> <td>0.064</td> <td>1.0</td> <td></td> <td>µg/∟</td> <td>1</td> <td>7/5/2017 9:00:00 PM</td> <td>R44015</td>		ND	0.064	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
Methylenzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.4-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.4-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromothane (EDC) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromothane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.4Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoberzene ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromomethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND <t< td=""><td>Ethylbenzene</td><td></td><td>0.093</td><td>1.0</td><td></td><td>µg/∟ α/l</td><td>1</td><td>7/5/2017 9:00:00 PM</td><td>R44015</td></t<>	Ethylbenzene		0.093	1.0		µg/∟ α/l	1	7/5/2017 9:00:00 PM	R44015		
1.2.4 Intherry Detizene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.5 Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dichloroethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Naphthalene ND 0.11 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015	A 2.4 Trimethyllegraphy	ND	0.24	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
1,3-printering/deficience ND 0.067 1.0 µg/L 1 7/5/2017 900:00 PM R44015 1,2-Dichlorosethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Naphthalene ND 0.11 2.0 µg/L 1 7/5/2017 900:00 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 900:00 PM R44015 2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.16 4.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Carbon disulfide <th< td=""><td>1,2,4-1 rimethylbenzene</td><td>ND</td><td>0.11</td><td>1.0</td><td></td><td>µg/∟</td><td>1</td><td>7/5/2017 9:00:00 PM</td><td>R44015</td></th<>	1,2,4-1 rimethylbenzene	ND	0.11	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
1.2-Ditoromethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Naphthalene ND 0.11 2.0 µg/L 1 7/5/2017 90:000 PM R44015 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 90:000 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 90:000 PM R44015 Acetone 4.5 0.82 10 J µg/L 1 7/5/2017 90:000 PM R44015 Bromodenzere ND 0.14 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Bromodom ND 0.21 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Bromodom ND 0.26 3.0 µg/L 1 7/5/2017 90:000 PM R44015 Carbon disulfide ND 0.11 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Chiorobenzene ND 0.40 10	1,3,5-1 rimetnyidenzene	ND	0.087	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
I.2-Dinformedmane (EDS) ND 0.13 1.0 µg/L 1 7/3/2017 9:00:00 PM R44015 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone 4.5 0.82 10 J µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoform ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
Napitralene ND 0.11 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND	1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
1-methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene A.5 0.82 10 J µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Stornomethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND		ND	0.11	2.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone 4.5 0.82 10 J µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromotichloromethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromotemane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachioride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/201		ND	0.16	4.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
Acctone 4.5 0.82 10 J µg/L 1 1/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoform ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroto	2-Methylnaphthalene	ND	0.15	4.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromobenzene ND 0.14 1.0 μg/L 1 //s/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Bromoform ND 0.21 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Bromomethane ND 0.26 3.0 μg/L 1 7/s/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 μg/L 1 7/s/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 μg/L 1 7/s/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Chlorobuene ND 0.40 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 2-Chlorobuene ND 0.40 1.0 <	Acetone	4.5	0.82	10	J	µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoform ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0	Bromobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromoform ND 0.21 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Bromomethane ND 0.26 3.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.40 1.0	Bromodichloromethane	ND	0.18	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromomethane ND 0.26 3.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorotothane ND 0.23 2.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 μg/L 1 7/5/2017 9:0:00 PM R44015 cis-1,2-DCE ND 0.082 1.0 μg/L 1 7/5/2017 9:0:0	Bromoform	ND	0.21	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
2-Butanone ND 1.1 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobethane ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.072 <	Bromomethane	ND	0.26	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.82 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibrhorobenzene ND 0.072 <td>2-Butanone</td> <td>ND</td> <td>1.1</td> <td>10</td> <td></td> <td>µg/L</td> <td>1</td> <td>7/5/2017 9:00:00 PM</td> <td>R44015</td>	2-Butanone	ND	1.1	10		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,3-Dichloropropane ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0	Carbon disulfide	ND	0.40	10		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroethane ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 i,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.091	Carbon Tetrachloride	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chloroethane ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 i.s-1,3-Dichloropropene ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 j.birormo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.09	Chlorobenzene	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND	Chloroethane	ND	0.23	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND<	Chloroform	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
2-ChlorotolueneND0.401.0μg/L17/5/2017 9:00:00 PMR440154-ChlorotolueneND0.401.0μg/L17/5/2017 9:00:00 PMR44015cis-1,2-DCEND0.201.0μg/L17/5/2017 9:00:00 PMR44015cis-1,3-DichloropropeneND0.0821.0μg/L17/5/2017 9:00:00 PMR440151,2-Dibromo-3-chloropropaneND1.42.0μg/L17/5/2017 9:00:00 PMR44015DibromochloromethaneND0.0721.0μg/L17/5/2017 9:00:00 PMR44015DibromochlorobenzeneND0.0911.0μg/L17/5/2017 9:00:00 PMR440151,3-DichlorobenzeneND0.0901.0μg/L17/5/2017 9:00:00 PMR440151,4-DichlorobenzeneND0.151.0μg/L17/5/2017 9:00:00 PMR440151,4-DichlorobenzeneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L1 <td>Chloromethane</td> <td>ND</td> <td>0.29</td> <td>3.0</td> <td></td> <td>µg/L</td> <td>1</td> <td>7/5/2017 9:00:00 PM</td> <td>R44015</td>	Chloromethane	ND	0.29	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
4-ChlorotolueneND0.401.0μg/L17/5/2017 9:00:00 PMR44015cis-1,2-DCEND0.201.0μg/L17/5/2017 9:00:00 PMR44015cis-1,3-DichloropropeneND0.0821.0μg/L17/5/2017 9:00:00 PMR440151,2-Dibromo-3-chloropropaneND1.42.0μg/L17/5/2017 9:00:00 PMR44015DibromochloromethaneND0.0721.0μg/L17/5/2017 9:00:00 PMR44015DibromochloromethaneND0.0911.0μg/L17/5/2017 9:00:00 PMR440151,2-DichlorobenzeneND0.0901.0μg/L17/5/2017 9:00:00 PMR440151,3-DichlorobenzeneND0.151.0μg/L17/5/2017 9:00:00 PMR440151,4-DichlorobenzeneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloroethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloroethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloroethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloroethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloroethaneND0.401.0μg/L1	2-Chlorotoluene	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichloromethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM <	4-Chlorotoluene	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroe	cis-1,2-DCE	ND	0.20	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromomethane ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloromethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R4	cis-1,3-Dichloropropene	ND	0.082	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromomethane ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane <t< td=""><td>1,2-Dibromo-3-chloropropane</td><td>ND</td><td>1.4</td><td>2.0</td><td></td><td>µg/L</td><td>1</td><td>7/5/2017 9:00:00 PM</td><td>R44015</td></t<>	1,2-Dibromo-3-chloropropane	ND	1.4	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Dibromomethane ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.081 1.0 µg/L 1 7/5/2017 9:00:00 PM P44015 1	Dibromochloromethane	ND	0.072	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	Dibromomethane	ND	0.091	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	1,2-Dichlorobenzene	ND	0.090	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.081 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	1,3-Dichlorobenzene	ND	0.15	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1 1-Dichloroethane ND 0.81 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	1,4-Dichlorobenzene	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
1,1-Dichloroethane ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 1 1-Dichloroethane ND 0.081 1.0 μc/L 1 7/5/2017 9:00:00 PM R44015	Dichlorodifluoromethane	ND	1.0	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
11-Dichloroethene ND 0.081 1.0 uo/l 1 7/5/2017 0:00:00 PM P44015	1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
n, Elemeno μg/L I //J/2017 3.00.00 FWI K44013	1,1-Dichloroethene	ND	0.081	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		

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
- Н 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
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 38 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Page 39 of 61

CLIENT: Western Refining Southwest,Project:SMW 2 and Boundary Wells1706000	Gallup	llup Client Sample ID: TRIP BLANK Collection Date:									
2 ad ID: 1706G62-008	Matrix:	I KIP BLA	INK K)/2017	10:30:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8260B: VOLATILES							Analyst: RAA				
1,2-Dichloropropane	ND	0.10	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,3-Dichloropropane	ND	0.17	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
2,2-Dichloropropane	ND	0.16	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1-Dichloropropene	ND	0.093	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Hexachlorobutadiene	ND	0.80	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
2-Hexanone	ND	0.66	10		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Isopropylbenzene	ND	0.051	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
4-Isopropyltoluene	ND	0.096	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Methylene Chloride	ND	0.11	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
n-Butylbenzene	ND	0.13	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
n-Propylbenzene	ND	0.074	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
sec-Butylbenzene	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Styrene	ND	0.16	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
tert-Butylbenzene	ND	0.10	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,1,2-Tetrachloroethane	ND	0.10	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,2,2-Tetrachloroethane	ND	0.14	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Tetrachloroethene (PCE)	ND	0.13	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
trans-1,3-Dichloropropene	ND	0.22	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,2,3-Trichlorobenzene	ND	0.12	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,2,4-Trichlorobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,1-Trichloroethane	ND	0.073	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Vinyl chloride	ND	0.18	1.0		μg/L	1	7/5/2017 9:00:00 PM	R44015			
Xylenes, Total	ND	0.32	1.5		μg/L	1	7/5/2017 9:00:00 PM	R44015			
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			
Surr: 4-Bromofluorobenzene	109	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			
Surr: Dibromofluoromethane	114	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			
Surr: Toluene-d8	102	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

1706G62-001G OW-60 Collected date/time: 06/28/17 11:10

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SAMPLE RESULTS - 02

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Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	07/11/2017 15:23	WG996538



DATE/TIME: 07/12/17 14:55

SAMPLE RESULTS - 03

Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/l		mg/l		date / time		
Cyanide	ND		0.00500	1	07/11/2017 16:25	<u>WG996538</u>	Ĺ

Ss [†]Cn Sr Qç GI A Sc

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1706G62-003G BW-4B

SAMPLE RESULTS - 04

Collected date/time: 06/28/17 10:30

Wet Chemistry by Method 4500CN E-2011

<u> </u>	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/!		mg/l		date / tim e	
Cyanide	ND		0.00500	1	07/11/2017 16:25	<u>WG996538</u>

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1706G62-004G BW-5C Collected date/time: 06/28/17 09:10

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SAMPLE RESULTS - 05

Wet Chemistry by Method 4500CN E-2011

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	Result	Qualifier	RDL	Dilution	Analysis	Batch	<u></u>	•
Analyte	mg/l		mg/l		date / time		0	
Cyanide	ND		0.00500	1	07/11/2017 16:27	<u>WG996538</u>	Ť٦	С

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1706G62-005G BW-5B Collected date/time: 06/28/17 09:40

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SAMPLE RESULTS - 06

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Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	07/11/2017 16:32	<u>WG996538</u>

⁴Cn Sfr ⁶Qc ⁷GI ⁸AI

1706G62-007G OW-59 Collected date/time: 06/28/17 12:40

SAMPLE RESULTS - 07

Wet Chemistry by Method 4500CN E-2011

2 J							
	Result	Qualifier	RDL	Dilution	Analysis	Batch	$\downarrow \bigcirc 0$
Analyte	mg/l	_	mg/i		date / time	—	Šensuum
Cyanide	0.0268		0.00500	1	07/11/2017 16:33	<u>WG996538</u>	Tc

³Ss ⁴Cn ⁶Qc ⁷Gl ⁸Al

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WG996538 Wet Chemistry by Method 45000	CN E-2011		0	UALIT)	CONTF 1920655-02.03.	ROL SUN 04.05.06.07	IMARY			ONE LAB. NATIONWI	ЭË
Method Blank (MB)						2					5-000000000000000000000000000000000000
(MB) R3232467-1 07/11/17 16:06						WARRANT PRATE TO A CONTRACT OF A CONTRACT			A B / T / T C COMMON AND AND AND AND AND AND AND AND AND AN		<u>.</u>
MB Result Analyte mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l		·						2
Cyanide		0.0018	0.00500								
L920655-02 Original Samp	ile (OS) • Dur	olicate (Dt									3Ss
(OS) L920655-02 07/11/17 16:23 • (DU	P) R3232467-4_C	7/11/17 16-24								a an	4 Cu
Original Res	sult DUP Result	Dilution D	UP RPD	OUP Qualifier	DUP RPD Limits						;
Analyte mg/l	l/gm	8			8						ц» V
Cyanide ND	0.00343	1 0			20						;
L920655-07 Original Samp	le (OS) • Dup	olicate (DL	<u>á</u>								O O
(OS) L920655-07 07/11/17 16:33 • (DUI	P) R3232467-7 0	7/11/17 16:34								n men vy von sy van de	<u>ת</u> ת
Original Re:	sult DUP Result	Dilution DI	UP RPD	OUP Qualifier	dup RPD Limits						
l/filli	шдл	8			Ŷ						
Cyanide 0.0268	0.0283	- 0			20						
Laboratory Control Sample	(LCS) • Labor	ratory Cor	ntrol Samp	ole Duplica	te (LCSD)						
(LCS) R3232467-2 07/11/17 16:07 • (LC	SD) R3232467-3	07/11/17 16:08	8						NAME AND A DESCRIPTION OF br>A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTIONO	ANALY CONTRACTOR OF A CALE OF A	
Spike Amou Analyte	Int LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	Cda i	RPD Limits		
Alialyte	l/Gm	1/бш	۶	*	*	and a second		8	8		
Cyanide 0.100	0.102	0.0969	102	16	85-115			ۍ. د	20	V control water and the second se	
L920655-05 Original Samp	le (OS) • Mat	ríx Spike I	(MS) • Mat	ríx Spike D	uplicate (MS	(Q					
(OS) L920655-05 07/11/17 16:27 • (MS)	R3232467-5 07	/11/17 16:28 • (MSD) R32324	.67-6 07/11/17	16:31	of the second	A STATE OF CONTRACT OF THE OWNER OF CONTRACT		A November of the first strategic st Strategic strategic st	NAMEN AND AND AND AND AND AND AND AND AND AN	
Spike Amou Analute	nt Original Result mail	MS Result	MSD Result	MS Rec. «	MSD Rec. «	Dilution Rec.	Limits <u>MS 0</u>	ualifier N	ISD Qualifier RPD	RPD Limits	
				والأ	R 20	e, r			¢	%	- 4-
Cyanide 0.100	Q	0.0931	0.0959	66	95	1 75-12	ъ		m	20	
		:									
ACCOUNT: Hall Environmental Analysis L	aboratory		Δ.	ROJECT:		SDG: L920655			DATE/TIME: 07/12/17 14:55		

GLOSSARY OF TERMS

駿	
Ср	Summer and a construction of the
² Tc	
³Ss	
⁴Cn	
⁵Sr	
⁶ Qc	
GI	
⁸ AI	
°Sc	

Abbreviations a	nd Definitions
SDG MDL RDL ND U RPD Original Sample Rec.	Sample Delivery Group. Method Detection Limit. Reported Detection Limit. Not detected at the Reporting Limit (or MDL where applicable). Not detected at the Reporting Limit (or MDL where applicable). Relative Percent Difference. 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. Recovery.
Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

WO#:	1706G62
	03-Aug-17

		•								0
Client: Project:	Western Refining SMW 2 and Boun	Southwe dary We	st, Gallup lls							
Sample ID MB-	A Samp	Type: MI	BLK	Tes	tCode: E	PA Method	200.7: Dissol	ved Meta	ls	
Client ID: PBW	Bat	ch ID: A4	4298	F	RunNo: 4	4298				
Prep Date:	Analysis	Date: 7	18/2017	S	SeqNo: 1	400233	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								
Vanadium	ND	0.050								
Zinc	ND	0.010								
Sample ID LCS	L L-A Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Dissol	ved Meta	ls	
Client ID: Batc	hQC Bat	ch ID: A4	4298	F	RunNo: 4	4298				
Prep Date:	Analysis	Date: 7	18/2017	5	SeqNo: 1	400234	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0018	0.0020	0.002000	0	89.0	50	150			J
Beryllium	0.0021	0.0020	0.002000	0	106	50	150			
Cadmium	0.0020	0.0020	0.002000	0	98.5	50	150			J
Calcium	0.53	1.0	0.5000	0	106	50	150			J
Chromium	0.0063	0.0060	0.006000	0	105	50	150			
Cobalt	0.0060	0.0060	0.006000	0	99.7	50	150			J
Iron	0.020	0.020	0.02000	0	102	50	150			
Magnesium	0.53	1.0	0.5000	0	106	50	150			J
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Nickel	0.0051	0.010	0.005000	0	103	50	150			J
Potassium	0.53	1.0	0.5000	0	107	50	150			J
Silver	0.0049	0.0050	0.005000	0	97.4	50	150			J
Sodium	0.51	1.0	0.5000	0	102	50	150			J
Vanadium	0.010	0.050	0.01000	0	105	50	150			J
Zinc	0.0056	0.010	0.005000	0	113	50	150			J

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#: 1706G62

03-Aug-17

Client: Western Refining Southwest, Gallup

Project: SMW 2 and Boundary Wells

Sample ID LCS-A	Samp	Type: LC	S	Test	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID: LCSW	Bato	h ID: A4	4298	R	unNo: 4	4298				
Prep Date:	Analysis	Date: 7/	18/2017	S	eqNo: 1	400235	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	97.2	85	115			
Beryllium	0.49	0.0020	0.5000	0	98.0	85	115			
Cadmium	0.49	0.0020	0.5000	0	97.1	85	115			
Calcium	49	1.0	50.00	0	97.6	85	115			
Chromium	0.49	0.0060	0.5000	0	97.3	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.6	85	115			
Iron	0.48	0.020	0.5000	0	95.1	85	115			
Magnesium	49	1.0	50.00	0	98.7	85	115			
Manganese	0.48	0.0020	0.5000	0	95.0	85	115			
Nickel	0.48	0.010	0.5000	0	95.0	85	115			
Potassium	47	1.0	50.00	0	94.7	85	115			
Silver	0.10	0.0050	0.1000	0	100	85	115			
Sodium	48	1.0	50.00	0	96.6	85	115			
Vanadium	0.50	0.050	0.5000	0	99.7	85	115			
Zinc	0.47	0.010	0.5000	0	94.2	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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1706G62
	03-Aug-17

Client: Project:	Weste SMW	ern Refining S	Southwes lary Wel	st, Gallup lls							
Sample ID	MB-32644	Samp	Туре: МЕ	BLK	Tes	tCode: E	PA Method	200.7: Total M	/letals		
Client ID:	PBW	Bato	h ID: 32	644	F	anNo: 4	14032				
Prep Date:	7/5/2017	Analysis	Date: 7/	6/2017	5	SeqNo: '	388501	Units: mg/L			
Analita		Decult					Loud insit	Lliabl insit	0/ חחח		Qual
Rarium		Result		SFR value	SFK Kei Vai	%REC	LOWLIIIII	підпішінні	%RFD	KFDLIIIII	Quai
Borvillium			0.0020								
Cadmium			0.0020								
Chromium		ND	0.0020								
Cohalt		ND	0.0000								
Iron		ND	0.0000								
Manganese		ND	0.020								
Nickel		ND	0.010								
Silver		ND	0.0050								
Vanadium		ND	0.050								
Zinc		ND	0.010								
Sample ID	LCSLL-32644	Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Total N	letals		
Client ID:	BatchQC	Bato	h ID: 32	644	F	anNo:	14032				
Prep Date:		Analysis	Date: 7/	6/2017	S	SeqNo:	388502	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.0020	0.0020	0.002000	0	102	50	150			
Beryllium		0.0020	0.0020	0.002000	0	100	50	150			
Cadmium		0.0021	0.0020	0.002000	0	106	50	150			
Chromium		0.0062	0.0060	0.006000	0	104	50	150			
Cobalt		0.0061	0.0060	0.006000	0	101	50	150			
Iron		0.020	0.020	0.02000	0	99.8	50	150			J
Manganese		0.0020	0.0020	0.002000	0	100	50	150			
Nickel		0.0044	0.010	0.005000	0	88.0	50	150			J
Silver		0.0045	0.0050	0.005000	0	90.6	50	150			J
Vanadium		0.0097	0.050	0.01000	0	96.7	50	150			J
Zinc		0.0056	0.010	0.005000	0	112	50	150			J
Sample ID	LCS-32644	Samp	Type: LC	S	Tes	tCode: E	PA Method	200.7: Total M	letals		
Client ID:	LCSW	Bato	h ID: 32	644	F	anNo: 4	14032				
Prep Date:	7/5/2017	Analysis	Date: 7/	6/2017	S	SeqNo: '	389083	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.49	0.0020	0.5000	0	97.9	85	115			
Beryllium		0.50	0.0020	0.5000	0	100	85	115			
Cadmium		0.49	0.0020	0.5000	0	98.6	85	115			
Chromium		0.49	0.0060	0.5000	0	98.4	85	115			
Cobalt		0.48	0.0060	0.5000	0	95.4	85	115			
Iron		0.48	0.020	0.5000	0	96.4	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 Detection Limit

W Sample container temperature is out of limit as specified

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Client:	Western Refining Southwest, Gallup
Project:	SMW 2 and Boundary Wells

Sample ID LCS-32644 Client ID: LCSW	Samp Bato	Type: LC	:S 644	Tes F	tCode: El RunNo: 4	PA Method 4032	200.7: Total M	letals		
Prep Date: 7/5/2017	Analysis	Date: 7/	6/2017	S	SeqNo: 1	389083	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.48	0.0020	0.5000	0	95.7	85	115			
Nickel	0.48	0.010	0.5000	0	95.7	85	115			
Silver	0.094	0.0050	0.1000	0	94.0	85	115			
Vanadium	0.50	0.050	0.5000	0	99.8	85	115			
Zinc	0.48	0.010	0.5000	0	95.3	85	115			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 43 of 61

Client:		Western Refining	South	west, Gallup							
Project:		SMW 2 and Boun	dary V	Vells							
Sample ID	LCS	Samp	Туре:	LCS	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	LCSW	Bat	ch ID:	C44340	F	RunNo: 4					
Prep Date:		Analysis	Date:	7/19/2017	5	SeqNo: 1401304		Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.023	0.00	10 0.02500	0	90.8	85	115			
Arsenic		0.024	0.00	10 0.02500	0	94.1	85	115			
Lead		0.012	0.000	50 0.01250	0	95.1	85	115			
Selenium		0.023	0.00	10 0.02500	0	93.8	85	115			
Uranium		0.012	0.000	50 0.01250	0	94.1	85	115			
Sample ID	LLLCS	Samp	Type:	LCSLL	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	BatchQ	C Bat	ch ID:	C44340	F	RunNo: 4	4340				
Prep Date:		Analysis	Date:	7/19/2017	5	SeqNo: 1	401305	Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.00053	0.00	10 0.001000	0	52.7	50	150			J
Arsenic		0.00096	0.00	10 0.001000	0	96.0	50	150			J
Lead		0.00047	0.000	50 0.0005001	0	94.2	50	150			J
Selenium		0.0011	0.00	10 0.001000	0	106	50	150			
Uranium		0.00047	0.000	50 0.0005001	0	93.2	50	150			J
Sample ID	МВ	Samp	Туре:	MBLK	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	PBW	Bate	ch ID:	C44340	F	RunNo: 4					
Prep Date:		Analysis	Date:	7/19/2017	SeqNo: 1401306			Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		ND	0.00	10							
Arsenic		ND	0.00	10							
Lead		ND	0.000	50							
Selenium		ND	0.00	10							
Uranium		ND	0.000	50							
Sample ID	LCS	Samp	Туре:	LCS	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	LCSW	Bate	ch ID:	A44430	RunNo: 44430						
Prep Date:		Analysis	Date:	7/21/2017	5	SeqNo: 1	404397	Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.024	0.00	10 0.02500	0	94.5	85	115			
Arsenic		0.023	0.00	10 0.02500	0	91.5	85	115			
Lead		0.012	0.000	50 0.01250	0	95.3	85	115			
Selenium		0.023	0.00	10 0.02500	0	91.7	85	115			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 44 of 61

Client: Project:	V S	Western Refining SMW 2 and Bour	Southwe	st, Gallup lls									
Sample ID	LLLCS	Sam	SLL	Tes	tCode: El	PA 200.8: I	Dissolved Metals						
Client ID:	BatchQC	: Ba	RunNo: 44430										
Prep Date:		Analysis	Analysis Date: 7/21/2017			SeqNo: 1404398 Ur							
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Antimony		0.00097	0.0010	0.001000	0	96.6	50	150			J		
Arsenic		0.00090	0.0010	0.001000	0	89.8	50	150			J		
Lead		0.00048	0.00050	0.0005001	0	96.9	50	150			J		
Selenium		0.00088	0.0010	0.001000	0	87.8	50	150			J		
Sample ID	MB	Sam	рТуре: М І	BLK	Tes	tCode: El	PA 200.8: I	Dissolved Met	als				
Client ID:	PBW	Ba	tch ID: A4	4430	F	RunNo: 4	4430						
Prep Date:		Analysis	Date: 7	/21/2017	S	SeqNo: 1	404399	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Antimony		ND	0.0010										
Arsenic		ND	0.0010										
Lead		ND	0.00050										
Selenium		ND	0.0010										

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
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- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 45 of 61

WO#:	1706G62
	03-Aug-17

Client: Project:	Western SMW 2 a	Refining and Boun	Southwes dary Wel	st, Gallup 1s									
Sample ID	MB-32644	Samp	оТуре: МЕ	BLK	Tes	TestCode: 200.8 ICPMS Metals:Total							
Client ID:	PBW	Batch ID: 32644			RunNo: 44075								
Prep Date:	7/5/2017	Analysis	Date: 7/	8/2017	S	SeqNo: 1	390839	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Antimony		ND	0.0010										
Arsenic		ND	0.0010										
Lead		ND	0.00050										
Selenium		ND	0.0010										
Sample ID	MSLCS-32644	Samp	oType: LC	S	Tes	tCode: 20	0.8 ICPMS	Metals:Total					
Client ID:	LCSW	Bat	ch ID: 32	644	R	RunNo: 44	4075						
Prep Date:	7/5/2017	Analysis	Date: 7/	8/2017	SeqNo: 1390841 Units: mg/L								
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Antimony		0.025	0.0010	0.02500	0	102	85	115					
Arsenic		0.023	0.0010	0.02500	0	92.5	85	115					
Lead		0.012	0.00050	0.01250	0	96.0	85	115					
Selenium		0.022	0.0010	0.02500	0	89.1	85	115					
Sample ID	MSLLLCS-32644	SLL	TestCode: 200.8 ICPMS Metals:Total										
Client ID:	BatchQC	Bat	ch ID: 32	644	RunNo: 44075								
Prep Date:	7/5/2017	Analysis	Date: 7/	8/2017	SeqNo: 1390843			Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Antimony		0.00095	0.0010	0.001000	0	94.9	50	150			J		
Arsenic		0.0011	0.0010	0.001000	0	113	50	150					
Lead		0.00048	0.00050	0.0005001	0	96.1	50	150			J		
Selenium		0.00085	0.0010	0.001000	0	84.9	50	150			J		
Sample ID	1706G62-002ELL	MS Samp	Type: MS	DLL	Tes	tCode: 200.8 ICPMS Metals:Total							
Client ID:	GW DUP01	Bat	ch ID: 32	644	R	RunNo: 44225							
Prep Date:	7/5/2017	Analysis	Date: 7/	14/2017	S	SeqNo: 1396853 Units: mg/l							
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Antimony		0.027	0.0050	0.02500	0	108	70	130	0.216	20			
Arsenic		0.026	0.0050	0.02500	0.001656	99.1	70	130	1.76	20			
Lead		0.014	0.0025	0.01250	0	111	70	130	0.949	20			
Selenium		0.029	0.0050	0.02500	0.006456	92.1	70	130	7.46	20			
Sample ID	1706G62-002ELL	MS Samp	Type: MS	SLL	Tes	tCode: 20	0.8 ICPMS	Metals:Total					
Client ID:	GW DUP01	Bat	ch ID: 32	644	R	RunNo: 4	4225						
Prep Date:	7/5/2017	Analysis	Date: 7/	14/2017	S	SeqNo: 1	396854	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 46 of 61

Client:	Western Refining Southwest, Gallup
Project:	SMW 2 and Boundary Wells

Sample ID	1706G62-002ELL	MS Samp	Туре: МS	SLL	Tes	tCode: 20	0.8 ICPMS	Metals:Total			
Client ID: GW DUP01 Batch ID: 32644				R	RunNo: 4	4225					
Prep Date:	Prep Date: 7/5/2017 Analysis Date: 7/14/2017				S	SeqNo: 1	396854				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.027	0.0050	0.02500	0	108	70	130			
Arsenic		0.027	0.0050	0.02500	0.001656	101	70	130			
Lead		0.014	0.0025	0.01250	0	110	70	130			
Selenium		0.027	0.0050	0.02500	0.006456	83.6	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 47 of 61
| Client: | Wester | n Refining Southwest, Gallup | | | | | | | |
|------------|-----------|------------------------------|-------------------------------------|--------------------|----------|------|--|--|--|
| Project: | SMW 2 | 2 and Boundary Wells | | | | | | | |
| Sample ID | MB-32802 | SampType: MBLK | TestCode: EPA Method 245.1: Mercury | | | | | | |
| Client ID: | PBW | Batch ID: 32802 | RunNo: 44238 | | | | | | |
| Prep Date: | 7/14/2017 | Analysis Date: 7/14/2017 | SeqNo: 1396754 | Units: mg/L | | | | | |
| Analyte | | Result PQL SPK valu | e SPK Ref Val %REC LowLimit | HighLimit %RPD | RPDLimit | Qual | | | |
| Mercury | | 0.000079 0.00020 | | | | J | | | |
| Sample ID | LCS-32802 | SampType: LCS | TestCode: EPA Metho | d 245.1: Mercury | | | | | |
| Client ID: | LCSW | Batch ID: 32802 | RunNo: 44238 | | | | | | |
| Prep Date: | 7/14/2017 | Analysis Date: 7/14/2017 | SeqNo: 1396755 | Units: mg/L | | | | | |
| Analyte | | Result PQL SPK valu | e SPK Ref Val %REC LowLimit | HighLimit %RPD | RPDLimit | Qual | | | |
| Mercury | | 0.0052 0.00020 0.00500 | 0 0 104 80 | 120 | | | | | |

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 48 of 61

WO#:	170	5G62

03-Aug-17	
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Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R43973 RunNu: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387126 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Floride ND 0.50 Biomide ND 0.50 Simple ID KRPD ND 0.50 Simple ID LCS SampType: ICS TestCode: EPA Method 300.0: Anions Filter ND: Client ID: LCSW Batch ID: R43973 RunNo: 43973 Filter ND: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Floride 0.62 0.10 0.500 0 104	Client: V Project: S	Vestern Refining S MW 2 and Bound	Southwe lary Wel	st, Gallup lls									
Client ID: PBW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387126 Units: mg/L Analyte Result POL SPK Value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Analyte ND 0.0 0.0 SeqNo: 1387126 Units: mg/L Chiordie ND 0.0 0.0 SeqNo: 1387127 Units: Mg/L	Sample ID MB	Samp	Type: m l	olk	Tes	tCode: El	PA Method	300.0: Anion	S				
Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387126 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride ND 0.10 SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Bornide ND 0.50 Similare ND 0.50 NTate-Nithe as N ND 0.50 Simple ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNix: 43973 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 90 1110 NRTA SREC LowLimit HighLimit %RPD RPDLimit Qual NRTA SREC LowL	Client ID: PBW	Bato	h ID: R4	3973	F	RunNo: 43973							
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Flooride ND 0.10	Prep Date:	Analysis I	Date: 7/	3/2017	S	SeqNo: 1	387126	Units: mg/L					
Flindte ND 0.10 Chiorde ND 0.50 Bromide ND 0.50 Suffate Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result POL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Flioride 0.52 0.10 0.500 0 96.6 90 110 Second Second 90 110 Second Second 90 110 Second	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Chioride ND 0.50 Bromide ND 0.10 Phosphorus, Orthophosphate (As P ND 0.50 Suffale ND 0.20 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.500 0 104 90 110 Chioride 4.8 0.50 5.000 0 96.6 90 110 Phosphorus, Othophosphate (As P 4.8 0.50 5.000 0 96.6 90 110 Phosphorus, Othophosphate (As P 4.8 0.50 5.000 0 96.6 90 110 Phosphorus, Othophosphate (As P 4.8 0.50 5.000 0 96.6 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.7 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.6 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.6 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mb/k TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride A, 6 0.50 5.00 0 93.7 90 110 Sample ID MB SampType: WBLK TestCode: EPA Method 300.0: Anions	Fluoride	ND	0.10										
Bromide ND 0.10 Phosphorus, Orthophosphate (As P ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde 0.52 0.10 0.500 0 104 90 1110 Sulfale 0.50 0.10 0.500 0 96.6 90 110 Bromide 2.4 0.10 0.500 0 96.6 90 110 Bromide 2.4 0.10 0.500 0 97.7 90 110 Sulfale 9.8 0.50 10.00 0 96.4 90 1110 Sulfale 9.8 0.50 10.00 0 96.4 90 1110 Sulfale 9.8 0.50 5.000 0 97.6 90 110 Sulfale 9.8 0.50 5.000 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde ND 0.50 Sulfale 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde ND 0.50 Sulfale 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde 4.6 0.50 5.00 0 92.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44528 RunNo: 44528	Chloride	ND	0.50										
Phosphorus, Orthophosphate (As P ND 0.50 Suifate ND 0.20 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result POL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 104 90 110 Simolide 2.4 0.10 2.500 0 97.7 90 110 Prosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 98.1 90 110 Suffate - Nitrite a Nitrite a Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mbik TestCode: EPA Method 300.0: Anions Client ID: POL </th <th>Bromide</th> <th>ND</th> <th>0.10</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Bromide	ND	0.10										
Sulfale ND 0.50 Sulfate-Nitrite as N ND 0.20 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Floride 4.8 0.50 5.000 0 96.6 90 110 Chordie 4.8 0.50 5.000 0 96.4 90 110 Bronide 2.4 0.10 2.500 0 97.7 90 110 Suffate 9.8 0.50 10.00 0 96.4 90 110 Suffate 9.8 0.50 10.00 0 96.4 90 110 Suffate 9.8 0.50 10.00 96.6 90 110 <th>Phosphorus, Orthophospha</th> <th>ite (As P ND</th> <th>0.50</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Phosphorus, Orthophospha	ite (As P ND	0.50										
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Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 90.6 90 110 Value SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride 4.8 0.50 5.000 0 97.7 90 110 Value Value SPK value SPK value 98.1 90 110 Value Value Value SPK value SPK value SPK 98.1 90 110 Value Value SPK value SPK 90 110 Value	Client ID: LCSW	Bato	:h ID: R4	3973	F	RunNo: 4	3973						
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Fluoride 0.52 0.10 0.500 0 104 90 110 Chioride 4.8 0.50 5.000 0 96.6 90 110 Bromide 2.4 0.10 2.500 0 97.7 90 110 Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 96.4 90 110 Nitrate - Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions EVENT Client ID: PBW Batch ID: R44381 RunNo: 44381 EVENT Analyte Result PQL SPK value SPK Ref Val %REC Lowlinit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
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Bromide 2.4 0.10 2.500 0 97.7 90 110 Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 96.4 90 110 Sulfate 9.8 0.50 10.00 0 98.1 90 110 Nitrate Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Aniovs Client ID: PBW Batch ID: R44381 RunNo: 44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Client ID: LCSW Batch ID: R44381 RunNo: 44381 J J Sample ID LCSW Batch ID: R44381 RunNo: 1402927 Units: mg/L Analyte Result	Chloride	4.8	0.50	5.000	0	96.6	90	110					
Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 96.4 90 110 Sulfate 9.8 0.50 10.00 0 98.1 90 110 Nitrate+Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Qual Chloride ND 0.50 50.00 90 90 110 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Units: mg/L Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Client ID: LCSW Batch ID: R44381 RunNo: 44381 Units: mg/L A	Bromide	2.4	0.10	2.500	0	97.7	90	110					
Sulfate 9.8 0.50 10.00 0 98.1 90 110 Nitrate+Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Vector Analysis Vector Analysis Vector <	Phosphorus, Orthophospha	ite (As P 4.8	0.50	5.000	0	96.4	90	110					
Nitrate+Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 4.6 0.50 5.000 92.7	Sulfate	9.8	0.50	10.00	0	98.1	90	110					
Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 J J J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Client ID: LCSW Batch ID: R44381 RunNo: 44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val<	Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.6	90	110					
Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 Suffate 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Qual Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Sample ID MB	Samp	Type: m ł	olk	Tes	tCode: El	PA Method	300.0: Anion	8				
Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 0.50 J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Vitis: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Qual Chloride 4.6 0.50 5.000 0 92.7 90 110 Qual Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions	Client ID: PBW	Batc	h ID: R4	4381	F	RunNo: 4							
AnalyteResultPQLSPK valueSPK Ref Val%RECLowLimitHighLimit%RPDRPDLimitQualChlorideND0.50	Prep Date:	Analysis I	Date: 7/	19/2017	S	SeqNo: 1	402926	Units: mg/L					
ND 0.50 Sulfate 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528 RunNo: 44528	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Sulfate 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Value <	Chloride	ND	0.50										
Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions EVA Client ID: PBW Batch ID: R44528 RunNo: 44528	Sulfate	0.15	0.50								J		
Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 9.4 0.50 10.00 0 93.7 90 110 90.000 1000 90.000 90.0000 90.0000 90.00000 90.0000 90.000000 90.00000000000000000000000000000000000	Sample ID LCS	Samp	Type: Ics	5	Tes	tCode: El	PA Method	300.0: Anion	5				
Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 100 100 100 93.7 90 110 100	Client ID: LCSW	Bato	h ID: R4	4381	F	RunNo: 4	4381						
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 4.6 0.50 5.000 0 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528 KunNo: 44528	Prep Date:	Analysis I	Date: 7/	19/2017	S	SeqNo: 1	402927	Units: mg/L					
Chloride 4.6 0.50 5.000 0 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528	Chloride	4.6	0.50	5.000	0	92.7	90	110					
Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528	Sulfate	9.4	0.50	10.00	0	93.7	90	110					
Client ID: PBW Batch ID: R44528 RunNo: 44528	Sample ID MB	Samp	Туре: МЕ	BLK	Tes	tCode: El	de: EPA Method 300.0: Anions						
	Client ID: PBW	Bato	h ID: R4	4528	F	RunNo: 4	4528						
Prep Date: Analysis Date: 7/26/2017 SeqNo: 1408053 Units: mg/L	Prep Date:	Analysis I	Date: 7/	26/2017	S	SeqNo: 1408053 U			Units: mg/L				
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 49 of 61

Client: Project:		Western Refining S SMW 2 and Bounda	outhwe ary We	st, Gallup lls							
Sample ID N Client ID: P	IB PBW	SampT Batch	ype: MF 1 ID: R4	3LK 4528	TestCode: EPA Method 300.0: Anions RunNo: 44528						
Prep Date:		Analysis D	ate: 7/	26/2017	S	SeqNo: 14	408053	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N ND 0.20											
Sample ID	.cs	SampT	ype: LC	s	Tes	tCode: EF	PA Method	300.0: Anions	6		
Client ID: L	csw	Batch	1D: R4	4528	F	RunNo: 44	4528				
Prep Date:		Analysis D	ate: 7/	26/2017	5	GeqNo: 14	408054	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as	Ν	3.4	0.20	3.500	0	97.0	90	110			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 50 of 61

WO#:	1706G62
	03-Aug-17

Client: Project:	Western I SMW 2 a	Refining S .nd Bound	outhwe ary We	st, Gallup lls									
Sample ID	MB-32608	SampT	Type: MI	BLK	TestCode: EPA Method 8015M/D: Diesel Range								
Client ID:	PBW	Batcl	h ID: 32	608	F	RunNo: 4	3984						
Prep Date:	7/3/2017	Analysis D	Date: 7/	5/2017	SeqNo: 1386515			Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range Organics (DRO) ND													
Motor Oil Range	e Organics (MRO)	ND	5.0										
Surr: DNOP		1.1		1.000		112	72.4	157					
Sample ID LCS-32608 SampType: LCS TestCode: EPA Method 8015M/D: Diesel Range													
Client ID:	LCSW	Batcl	h ID: 32	608	RunNo: 43984								
Prep Date:	7/3/2017	Analysis D	Date: 7/	5/2017	5	SeqNo: 1	386736						
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range O	rganics (DRO)	6.0	1.0	5.000	0	121	82.8	146					
Surr: DNOP		0.54		0.5000		109	72.4	157					
Sample ID	1706G62-001BMS	SampT	Гуре: М	3	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	9			
Client ID:	OW-60	Batcl	h ID: 32	608	F	RunNo: 4	3984						
Prep Date:	7/3/2017	Analysis D	Date: 7/	5/2017	5	SeqNo: 1	386854	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range O	rganics (DRO)	6.5	1.0	5.000	0	129	87.2	145					
Surr: DNOP		0.56		0.5000		112	72.4	157					
Sample ID	1706G62-001BMS	D Samp1	Type: MS	SD	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	9			
Client ID:	OW-60	Batcl	h ID: 32	608	F	RunNo: 4	3984						
Prep Date:	7/3/2017	Analysis E	Date: 7/	5/2017	5	SeqNo: 1	386861	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range O	rganics (DRO)	6.6	1.0	5.000	0	131	87.2	145	1.51	20			
Surr: DNOP		0.56		0.5000		112	72.4	157	0	0			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1706G62

03-Aug-17

Client: Project:	Western SMW 2	Refining S and Bound	Southw lary W	vest, Gallup Tells								
Sample ID	RB	Samp	Гуре: М	/IBLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e		
Client ID:	PBW	Batc	h ID: (G44019	F	RunNo: 44019						
Prep Date:		Analysis [Date:	7/6/2017	S	SeqNo: 1	1388622	Units: mg/L				
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Rang Surr: BFB	ge Organics (GRO)	ND 21	0.05	0 20.00		106	52.3	138				
Sample ID	2.5UG GRO LCS	Samp	Гуре: L	.cs	TestCode: EPA Method 8015D: Gasoline Range							
Client ID:	LCSW	Batc	h ID: (G44019	F	RunNo: 4	44019					
Prep Date:		Analysis [Date:	7/6/2017	S	SeqNo: 1	1388623	Units: mg/L				
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Rang	ge Organics (GRO)	0.50	0.05	0 0.5000	0	99.7	75.8	123				
Surr: BFB		24		20.00		118	52.3	138				
Sample ID	1706G62-002AM	S Samp	Гуре: 🛚	IS	TestCode: EPA Method 8015D: Gasoline Range							
Client ID:	GW DUP01	Batc	h ID: (G44019	F	RunNo: 4	44019					
Prep Date:		Analysis [Date:	7/6/2017	S	SeqNo: 1	1388626	Units: mg/L				
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Rang	ge Organics (GRO)	0.49	0.05	0 0.5000	0.03520	90.7	53.2	134				
Surr: BFB		26		20.00		131	52.3	138				
Sample ID	1706G62-002AM	SD Samp	Гуре: 🛚	ISD	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e		
Client ID:	GW DUP01	Batc	h ID: (G44019	F	RunNo: 4	44019					
Prep Date:		Analysis [Date:	7/6/2017	5	SeqNo: 1	1388627	Units: mg/L				
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Rang	ge Organics (GRO)	0.48	0.05	0 0.5000	0.03520	90.0	53.2	134	0.740	20		
Surr: BFB		26		20.00		129	52.3	138	0	0		
Sample ID	RB	Samp	Гуре: 🛚	IBLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e		
Client ID:	PBW	Batc	h ID: V	VG44091	F	RunNo: 4	44091					
Prep Date:		Analysis [Date:	7/10/2017	S	SeqNo: 1	1391577	Units: mg/L				
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Rang	ge Organics (GRO)	ND	0.05	0								
Surr: BFB		23		20.00		114	52.3	138				
Sample ID	2.5UG GRO LCS	Samp	Type: L	CS	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e		
Client ID:	LCSW	Batc	h ID: V	VG44091	RunNo: 44091							
Prep Date:		Analysis [Date:	7/10/2017	S	SeqNo: 1	1391578	Units: mg/L				

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Client: Project:	Western Refining Southwest, Gallup SMW 2 and Boundary Wells										
Sample ID	ple ID 2.5UG GRO LCS SampType: LCS TestCode: EPA Method 8015D: Gasoline Range										
Client ID:	LCSW	Batch	ID: W	G44091	RunNo: 44091						
Prep Date:	Analysis Date: 7/10/2017		/10/2017	SeqNo: 1391578			Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	0.48	0.050	0.5000	0	95.7	75.8	123			
Surr: BFB		25		20.00		125	52.3	138			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1706G62 03-Aug-17

Client:
Project:

Western Refining Southwest, Gallup

SMW 2 and Boundary Wells

Sample ID 100ng Ics	SampType: LCS4 TestCode: EPA Method 8260B: VOLATILES									
Client ID: BatchQC	Batch	n ID: R4	4015	F	RunNo: 4	4015				
Prep Date:	Analysis D	ate: 7/	5/2017	S	SeqNo: 1	387911	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	20	1.0	20.00	0	100	70	130			
Ethylbenzene	20	1.0	20.00	0	99.5	70	130			
Methyl tert-butyl ether (MTBE)	42	1.0	40.00	0	104	70	130			
1,2,4-Trimethylbenzene	21	1.0	20.00	0	103	70	130			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	101	70	130			
1,2-Dichloroethane (EDC)	21	1.0	20.00	0	103	62.2	143			
1,2-Dibromoethane (EDB)	20	1.0	20.00	0	99.1	70	130			
Naphthalene	19	2.0	20.00	0	92.6	70	130			
1-Methylnaphthalene	19	4.0	20.00	0	95.0	60	140			
2-Methylnaphthalene	14	4.0	20.00	0	71.6	60	140			
Acetone	43	10	40.00	0	107	60	140			
Bromobenzene	21	1.0	20.00	0	104	70	130			
Bromodichloromethane	21	1.0	20.00	0	107	70	130			
Bromoform	20	1.0	20.00	0	99.3	70	130			
Bromomethane	17	3.0	20.00	0	87.2	60	140			
2-Butanone	47	10	40.00	0	117	60	140			
Carbon disulfide	38	10	40.00	0	94.3	60	140			
Carbon Tetrachloride	21	1.0	20.00	0	104	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
Chloroethane	20	2.0	20.00	0	99.2	60	140			
Chloroform	21	1.0	20.00	0	107	70	130			
Chloromethane	17	3.0	20.00	0	87.0	60	140			
2-Chlorotoluene	20	1.0	20.00	0	102	70	130			
4-Chlorotoluene	20	1.0	20.00	0	102	70	130			
cis-1,2-DCE	21	1.0	20.00	0	107	70	130			
cis-1,3-Dichloropropene	19	1.0	20.00	0	96.8	70	130			
1,2-Dibromo-3-chloropropane	20	2.0	20.00	0	102	70	130			
Dibromochloromethane	19	1.0	20.00	0	95.4	70	130			
Dibromomethane	22	1.0	20.00	0	108	70	130			
1,2-Dichlorobenzene	20	1.0	20.00	0	101	70	130			
1,3-Dichlorobenzene	21	1.0	20.00	0	103	70	130			
1,4-Dichlorobenzene	21	1.0	20.00	0	103	67.2	141			
Dichlorodifluoromethane	17	1.0	20.00	0	85.6	60	140			
1,1-Dichloroethane	21	1.0	20.00	0	103	52.6	157			
1,1-Dichloroethene	20	1.0	20.00	0	101	70	130			
1,2-Dichloropropane	21	1.0	20.00	0	103	63.7	138			
1,3-Dichloropropane	20	1.0	20.00	0	98.1	70	130			
2,2-Dichloropropane	21	2.0	20.00	0	107	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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: **1706G62** *03-Aug-17*

Client:
Project:

Western Refining Southwest, Gallup

SMW 2 and Boundary Wells

Sample ID 100ng lcs	SampType: LCS4			TestCode: EPA Method 8260B: VOLATILES						
Client ID: BatchQC	Batch ID: R44015			RunNo: 44015						
Prep Date:	Analysis D	Date: 7/	5/2017	S	SeqNo: 1	387911	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	20	1.0	20.00	0	102	70	130			
Hexachlorobutadiene	18	1.0	20.00	0	87.6	70	130			
2-Hexanone	38	10	40.00	0	95.4	60	140			
Isopropylbenzene	20	1.0	20.00	0	100	70	130			
4-Isopropyltoluene	21	1.0	20.00	0	104	70	130			
4-Methyl-2-pentanone	41	10	40.00	0	102	60	140			
Methylene Chloride	21	3.0	20.00	0	103	70	130			
n-Butylbenzene	19	3.0	20.00	0	97.4	70	130			
n-Propylbenzene	20	1.0	20.00	0	100	70	130			
sec-Butylbenzene	20	1.0	20.00	0	98.3	70	130			
Styrene	20	1.0	20.00	0	101	70	130			
tert-Butylbenzene	20	1.0	20.00	0	101	70	130			
1,1,1,2-Tetrachloroethane	20	1.0	20.00	0	98.5	70	130			
1,1,2,2-Tetrachloroethane	21	2.0	20.00	0	105	65.9	133			
Tetrachloroethene (PCE)	21	1.0	20.00	0	103	70	130			
trans-1,2-DCE	20	1.0	20.00	0	99.9	70	130			
trans-1,3-Dichloropropene	19	1.0	20.00	0	92.8	70	130			
1,2,3-Trichlorobenzene	19	1.0	20.00	0	92.9	70	130			
1,2,4-Trichlorobenzene	18	1.0	20.00	0	92.3	70	130			
1,1,1-Trichloroethane	21	1.0	20.00	0	104	70	130			
1,1,2-Trichloroethane	20	1.0	20.00	0	99.1	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Trichlorofluoromethane	20	1.0	20.00	0	102	70	130			
1,2,3-Trichloropropane	21	2.0	20.00	0	103	69.7	129			
Vinyl chloride	19	1.0	20.00	0	93.5	70	130			
Xylenes, Total	61	1.5	60.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		113	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	n ID: R4	4015	F	RunNo: 4	4015				
Prep Date:	Analysis D	Date: 7/	5/2017	S	SeqNo: 1	387914	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								

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 55 of 61

WO#:	1706G62
	03-Aug-17

Client: Wester	ern Refining S	Southwe	est, Gallup								
Project: SMW	2 and Bound	ary We	ells								
Sample ID rb	SampType: MBLK		Tes	TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batc	h ID: R	44015	F	RunNo: 4	4015					
Prep Date:	Analysis E	Date: 7	/5/2017	:	SeqNo: 1	387914	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
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-DCF	ND	1.0									
cis-1 3-Dichloronronene	ND	1.0									
1 2-Dibromo-3-chloronronane	ND	2.0									
Dibromochloromethane	ND	2.0									
Dibromomethane	ND	1.0									
1.2 Dichlorobenzene	ND	1.0									
1,2-Dichlorobenzene		1.0									
1,3-Dichlorobenzene		1.0									
Dichlorodifluoromethane	ND	1.0									
1 1 Dichloroethane		1.0									
		1.0									
1, I-Dichloropropago		1.0									
		1.0									
		1.0									
		2.0									
		1.0									
Hexachioroputadiene	ND	1.0									
2-Hexanone	ND	10									

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 56 of 61

WO#:	1706G62
	02 4 17

03-Aug-1	17
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Client: V Project: S	Western Refinin MW 2 and Boy	ng Southwe undary We	est, Gallup Ils							
Sample ID rb	Sa	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID: PBW	В	atch ID: R4	44015	F	RunNo: 4	4015				
Prep Date:	Analys	sis Date: 7	/5/2017	S	SeqNo: 1	387914	Units: µg/L			
Analyte	Resu	ılt PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Isopropylbenzene	N	D 1.0								
4-Isopropyltoluene	N	D 1.0								
4-Methyl-2-pentanone	N	D 10								
Methylene Chloride	N	D 3.0								
n-Butylbenzene	N	D 3.0								
n-Propylbenzene	N	D 1.0								
sec-Butylbenzene	N	D 1.0								
Styrene	N	D 1.0								
tert-Butylbenzene	N	D 1.0								
1,1,1,2-Tetrachloroethane	N	D 1.0								
1,1,2,2-Tetrachloroethane	N	D 2.0								
Tetrachloroethene (PCE)	N	D 1.0								
trans-1,2-DCE	N	D 1.0								
trans-1,3-Dichloropropene	N	D 1.0								
1,2,3-Trichlorobenzene	N	D 1.0								
1,2,4-Trichlorobenzene	N	D 1.0								
1,1,1-Trichloroethane	N	D 1.0								
1,1,2-Trichloroethane	N	D 1.0								
Trichloroethene (TCE)	N	D 1.0								
Trichlorofluoromethane	N	D 1.0								
1,2,3-Trichloropropane	N	D 2.0								
Vinyl chloride	N	D 1.0								
Xylenes, Total	N	D 1.5								
Surr: 1,2-Dichloroethane	-d4 1	1	10.00		108	70	130			
Surr: 4-Bromofluorobenz	ene 1	1	10.00		108	70	130			
Surr: Dibromofluorometh	ane 1	1	10.00		114	70	130			
Surr: Toluene-d8	1	0	10.00		104	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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1706G62
	03-Aug-17

Client:WesterProject:SMW	ern Refining So 2 and Boundar	uthwest, Gallup ry Wells								
Sample ID mb-32619	SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles							
Client ID: PBW	Batch I	D: 32619	RunNo: 44051							
Pren Date: 7/3/2017	Analysis Da	te: 7/6/2017	SeaNo: 1389536 Units: ua/l							
	Desell			.						
Analyte	Result	PQL SPK value	SPK Ref Val %REC LOWLIMIT HighLimit %RPD RPDLIMIT	Juai						
Acenaphiliene		10								
	ND	10								
	ND	10								
Azohenzene	ND	10								
Renz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(h)fluoranthene	ND	10								
Benzo(a h i)pervlene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	85	20		.1						
Benzyl alcohol	ND	10		Ũ						
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl ohthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3 [°] -Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1706G62
	03-Aug-17

Client:Western Refining Southwest, GallupProject:SMW 2 and Boundary Wells										
Sample ID mb-32619	mple ID mb-32619 SampType: MBLK		Tes	tCode: El	PA Method	8270C: Semiv	olatiles			
Client ID: PBW	Batch	ID: 326	19	R	RunNo: 4	4051				
Prep Date: 7/3/2017	Analysis D	ate: 7/6	6/2017	S	SeqNo: 1	389536	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	120		200.0		60.8	15	98.1			
Surr: Phenol-d5	100		200.0		51.7	15	80.7			
Surr: 2,4,6-Tribromophen	ol 160		200.0		78.6	15	112			
Surr: Nitrobenzene-d5	90		100.0		90.2	27.2	90.7			
Surr: 2-Fluorobiphenyl	86		100.0		85.7	23.3	85.6			S
Surr: 4-Terphenyl-d14	72		100.0		71.6	27.6	107			

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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1706G62
	02 4 17

Client:	Western Refining Southwest, Gallup
Project:	SMW 2 and Boundary Wells

Sample ID Ics-32619	SampT	ype: LC	S	Tes	tCode: El	PA Method	8270C: Semi	volatiles		
Client ID: LCSW	Batch	n ID: 326	619	F	RunNo: 4	4051				
Prep Date: 7/3/2017	Analysis D	Date: 7/	6/2017	S	SeqNo: 1	389537	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	85	10	100.0	0	85.2	41.2	98.9			
4-Chloro-3-methylphenol	170	10	200.0	0	84.8	29.1	111			
2-Chlorophenol	150	10	200.0	0	77.3	23.3	108			
1,4-Dichlorobenzene	63	10	100.0	0	62.6	29.4	84.5			
2,4-Dinitrotoluene	75	10	100.0	0	74.7	36.6	88.7			
N-Nitrosodi-n-propylamine	90	10	100.0	0	89.5	46.9	106			
4-Nitrophenol	99	10	200.0	0	49.4	15	74.7			
Pentachlorophenol	140	20	200.0	0	68.0	28.1	85.4			
Phenol	100	10	200.0	0	50.4	15	78.2			
Pyrene	97	10	100.0	0	97.0	44.4	96.8			S
1,2,4-Trichlorobenzene	75	10	100.0	0	74.9	34.3	89			
Surr: 2-Fluorophenol	120		200.0		58.5	15	98.1			
Surr: Phenol-d5	110		200.0		52.8	15	80.7			
Surr: 2,4,6-Tribromophenol	160		200.0		80.4	15	112			
Surr: Nitrobenzene-d5	95		100.0		94.6	27.2	90.7			S
Surr: 2-Fluorobiphenyl	86		100.0		85.6	23.3	85.6			
Surr: 4-Terphenyl-d14	68		100.0		68.0	27.6	107			
Sample ID LCSD-32619	SampT	ype: LC	SD	Tes	tCode: El	PA Method	8270C: Semi ^v	volatiles		
Sample ID LCSD-32619 Client ID: LCSS02	SampT Batch	⁻ ype: LC n ID: 326	SD 619	Tes F	tCode: El RunNo: 4	PA Method 4051	8270C: Semi ^v	volatiles		
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017	SampT Batch Analysis D	Type: LC n ID: 326 Date: 7/	SD 619 6/2017	Tes F S	tCode: El RunNo: 4 SeqNo: 1	PA Method 4051 389538	8270C: Semin Units: μg/L	volatiles		
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte	SampT Batch Analysis D Result	Type: LC n ID: 326 Date: 7/0 PQL	SD 619 6/2017 SPK value	Tes F S SPK Ref Val	tCode: El RunNo: 4 SeqNo: 1 %REC	PA Method 4051 389538 LowLimit	8270C: Semi Units: μ g/L HighLimit	volatiles %RPD	RPDLimit	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene	SampT Batch Analysis D Result 69	Type: LC n ID: 326 Date: 7/ PQL 10	SD 619 6/2017 SPK value 100.0	Tes F SPK Ref Val 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6	PA Method 4051 389538 LowLimit 41.2	8270C: Semin Units: μg/L HighLimit 98.9	volatiles %RPD 21.6	RPDLimit 37.4	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol	SampT Batch Analysis D Result 69 140	Type: LC n ID: 326 Date: 7/0 PQL 10 10	SD 519 6/2017 SPK value 100.0 200.0	Tes F SPK Ref Val 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4	PA Method 4051 389538 LowLimit 41.2 29.1	8270C: Semin Units: μg/L HighLimit 98.9 111	volatiles %RPD 21.6 18.5	RPDLimit 37.4 26.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol	SampT Batch Analysis D Result 69 140 140	Type: LC n ID: 326 Date: 7/0 PQL 10 10 10	SD 6/2017 SPK value 100.0 200.0 200.0	Tes F SPK Ref Val 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0	PA Method 4051 389538 LowLimit 41.2 29.1 23.3	8270C: Semin Units: μg/L HighLimit 98.9 111 108	volatiles %RPD 21.6 18.5 11.4	RPDLimit 37.4 26.8 30.3	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene	SampT Batch Analysis D Result 69 140 140 58	Type: LC n ID: 326 Date: 7/0 PQL 10 10 10 10	SD 6/2017 SPK value 100.0 200.0 200.0 100.0	Tes F SPK Ref Val 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5	%RPD 21.6 18.5 11.4 8.32	RPDLimit 37.4 26.8 30.3 32	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene	SampT Batch Analysis D Result 69 140 140 58 63	ype: LC n ID: 320 Date: 7/0 PQL 10 10 10 10 10	SD 519 5/2017 SPK value 100.0 200.0 200.0 100.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7	%RPD 21.6 18.5 11.4 8.32 16.7	RPDLimit 37.4 26.8 30.3 32 36.7	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine	SampT Batch Analysis D Result 69 140 140 58 63 75	ype: LC n ID: 320 Date: 7/0 PQL 10 10 10 10 10 10	SD 619 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 10 10	SD 619 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15	8270C: Semin Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110	Type: LC n ID: 320 Date: 70 PQL 10 10 10 10 10 10 10 10 20	SD 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 200.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1	8270C: Semin Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89	Type: LC n ID: 326 Date: 7/0 PQL 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 200.0 200.0 200.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89	Type: LC n ID: 326 pate: 7/0 PQL 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 519 5/2017 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69	Type: LC Date: 7/ PQL 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 519 5/2017 SPK value 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110	Type: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 519 5/2017 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 100.0 200.0 100.0 20	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1	<pre>%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8 0	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110 96	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 10 20 10 10 10	SD 519 5/2017 SPK value 100.0 200.0 200.0 100.0 100.0 20	Tes F S SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0 48.0	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 15	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110 96 140	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 10 20 10 10 10	SD 519 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 20	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0 48.0 71.3	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15 15 15	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0 0 0 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Phenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110 96 140 84	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 20 10 10 10 10	SD 519 6/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 100.0 200.0 200.0 100.0 200.0 200.0 100.0 200.0 200.0 100.0 200.0 100.0 200.0 100.0 200.0 100.0 200.0 100.0 200.0 200.0 100.0 200.0 100.0 200.0 100.0 20	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0 48.0 71.3 83.9	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15 15 15 15 15	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112 90.7	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0 0 0 0	Qual

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

Sample pH Not In Range

RL Reporting Detection Limit

Р

W Sample container temperature is out of limit as specified

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Client: Project:	Wester SMW 2	n Refining S 2 and Bounda	outhwe ary We	st, Gallup lls							
Sample ID L Client ID: L	_CSD-32619 _CSS02	SampT Batch	ype: LC	SD 619	Test R	tCode: El	PA Method 4051	8270C: Semi	volatiles		
Prep Date:	7/3/2017	Analysis D	ate: 7	6/2017	S	eqNo: 1	389538	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphe	enyl-d14	60		100.0		60.5	27.6	107	0	0	

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 61 of 61

ANALYSIS	INTAL RY	Albu TEL: 305-343-3975 i Website: www.hal	4901 Hawkinz querque, NM 87 FAX: 505-345-4 lenvironmental.c	NE 109 Sam 107 107	ple Log-In C	heck List
Client Name Weste	m Refining Gallup	Work Order Number:	1706G62		RoptNo:	ī
Received By: Richi	e Eriacho	6/30/2017 10:30:00 AM	1	12-2		
Completed By: Ashle Reviewed By:	ey Gallegos	в/30/2017 4:02:10 РМ € 7{3 7		A		
Chain of Custody						
1 Custody seats intact	on sample hottles?		Yes 🗌	No 🗌	Not Present	
2. Is Chain of Custody	complete?		Yes 🔽	No 🗔	Not Present	
3, How was the sample	e delivered?		Courter			
Log In						
4. Was an attempt ma	de to cool the sample	s?	Yes 🗹	No 🗌	NA 🗆	
5. Were all samples re	ceived at a temperatu	re of >0° C to 6.0°C	Yes 🗹	No 🗌		
6. Sample(s) in proper	container(s)?		Yes 🗹	No 🗖		
7. Sufficient sample vo	lume for indicated tes	t(s)?	Yes 🖌	NO DI	r.	
B. Are samples (except	VOA and ONG) prop	only preserved?	Yes V	No VI		
9. Was preservative ad	ided to bottles?		Yes V	No 🗹 (25 NA	
10.VOA vials have zero	headspace?		Yes 🗹	No 🗆	No VOA Vials	
11. Were any sample of	ontainers received bro	ken?	Yes 🗆	No 🔽	# of preserved bottles checked	
12. Does paperwork ma (Note discrepancies	tch bottle labels? on chain of custody)		Yos 🗹	No 🗌	for pH: 17	r (12)unless noted)
13. Are matrices correct	ly identified on Chain	of Custody7	Yes 🔽	No L	Adjusted?	105
14. Is it clear what analy	ses were requested?		Yes 🗹	No 🗌	Sec. All	900
15. Were all holding time (If no, notify custome	es able to be met? er for authorization.)		Yes 🗹	No 🛄	Checked by:	003
Special Handling (i	f applicable)					
16. Was client notified o	f all discrepancies wit	h this order?	Yes	No 🔲	NA 🔽	
Person Notifie	di:	Date				
By Whom:		Via:	eMail 🗌 P	hone 🗌 Fax	In Person	
Regarding:						
Client Instructi	Encondate	a participat di	deled in	++151/2	to -orre f	opourol
to a subtraine remarks:	PH H	dzy hours r	Divin to	apalus	In COTE I	St Secci l
18. Cooler Information Cooler No Ten	p °C Condition	Seal Intact Seal No S	Seal Date	Signed By	2.	
1 2.2	Good N	ot Present	1		71	3@1032
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If recessary, samples submitted to Hall Environmental may be subcontracted to other accrection laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

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WESTERN REFINING SOUTHWEST, INC. GALLUP REFINERY - GALLUP, NEW MEXICO SMW-2 AND BOUNDARY WELLS - JUNE 2016 METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES AND WATER QA/QC SAMPLES

TOTAL METALS ANALYSIS AND DISSOLVED METALS ANALYSIS

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
langanese	SW-846 method 6010/6020

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES AND WATER QA/QC SAMPLES

Analyte	Analytical Method
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0

Appendix F SMW-2 Area - Analytical Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 01, 2017

Cheryl Johnson Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-0231 FAX

OrderNo.: 1706G37

RE: SMW 2

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 6/30/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

and

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report

Lab Order 1706G37 Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gal Project: SMW 2	llup	up Client Sample ID: SMW-2 Collection Date: 6/28/2017 1:10:00 PM Matrix: AQUEQUS Received Date: 6/30/2017 10:30:00 AM								
Lao ID: 1706G37-001	Matrix:	AQUEUUS	K	eceivea	Date: 0/30	//2017/1	10:30:00 AM			
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 300.0: ANIONS							Analyst: MRA			
Fluoride	ND	0.22	0.50		mg/L	5	7/3/2017 8:26:31 PM	R43998		
Chloride	2600	120	250		mg/L	500	7/21/2017 4:18:01 PM	R44455		
Bromide	2.8	0.073	0.50		mg/L	5	7/3/2017 8:26:31 PM	R43998		
Phosphorus, Orthophosphate (As P)	ND	5.0	10	н	mg/L	20	7/19/2017 6:05:29 PM	R44381		
Sulfate	1500	4.8	25		mg/L	50	7/19/2017 6:17:53 PM	R44381		
Nitrate+Nitrite as N	ND	0.26	2.0		mg/L	10	7/19/2017 8:22:00 PM	A44381		
EPA METHOD 200.7: DISSOLVED METALS	3						Analyst: pmf			
Calcium	300	1.6	20		mg/L	20	7/12/2017 8:09:43 PM	C44171		
Magnesium	90	0.25	1.0		mg/L	1	7/12/2017 8:07:46 PM	C44171		
Potassium	0.75	0.11	1.0	J	mg/L	1	7/12/2017 8:07:46 PM	C44171		
Sodium	2300	8.2	50		mg/L	50	7/13/2017 5:56:50 PM	B44206		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in
	D	Sample Diluted Due to Matrix	Е	Value above quanti

- 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
- the associated Method Blank
- itation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 1 of 8

Analytical Report Lab Order 1706G37

Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest Project: SMW 2	t, Gallup	p Client Sample ID: SMW-4 Collection Date: 6/28/2017 2:25:00 PM								
Lab ID: 1706G37-002	Matrix:	AQUEOUS	R	eceived	Date: 6/30)/2017	10:30:00 AM			
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 300.0: ANIONS							Analyst: MRA			
Fluoride	1.1	0.22	0.50		mg/L	5	7/3/2017 8:51:20 PM	R43998		
Chloride	63	1.2	2.5		mg/L	5	7/3/2017 8:51:20 PM	R43998		
Bromide	0.26	0.073	0.50	J	mg/L	5	7/3/2017 8:51:20 PM	R43998		
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5	н	mg/L	5	7/19/2017 6:30:17 PM	R44381		
Sulfate	180	0.48	2.5		mg/L	5	7/3/2017 8:51:20 PM	R43998		
Nitrate+Nitrite as N	0.21	0.13	1.0	J	mg/L	5	7/3/2017 10:55:27 PM	R43998		
EPA METHOD 200.7: DISSOLVED ME	TALS						Analyst: pmf			
Calcium	4.5	0.078	1.0		mg/L	1	7/12/2017 8:11:40 PM	C44171		
Magnesium	1.2	0.25	1.0		mg/L	1	7/12/2017 8:11:40 PM	C44171		
Potassium	0.52	0.11	1.0	J	mg/L	1	7/12/2017 8:11:40 PM	C44171		
Sodium	310	3.3	20		mg/L	20	7/12/2017 8:13:39 PM	C44171		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in t
	D	Sample Diluted Due to Matrix	Е	Value above quantit
			_	

- 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
- the associated Method Blank
- tation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 2 of 8

Analytical Report

Lab Order 1706G37 Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest SMW 2	, Gallup	Client Sample ID: Evaporation Pond #2 Collection Date: 6/28/2017 2:45:00 PM									
Lab ID:	1706G37-003	Matrix:	AQUEOUS	R	Received Date: 6/30/2017 10:30:00 AM							
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METH	IOD 300.0: ANIONS							Analyst: MRA				
Fluoride		18	0.44	1.0	*	mg/L	10	7/3/2017 9:16:10 PM	R43998			
Chloride		5000	120	250		mg/L	500	7/19/2017 7:19:55 PM	A44381			
Bromide		1.9	0.15	1.0		mg/L	10	7/3/2017 9:16:10 PM	R43998			
Phosphoru	us, Orthophosphate (As P)	ND	2.5	5.0	н	mg/L	10	7/19/2017 7:07:31 PM	A44381			
Sulfate		1400	9.6	50		mg/L	100	7/3/2017 9:28:34 PM	R43998			
Nitrate+Nit	trite as N	1.1	0.52	4.0	J	mg/L	20	7/19/2017 8:34:25 PM	A44381			
EPA METH	OD 200.7: DISSOLVED ME	TALS						Analyst: pmf				
Calcium		410	1.6	20		mg/L	20	7/12/2017 8:23:47 PM	C44171			
Magnesiur	n	100	5.0	20		mg/L	20	7/12/2017 8:23:47 PM	C44171			
Potassium	1	140	2.3	20		mg/L	20	7/12/2017 8:23:47 PM	C44171			
Sodium		3100	8.2	50		mg/L	50	7/13/2017 5:58:45 PM	B44206			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in
	D	Sample Diluted Due to Matrix	Е	Value above quantit

- 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
- the associated Method Blank
- tation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 3 of 8

Analytical Report

Lab Order 1706G37 Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwe	est, Gallup	Client Sample ID: Evaporation Pond #3									
Project: SMW 2			Co	llection	Date: 6/28	8/2017	3:05:00 PM				
Lab ID: 1706G37-004	Matrix:	AQUEOUS	R	eceived	Date: 6/30	0/2017	10:30:00 AM				
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 300.0: ANIONS							Analyst: MRA				
Fluoride	16	0.44	1.0	*	mg/L	10	7/3/2017 9:41:00 PM	R43998			
Chloride	7100	120	250		mg/L	500	7/19/2017 7:44:45 PM	A44381			
Bromide	2.3	0.15	1.0		mg/L	10	7/3/2017 9:41:00 PM	R43998			
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0	н	mg/L	10	7/19/2017 7:32:20 PM	A44381			
Sulfate	1800	9.6	50		mg/L	100	7/3/2017 9:53:25 PM	R43998			
Nitrate+Nitrite as N	1.1	0.52	4.0	J	mg/L	20	7/19/2017 8:46:49 PM	A44381			
EPA METHOD 200.7: DISSOLVED M	ETALS						Analyst: pmf				
Calcium	540	1.6	20		mg/L	20	7/12/2017 8:27:42 PM	C44171			
Magnesium	150	5.0	20		mg/L	20	7/12/2017 8:27:42 PM	C44171			
Potassium	230	2.3	20		mg/L	20	7/12/2017 8:27:42 PM	C44171			
Sodium	4300	8.2	50		mg/L	50	7/13/2017 6:00:52 PM	B44206			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in t
	D	Sample Diluted Due to Matrix	Е	Value above quantita

- 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
- the associated Method Blank
- ation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 4 of 8

SMW 2

Western Refining Southwest, Gallup

thod 200.7: Dissolved Metals	

Sample ID	MB-C	Sampl	Type: ME	3LK	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	PBW	Batcl	h ID: C4	4171	R	RunNo: 44	4171				
Prep Date:		Analysis E	Date: 7/	12/2017	S	SeqNo: 1	394698	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		ND	1.0								
Magnesium		ND	1.0								
Potassium		ND	1.0								
Sodium		ND	1.0								
Sample ID	LCSLL-C	Sampl	Гуре: LC	SLL	Test	tCode: EF	PA Method	200.7: Dissol	ved Metal	's	
Client ID:	BatchQC	Batc	Batch ID: C44171			RunNo: 44	4171				
Prep Date:		Analysis E	Date: 7/	12/2017	S	SeqNo: 1	394700	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		0.59	1.0	0.5000	0	119	50	150			J
Magnesium		0.53	1.0	0.5000	0	106	50	150			J
Potassium		0.50	1.0	0.5000	0	99.3	50	150			J
Sodium		0.51	1.0	0.5000	0	101	50	150			J
Sample ID	LCS-C	Sampl	Type: LC	S	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID:	LCSW	Batcl	h ID: C4	4171	R	RunNo: 4	4171				
Prep Date:		Analysis E	Date: 7/	'12/2017	S	SeqNo: 1;	394702	Units: mg/L			
Analyta		Result	PQI	SPK value	SPK Ref Val	%REC	LowLimit	Highl imit			Qual
Analyte			· ~=					riigiteittiit	/0RFD	RPDLIMIt	
Calcium		52	1.0	50.00	0	103	85	115	/0RF D	RPDLIMIt	
Calcium Magnesium		52 52	1.0 1.0	50.00 50.00	0 0	103 104	85 85	115 115	//IKF D	RPDLIMIt	
Calcium Magnesium Potassium		52 52 50	1.0 1.0 1.0	50.00 50.00 50.00	0 0 0	103 104 100	85 85 85	115 115 115 115	/orr D	RPDLIMIt	
Calcium Magnesium Potassium Sodium		52 52 50 51	1.0 1.0 1.0 1.0 1.0	50.00 50.00 50.00 50.00	0 0 0 0	103 104 100 102	85 85 85 85	115 115 115 115 115	/////	RPDLIMIt	
Calcium Magnesium Potassium Sodium Sample ID	МВ-В	52 52 50 51 Samp	1.0 1.0 1.0 1.0 1.0	50.00 50.00 50.00 50.00 BLK	0 0 0 0 Tes	103 104 100 102 tCode: EI	85 85 85 85 PA Method	115 115 115 115 115 115	lved Metal	RPDLIMIt	
Calcium Magnesium Potassium Sodium Sample ID Client ID:	MB-B PBW	52 52 50 51 Samp1 Batc	1.0 1.0 1.0 1.0 1.0 Type: ME	50.00 50.00 50.00 50.00 3LK 14206	0 0 0 Test	103 104 100 102 tCode: Ef	85 85 85 85 PA Method 4206	115 115 115 115 115 200.7: Dissol	ved Metal	KPDLIMIt	
Calcium Magnesium Potassium Sodium Sample ID Client ID: Prep Date:	MB-B PBW	52 52 50 51 Sampī Batcl Analysis [1.0 1.0 1.0 1.0 Type: ME h ID: B4 Date: 7/	50.00 50.00 50.00 50.00 3LK 44206 /13/2017	0 0 0 Test R S	103 104 100 102 tCode: Ef tunNo: 4 SeqNo: 1 :	85 85 85 PA Method 4206 395435	115 115 115 115 115 200.7: Dissol	ved Metal	KPDLIMIt	
Calcium Magnesium Potassium Sodium Sample ID Client ID: Prep Date: Analyte	MB-B PBW	52 52 50 51 Samp Batcl Analysis I Result	1.0 1.0 1.0 1.0 1.0 Type: ME h ID: B4 Date: 7/ PQL	50.00 50.00 50.00 50.00 3LK 4206 '13/2017 SPK value	0 0 0 Test R SPK Ref Val	103 104 100 102 tCode: EI ≀unNo: 4 3eqNo: 1; %REC	85 85 85 PA Method 4206 395435 LowLimit	115 115 115 115 115 1200.7: Dissol Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Calcium Magnesium Potassium Sodium Sample ID Client ID: Prep Date: Analyte Sodium	MB-B PBW	52 52 50 51 Samp ^T Batcl Analysis I Result ND	1.0 1.0 1.0 1.0 1.0 Fype: MF h ID: B4 Date: 7 / PQL 1.0	50.00 50.00 50.00 3LK 4206 '13/2017 SPK value	0 0 0 Test R S SPK Ref Val	103 104 100 102 tCode: EF &unNo: 4 &eqNo: 1: %REC	85 85 85 PA Method 4206 395435 LowLimit	115 115 115 115 200.7: Dissol Units: mg/L HighLimit	%RPD	RPDLimit RPDLimit	Qual
Calcium Magnesium Potassium Sodium Sample ID Client ID: Prep Date: Analyte Sodium Sample ID	MB-B PBW LCSLL-B	52 52 50 51 SampT Batcl Analysis [Result ND	1.0 1.0 1.0 1.0 1.0 Fype: ME h ID: B4 Date: 7 / PQL 1.0	50.00 50.00 50.00 3LK 4206 '13/2017 SPK value	0 0 0 Test R SPK Ref Val	103 104 100 102 tCode: EF RunNo: 4/ SeqNo: 1: %REC	85 85 85 PA Method 4206 395435 LowLimit	115 115 115 115 200.7: Dissol Units: mg/L HighLimit	%RPD	s RPDLimit	Qual
Calcium Magnesium Potassium Sodium Sample ID Client ID: Prep Date: Analyte Sodium Sample ID Client ID:	MB-B PBW LCSLL-B BatchQC	52 52 50 51 SampT Batcl Analysis E Result ND SampT Batc	1.0 1.0 1.0 1.0 1.0 1.0 Fype: ME h ID: B4 1.0 Fype: LC h ID: B4	50.00 50.00 50.00 3LK 4206 '13/2017 SPK value CSLL 44206	0 0 0 Test R SPK Ref Val Tes ⁻ F	103 104 100 102 tCode: EF &unNo: 4 %REC tCode: EF RunNo: 4	85 85 85 PA Method 4206 395435 LowLimit PA Method 4206	115 115 115 115 200.7: Dissol Units: mg/L HighLimit	%RPD	s RPDLimit	Qual
Calcium Magnesium Potassium Sodium Sample ID Client ID: Prep Date: Analyte Sodium Sample ID Client ID: Prep Date:	MB-B PBW LCSLL-B BatchQC	52 52 50 51 SampT Batcl Analysis [Result ND SampT Batc Analysis [1.0 1.0 1.0 1.0 1.0 1.0 Fype: ME h ID: B4 Date: 7/ Fype: LC h ID: B4 Date: 7/	50.00 50.00 50.00 3LK 4206 '13/2017 SPK value :SLL 44206 '13/2017	0 0 0 Test R SPK Ref Val Test F S	103 104 100 102 tCode: EF &unNo: 44 SeqNo: 1: %REC tCode: EF &unNo: 4 SeqNo: 1:	85 85 85 PA Method 4206 395435 LowLimit PA Method 4206 395438	115 115 115 200.7: Dissol Units: mg/L Units: mg/L Units: mg/L	%RPD	s RPDLimit	Qual
Calcium Magnesium Potassium Sodium Sample ID Client ID: Prep Date: Analyte Sodium Sample ID Client ID: Prep Date: Prep Date: Analyte	MB-B PBW LCSLL-B BatchQC	52 52 50 51 SampT Batcl Analysis D Result SampT Batcl Analysis D Result	1.0 1.0 1.0 1.0 1.0 1.0 1.0 PQL 1.0 Fype: LC h ID: B4 Date: 7/ PQL 2.0 PQL 2.0 PQL	50.00 50.00 50.00 3LK 4206 '13/2017 SPK value '25LL 4206 '13/2017 SPK value	0 0 0 Test R SPK Ref Val Test R SPK Ref Val	103 104 100 102 tCode: EF &unNo: 4/ SeqNo: 1: &REC &unNo: 4/ SeqNo: 1: %REC	85 85 85 PA Method 4206 395435 LowLimit PA Method 4206 395438 LowLimit	115 115 115 115 200.7: Dissol Units: mg/L HighLimit Units: mg/L HighLimit	%RPD	s RPDLimit	Qual

Qualifiers:

Client: Project:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1706G37

Client: Project:		Western H SMW 2	Refining S	outhw	est, Gallup							
Sample ID	_CS-B		SampT	Type: L	.CS	Tes	tCode: EF	PA Method	200.7: Dissol	ved Metal	s	
Client ID: L	CSW		Batch	h ID: B	44206	F	unNo: 44	4206				
Prep Date:			Analysis D	Date:	7/13/2017	S	eqNo: 1	395441	Units: mg/L			
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium			50	1.(50.00	0	101	85	115			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Client: Project:	Western Refining S SMW 2	outhwes	st, Gallup							
Sample ID MB	SampT	ype: mb	olk	Tes	tCode: E	PA Method	300.0: Anions	6		
Client ID: PBW	Batch	n ID: R4	3998	F	RunNo: 4	3998				
Prep Date:	Analysis D	Date: 7/	3/2017	S	SeqNo: 1	387038	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								
Bromide	ND	0.10								
Sulfate	0.13	0.50								J
Nitrate+Nitrite as N	ND	0.20								
Sample ID LCS	SampT	ype: Ics	i	Tes	tCode: E	PA Method	300.0: Anions	6		
Client ID: LCSW	Batch	n ID: R4	3998	F	RunNo: 4	3998				
Prep Date:	Analysis D	Date: 7/	3/2017	S	SeqNo: 1	387039	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.48	0.10	0.5000	0	95.7	90	110			
Chloride	4.8	0.50	5.000	0	95.8	90	110			
Bromide	2.4	0.10	2.500	0	94.6	90	110			
Sulfate	9.7	0.50	10.00	0	96.6	90	110			
Nitrate+Nitrite as N	3.4	0.20	3.500	0	98.2	90	110			
Sample ID MB	SampT	ype: mb	olk	Tes	tCode: E	PA Method	300.0: Anions	6		
Sample ID MB Client ID: PBW	SampT Batch	Type: mb n ID: R4	olk 4381	Tes F	tCode: E RunNo: 4	PA Method 4381	300.0: Anions	5		
Sample ID MB Client ID: PBW Prep Date:	SampT Batch Analysis D	⁻ ype: mb n ID: R4 Date: 7/	olk 4381 19/2017	Tes F S	tCode: E RunNo: 4 SeqNo: 1	PA Method 4381 402926	300.0: Anions Units: mg/L	5		
Sample ID MB Client ID: PBW Prep Date: Analyte	SampT Batch Analysis D Result	⁻ ype: mb n ID: R4 Date: 7/ PQL	olk 4381 19/2017 SPK value	Tes F SPK Ref Val	tCode: E RunNo: 4 SeqNo: 1 %REC	PA Method 4381 402926 LowLimit	300.0: Anions Units: mg/L HighLimit	s %RPD	RPDLimit	Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl	SampT Batch Analysis D <u>Result</u> hate (As P 0.30	⁻ ype: mb n ID: R4 Date: 7/ PQL 0.50	olk 4381 19/2017 SPK value	Tes F S SPK Ref Val	tCode: E RunNo: 4 SeqNo: 1 %REC	PA Method 4381 402926 LowLimit	300.0: Anions Units: mg/L HighLimit	s %RPD	RPDLimit	Qual J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate	SampT Batch Analysis D <u>Result</u> hate (As P 0.30 0.15	⁻ ype: mb n ID: R4 Date: 7/ PQL 0.50 0.50	olk 4381 19/2017 SPK value	Tes F SPK Ref Val	tCode: E RunNo: 4 SeqNo: 1 %REC	PA Method 4381 402926 LowLimit	300.0: Anions Units: mg/L HighLimit	s %RPD	RPDLimit	Qual J J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT	Type: mb n ID: R4 Date: 7/ PQL 0.50 0.50	olk 4381 19/2017 SPK value	Tes F SPK Ref Val Tes	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E	PA Method 4381 402926 LowLimit PA Method	300.0: Anions Units: mg/L HighLimit 300.0: Anions	s %RPD	RPDLimit	Qual J J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch	Type: mb n ID: R4 Date: 7/ PQL 0.50 0.50 Type: ICS n ID: R4	olk 4381 19/2017 SPK value 4381	Tes F SPK Ref Val Tes F	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4	PA Method 4381 402926 LowLimit PA Method 4381	300.0: Anions Units: mg/L HighLimit 300.0: Anions	s %RPD	RPDLimit	Qual J J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date:	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D	Type: mt n ID: R4 Date: 7/ PQL 0.50 0.50 0.50 Type: ICs n ID: R4 Date: 7/	olk 4381 19/2017 SPK value 4381 19/2017	Tes F SPK Ref Val Tes F S	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1	PA Method 4381 402926 LowLimit PA Method 4381 402927	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L	s %RPD	RPDLimit	Qual J J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result	Type: mt n ID: R4 Date: 7/ PQL 0.50 0.50 0.50 0.50 0.50 0.10: R4 Date: 7/ PQL 0.50	vik 4381 19/2017 SPK value 4381 19/2017 SPK value	Tes F SPK Ref Val Tes F SPK Ref Val	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit	s %RPD	RPDLimit	Qual J J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophosp Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophosp	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6	Type: mt n ID: R4 Date: 7/ PQL 0.50 0.50 0.50 Type: ICs n ID: R4 Date: 7/ PQL 0.50	olk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000	Tes F SPK Ref Val Tes SPK Ref Val 0	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110	s %RPD s %RPD	RPDLimit	Qual J J Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophospl Sulfate	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6 9.4	Type: mt Di ID: R4 Date: 7/ PQL 0.50 0.50 Type: Ics Di ID: R4 Date: 7/ PQL 0.50 0.50	olk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000 10.00	Tes F SPK Ref Val Tes F SPK Ref Val 0 0	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7 93.7	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90 90	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110 110	s %RPD	RPDLimit	Qual J J Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID MB	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6 9.4 SampT	Type: mt D ID: R4 Date: 7/ PQL 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	olk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000 10.00	Tes F SPK Ref Val Tes SPK Ref Val 0 0 Tes	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7 93.7 tCode: E	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90 90 PA Method	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110 110 300.0: Anions	s %RPD	RPDLimit	Qual J J Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID MB Client ID: PBW	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6 9.4 SampT Batch	Type: mt Di ID: R4 Date: 7/ PQL 0.50	Alk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000 10.00 Dlk 4381	Tes F SPK Ref Val Tes SPK Ref Val 0 0 Tes F	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7 93.7 tCode: E RunNo: 4	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90 90 PA Method 4381	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110 110 300.0: Anions	s %RPD %RPD	RPDLimit	Qual J J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID MB Client ID: PBW Prep Date:	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6 9.4 SampT Batch Analysis D	Type: mt Di ID: R4 Date: 7/ PQL 0.50	Alk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000 10.00 Nlk 4381 19/2017	Tes F SPK Ref Val Tes SPK Ref Val 0 0 Tes F S	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7 93.7 tCode: E RunNo: 4 SeqNo: 1	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90 90 PA Method 4381 402953	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110 110 300.0: Anions Units: mg/L	s %RPD s %RPD	RPDLimit	Qual J J
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID MB Client ID: PBW Prep Date: Analyte	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6 9.4 SampT Batch SampT Batch Analysis D Result	Type: mt n ID: R4 Date: 7/ PQL 0.50 0.50 0.50 Type: ICs n ID: R4 Date: 7/ PQL 0.50 Date: 7/ PQL 0.50 0.50 0.50 Type: mt 0.50 0.50 PQL 0.50 Oute: 7/ PQL: 0.20 Oute: 7/ PQL: 0.20	Alk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000 10.00 Dlk 4381 19/2017 SPK value	Tes SPK Ref Val SPK Ref Val Tes SPK Ref Val 0 0 Tes F SPK Ref Val	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7 93.7 tCode: E RunNo: 4 SeqNo: 1 %REC	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90 90 PA Method 4381 402953 LowLimit	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110 110 300.0: Anions Units: mg/L HighLimit HighLimit	s %RPD %RPD	RPDLimit RPDLimit	Qual J J Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID MB Client ID: PBW Prep Date: Analyte Chloride	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6 9.4 SampT Batch Analysis D Result Analysis D Result ND	Type: mb n ID: R4 Date: 7/ PQL 0.50 0.50 0.50 0.1D: R4 Date: 7/ PQL 0.50 0.1D: R4 Date: 7/ PQL 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.1D: A4 Date: 7/ PQL 0.50	Alk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000 10.00 Alk 4381 19/2017 SPK value	Tes SPK Ref Val SPK Ref Val SPK Ref Val 0 0 Tes F SPK Ref Val	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7 93.7 tCode: E RunNo: 4 SeqNo: 1 %REC	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90 90 PA Method 4381 402953 LowLimit	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 110 300.0: Anions Units: mg/L HighLimit	s %RPD	RPDLimit	Qual J Qual Qual
Sample ID MB Client ID: PBW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID LCS Client ID: LCSW Prep Date: Analyte Phosphorus, Orthophospl Sulfate Sample ID MB Client ID: PBW Prep Date: Analyte Chloride Phosphorus, Orthophospl	SampT Batch Analysis D Result hate (As P 0.30 0.15 SampT Batch Analysis D Result hate (As P 4.6 9.4 SampT Batch Analysis D Result Analysis D Result ND hate (As P 0.32	Type: mt n ID: R4 Date: 7/ PQL 0.50 0.50 0.50 Type: ICs n ID: R4 Date: 7/ PQL 0.50 DID: R4 Date: 7/ PQL 0.50 TD: A4 Date: 7/ PQL 0.50 0.50 0.50	olk 4381 19/2017 SPK value 4381 19/2017 SPK value 5.000 10.00 olk 4381 19/2017 SPK value	Tes F SPK Ref Val Tes SPK Ref Val 0 0 Tes F SPK Ref Val	tCode: E RunNo: 4 SeqNo: 1 %REC tCode: E RunNo: 4 SeqNo: 1 %REC 92.7 93.7 tCode: E RunNo: 4 SeqNo: 1 %REC	PA Method 4381 402926 LowLimit PA Method 4381 402927 LowLimit 90 90 PA Method 4381 402953 LowLimit	300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit 300.0: Anions Units: mg/L HighLimit	s %RPD	RPDLimit RPDLimit	Qual J Qual Qual

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 Detection Limit

W Sample container temperature is out of limit as specified

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01-Aug-17

Client: Project:	Western SMW 2	Refining So	outhwe	st, Gallup							
	51117 2										
Sample ID M	IB	SampT	ype: m l	blk	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID: P	BW	Batch	ID: A 4	4381	R	unNo: 4	4381				
Prep Date:		Analysis D	ate: 7	/19/2017	S	eqNo: 1	402953	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as	N	ND	0.20								
Sample ID L	cs	SampT	ype: Ics	5	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID: L	CSW	Batch	ID: A 4	4381	R	unNo: 4	4381				
Prep Date:		Analysis D	ate: 7/	/19/2017	S	eqNo: 1	402954	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		4.8	0.50	5.000	0	95.2	90	110			
Phosphorus, Orth	ophosphate (As P	4.8	0.50	5.000	0	96.4	90	110			
Nitrate+Nitrite as	N	3.4	0.20	3.500	0	97.9	90	110			
Sample ID M	IB	SampT	уре: М	BLK	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID: P	BW	Batch	ID: R4	4455	R	unNo: 4	4455				
Prep Date:		Analysis D	ate: 7	21/2017	S	eqNo: 1	405140	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		ND	0.50								
Sample ID L	cs	SampT	ype: LC	s	Tes	tCode: El	PA Method	300.0: Anions	;		
Client ID: L	CSW	Batch	ID: R4	4455	R	unNo: 4	4455				
Prep Date:		Analysis D	ate: 7	/21/2017	S	eqNo: 1	405141	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	94.1	90	110			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified



Sample Log-In Check List

...

Client Name:	Western Refining Gallup	Work Order Number:	1706G37		RcptNo: 1
Received By:	Richie Eriacho	6/30/2017 10:30:00 AM	ń	12-2	· ···
Completed By:	Ashley Gallegos	6/30/2017 1:43:58 PM		AF	
Reviewed By:	NE	6 7/3/17		V	
Chain of Cust	ody				
1. Custody seals	s intact on sample bottles?		Yes 🗌	No 🗌	Not Present 🗹
2. Is Chain of Cu	ustody complete?		Yes 🗹	No 🗆	Not Present
3. How was the s	sample delivered?		<u>Courier</u>		
<u>Log In</u>					
4. Was an atten	npt made to cool the sample	rs?	Yes 🗹	No 🗀	
5. Were all sam	ples received at a temperate	ire of >0° C to 6.0°C	Yes 🗹	No 🗌	
6. Sample(s) in	proper container(s)?		Yes 🔽	No 🗌	
7. Sufficient sam	nple volume for indicated tes	st(s)?	Yes 🗹	No 🗌	
8. Are samples ((except VOA and ONG) proj	perly preserved?	Yes 🔽	No 🗌	
9. Was preserva	tive added to bottles?		Yes 🗌	No 🗹	NA 🗌
10.VOA vials hav	ve zero headspace?		Yes 🗹	No 🗌	No VOA Vials
11. Were any sar	mple containers received br	oken?	Yes 🗖	No 🔽	# of preserved
12	ada aratab battla labala?		Vec M		bottles checked
I∠. Does paperwo (Note discrepa	ork match bottle labels? ancies on chain of custody)		res 💌		(<2)or >12 unless noted)
13. Are matrices of	correctly identified on Chain	of Custody?	Yes 🔽	No 🗋	Adjusted NO
14. Is it clear wha	t analyses were requested?		Yes 🗹	No 🗌	
15. Were all holdi (If no, notify c	ing times able to be met? ustomer for authorization.)		Yes 🗹	No 🗌	Checked by:
0	1				
16 Was client no	tified of all discrepancies wi	th this order?	Yes 🗌	No 🗍	
					· · · · · · · · · · · · · · · · · · ·
Person		Date	□ □		
Bogordi		Via:		rnone 📑 Fax	
Client In	nstructions:		****	<u> </u>	
47					· · · · · · ·

18. Cooler Information

<u> </u>						
Cooler N	o Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good	Yes		÷	

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Appendix G LTA Subsurface Conditions



PRECISION ENGINEERING, INC.

P.O. BOX 422 • LAS CRUCES, NM 88004
 Ph: (505) 523-7674
 FAX: (505) 523-7248 • E-mail: werpei@aol.com

June 8, 1996

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CA

Mr. Ed Horst Giant Refining Company Ciniza Refinery Route 3, Box 7 Gallup, New Mexico 87301

Re: LTA Subsurface Conditions

Dear Ed,

Attached is our summary of the geologic conditions at the Land Treatment Area. As you are aware our interpretation of the conditions was derived from all previous drilling that has been performed at the site as well as our work over the course of the past six years.

We would like to express our thanks to you and the rest of the Giant environmental staff. Without your assistance and professional cooperation in accumulating past data, our interpretations of the ground conditions would not have been possible.

If you have any questions or comments concerning our interpretations plese do not hesitate calling. We will be happy to discuss the matter with any project related personnel.

Sincerely, Precision Engineering, Inc.

William H. Kingsley, P.E

SUBSURFACE MODELING GEOTECHNICAL INVESTIGATIONS MATERIALS TESTING LABORATORY ENVIRONMENTAL MONITORING SYSTEMS
Giant Refining-Ciniza Land Treatment Area Permittee Copy Page Modified March 1997

Introduction

The intent of this report is to provide a summary of stratigraphic conditions at the Land Treatment Area located in the northwest portion of the Ciniza Refinery property. The interpretations made are derived from the data of past investigations in the area as well as logs from borings and well installations performed by Precision Engineering, Inc. in the area of the refinery as well surface studies we have made on surrounding properties. All subsurface data in the area has been digitized and modeled as surfaces based on general environments of deposition.

Historical Interpretations

Past reports indicate the entire site is, in essence, a part of a highly weathered section of the Chinle Formation. An unconsolidated sandy stringer within this highly weathered shale formation was known to be water bearing. This unconsolidated sand was named the Ciniza Sand and is consistently referred to in reports after 1985. The nomenclature is local only and is not a documented bed name within the Chinle Formation. Some reports refer to the "Ciniza Sand" as a sandstone, however, it has never been shown to have any degree of cementation. Below the "Ciniza Sand" is a sandstone bed that lies within unweathered shale. This sandstone bed is known as the Sonsela Sandstone which is a documented unit name within the Chinle Formation. The bed is water bearing and represents a potential aquifer in the Ciniza area and is being used as an aquifer in the Bluewater area.

The Ciniza Sand was interpreted to vary in thickness below the Land Treatment Area. The zone was also thought to pinch out completely to the west and reach a maximum thickness of approximately five (5) feet in the south central portion of the Treatment Area.

The SMW well series was placed to monitor water quality in the "Ciniza Sand" since some water was encountered in the sands. The wells vary substantially in depth ranging from approximately forty six (46) feet at SMW-1 to seventy four (74) feet at SMW-5. Formation dip was used to explain the differences in depth initially, although it was later thought there may be two beds comprising the "Ciniza Sand".

The MW well series monitors the water from the Sonsela Sandstone. These wells range in depth from approximately one hundred twenty (120) to one hundred twenty seven (127) feet in depth.

Current Stratigraphic Interpretation

During the course of various subsurface investigations at the refinery site, including the Land Treatment Unit, inconsistencies were noted in the logs of early investigations and the

> ATTACHMENT F Appendix 1 Page 1 of 4

Ciniza Refinery LTA Stratigraphy

Giant Refining-Ciniza Land Treatment Area Permittee Copy Page Modified March 1997

findings of more recent studies. One major inconsistency noted was that the depth to unweathered shale greatly varied from the OW series wells to all other findings. It was also noted that the upper fifty (50) to sixty (60) feet of sediments in the Land Treatment Unit did not match what should have been encountered in a weathered shale section of the Chinle Formation. As a result of the inconsistencies, the Land Treatment Area was modeled based on all borings that have been drilled in the area in an effort to accurately define the stratigraphy.

The results of the modeling show a much more complex subsurface environment than had originally been assumed. The upper fifty (50) to sixty (60) feet of sediments are not weathered in place sediments of the Chinle Formation: Although the sediments have a Chinle Formation parent material, the time of deposition is believed to be much later. Although not dated, the structure of the soils suggests a relatively recent fluvial environment of deposition. Charcoal is abundant in sandy sediments and occasionally encountered in the clay sediments. Some carbonate accumulation can be noted in the soils. No evidence of cementation of the sediments has been observed. It is believed dating would place the age of the sediments in the range of a few thousand years to a few tens of thousands of years - much younger than the Chinle Formation.

To a depth of approximately ten (10) feet the entire Land Treatment Area is comprised of a high density, high plasticity clay. Below the ten (10) foot depth and within the fluvial materials comprising the upper fifty (50) to sixty (60) feet of the valley floor below the Land Treatment Area is a sandy zone that extends roughly from the ten (10) foot depth to approximately the thirty to forty (40) foot depth. Grossly speaking the sandy unit can be subdivided in to two smaller units. The upper unit is about ten (10) feet thick and the lower unit is about ten (10) to fifteen (15) feet thick. On the south end of the Land Treatment Area the units are separated by a clay zone on the order of five (5) to ten (10) feet in thickness. On the north end of the treatment area the two zones become indistinguishable and appear as a single unit. Whether or not the upper or lower unit pinches out is not fully understood, however, it is suspected the upper unit thins and blends with the lower unit. It should be noted that the sandy zone is best described as interbedded very fine sands, silts and clays that should be expected to hydraulically interconnect. On the south end of the Treatment Area the lower sandy zone is water bearing below approximately the thirty (30) foot depth. To the north no water is encountered in this zone. The approximate extent of water in this zone may be represented by a line extending from the southwest corner of the Area to the northeast corner. Wells SMW-1, 2, and 3 derive their water from this zone. This zone is the original "Ciniza Sand" referred to in earlier work. This sandy zone represents channel deposition believed to be the result of infilling from the ancestral Rio Puerco or, more likely, derived from the Four Mile Canyon drainage system to the east of the Ciniza. Refinery property. The channels of this zone trend roughly from northeast to southwest.

Below the sandy zone is a thick clay bed. The bed represents a very low energy environment likely as a result of flood plain deposits of the ancestral Rio Puerco. The clays are hard, high plasticity, moist to wet (but not water bearing) and brown to reddish.

> ATTACHMENT F Appendix 1 Page 2 of 4

Ciniza Refinery LTA Stratigraphy

Giant Refining-Ciniza Land Treatment Area Permittee Copy Page Modified March 1997

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brown. Occasionally sample specimens show evidence of mud cracks indicating a wetted then dry environment after the initial deposition. No free water has ever been detected in this zone.

Immediately below the clay zone is another sand bed. The sand may or may not contain gravel made up of subrounded sandstone fragments, petrified wood, and rounded to subrounded multi-colored chert fragments one to two inches in greatest dimension. In some areas this bed is composed only of fine sand. The sands are red to brown. The bed up to three (3) feet in thickness, although records at Precision Engineering, Inc. only show these thicknesses apparent south and east of the Land Treatment Area. The significance of this bed is two fold. First, in all locations where this zone has been penetrated it has upper portion of the Petrified Forest Member of the Chinle Formation. Water from this zone has never been shown to penetrate more than a few inches into the Chinle Formation. The shales below the zone are typically damp to dry; more often than not they are dry. This bed most likely represents alluvial deposition on the ancient exposed Chinle surface. It is felt this bed, at least in the refinery property area, may be used as a marker to represent the boundary between younger valley infilling and true Chinle Formation shales below.

Significantly, the thin sand bed described above is derived from a different environment of deposition. Hydraulic connection to the upper fluvial sands has, as yet, not been demonstrated and the two zones may not connect. Shallow Monitoring Wells (SMW) 4, 5, and 6 produce out of this zone. This bed has also been referred to as "Ciniza Sand" in earlier reports.

Shales and sandy shales of the Chinle formation lie below the valley fill materials. Approximately, thirty (30) to fifty (50) feet of shale lies between the valley fill and the Sonsela Sandstone bed that lies within the Chinle Formation. The sandstone is on the order of ten (10) to thirty (30) feet in thickness. The Sonsela Sandstone is water bearing at the refinery site and as stated earlier meets the definition of a potential aquifer.

The lower boundary of the Sonsela Sandstone is the extent of the modeling on this site. It is known from deep well logs that the Chinle Formation is on the order of seven hundred fifty (750) feet in thickness where deeper, established aquifers are encountered.

Summary

To summarize the current model of the stratigraphic section below the Land Treatment Area, a typical section through the area would be as follows:

The upper ten (10) feet of the site would be comprised of a dense dry to damp clay of high plasticity overlying two sequences of channel sands and silts separated by a clay zone on the order of five (5) to ten (10) feet in thickness. The channel sands would be expected

ATTACHMENT F Appendix 1 Page 3 of 4

Giant Refining-Ciniza Land Treatment Area Permittee Copy Page Modified March 1997

Ciniza Refinery LTA Stratigraphy

to be on the order of ten (10) to fifteen (15) feet in thickness each. The channel sands are actually interbedded sands, silts, and elays. Below the thirty (30) foot depth in the southern part of the LTA the sandy zone is water bearing. In the northern part the zones are not water bearing. A fifteen (15) to twenty (20) foot thick section of clay is encountered next. The clay is hard, highly plastic, not water bearing, and may show shrinkage cracking structure. Below this, a thin water bearing sand, gravel, or, sandy gravel composed of aggregates of mixed sources is encountered next and represents alluviation from the higher areas to the south into the valley. Below is generally unweathered shale for thirty (30) feet. The top of the shale should be encountered at an average of sixty (60) feet below the surface but may be as shallow as fifty (50) feet to the south and as deep as seventy (70) feet to the north. The water bearing Sonsela Sandstone is then encountered and should be from ten (10) to thirty (30) feet in thickness.

> ATTACHMENT F Appendix 1 Page 4 of 4

Precision Engineering, Inc. P.O. Box 422 Las Cruces, NM 88004 505-523-7674

Proposed Fire Water Storage

GRCC

Rigid Wall Hydraulic Conductivity Falling Head

ATTN: James Romero Giant Refining Company Route 3, Box 7 Gallup, NM 87301

Project: Ciniz	a Fire Water Lagoon				File No .:	05-100
Soil Type: Silty	Clay	Date:	October 13, 2	2005	Lab No .:	47872
Sampled From: Borin	g 05-100-1(2.5'-3.0')		-	Perfo	rmed By:	GG

TEST SPECIMEN CONDITIONS AT BEGINING OF TEST:

Wet Unit Weight: 120.8 pcf Dry Unit Weight: 109.0 pcf

% Moisture: 10.8 % Compaction: n/a % Compaction Requested: n/a

PROCTOR INFORMATION:

Maximum Dry Density: n/a pcf Optimum Moisture Content: n/a %

Coefficient of Permeability, k20: 1.1 X 10-7 cm/sec. avg

Remarks: Avg of three: 1.1x107, 1.1x107, 1.1x107

C:\bill\Projects\2005\05100cinizafirewtr\[Permeability.xls]Report Reviewed By: Reviewed By:

ell:



SW Corner of Proposed Lagoon Elevation: -98.2@TD,-27@1 hr Mo.: 05-100-1

P.O. Box 422 Las Cruces, NM 88004 505-523-7674

File #: 05-100 Site: Giant-Ciniza

Elevation: EXISTING Date: 9/24/2005

Log of Test Borings BLOW LAB # DEPTH MATERIAL CHARACTERISTICS COUNT PLOT SCALE (MOISTURE, CONDITION, COLOR, ETC.) 0.0-5.0 %M LL PI CLASS. Clay, Very Silty, Sandy, Very Fine, Dark Red, Wet, Firm 47872 [2.5-3.0 hydraulic conductivity sample] 2.5 5.0 5.0-10.0 Same As Above, Wet, Soft 7.5 10.0 10.0-15.0 Same As Above 15.0 Same As Above 15.0-16.0 16.0-17.5 Sand, Very Fine, Very Clayey, Very Silty, Weak Water Bearing, Moderately Dense, Dark **Red/Brown** Clay, Dark Red, Wet, Soft 17.5-21.5 20.0 SIZE & TYPE OF BORING: 4 1/4" ID HOLLOW STEMMED AUGER LOGGED BY: WHK

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Sheet: 2 OF 5 Bore Point: SW Corner of Proposed Fire Water Lagoon Water Elevation: Boring No.: 05-100-1 Precision Engineering, Inc. P.O. Box 422 Las Cruces, NM 88004 505-523-7674 File # 3 OF 5 Profession Profession Profession Pate: 3/54/5002 Pate:

Log of Test Borings

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Sheet: 2 OF 5 Bore Point: SW Corner of Proposed Fire Water Lagoon Water Elevation: Boring No.: 05-100-1 Precision Engineering, Inc. P.O. Box 422 Las Cruces, NM 88004 505-523-7674

Site: Gia a u Elevation: EXISTIN Date: 9/24/2005

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No.: 05

File #: E

Log of Test Borings

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	22.1-23.5				Clay, Hard, Red/Brown (Brighter than Above), Wet/Moist	1			
	23.5-25.1			<u>25.0</u>	Pertrifled Forest Formation <u>Mudstone/Claystone</u> , Weathered, Some Grey/Green Reduction Spots, Generally Red/ Brown, Fissile to Crumbly, Damp/Moist <u>Mudstone</u> , As Above, Few Reduction Spots, Damp/Dry				
	30.0-35.0			<u>30.0</u>	Same As Above dry				
	35.0-40.0			<u>35.0</u>	<u>Same As Above</u> dry		North Contraction		
4	0.0-45.0			40.0	Same As Above, Brighter Red @ 44.5'-45.0', dry				
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Proje	cts\2005\05	100cinizatire	uthDad	and what	head 4	1000	EDI	Л.	WHIN

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			rtui	SCALE	(MOISTURE, CONDITION, COLOR, ETC.)	%M	LL	PI	CLASS.
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	50.0-55.0			<u>50.0</u>	Same As Above				
	55.0-60.0			<u>55.0</u>	Same As Above				
	60.0-65.0			<u>60.0</u>	Same As Above				

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August 9, 2019

Mr. John E. Kieling, Chief New Mexico Environmental Department 2905 Rodeo Park Drive East, Bldg. 1 Santa Fe, NM 87SOS-6303

RE: Response to Disapproval Investigation Work Plan [SMW-2] and [GWM-1] Areas Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.) EPA ID# NMD000333211 HWB-WRG-18-007

Dear Mr. Kieling:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting the enclosed responses to your comments dated February 20, 2019 on the referenced Investigation Work Plan. The Investigation Work Plan has been revised per your comments and enclosed for your review. If there are any questions, please call Brian Moore at 505-726-9745.

Certification

Icertify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely, Marathon Petroleum Company LP, Gallup Refinery

Robert S. Harb

Robert S. Hanks Refinery General Manager

Enclosure

cc K. Van Horn NMED C. Chavez NMOCD B. Moore Marathon Gallup Refinery

92 Giant Crossing Road Jamestown, NM 87347

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RESPONSE TO COMMENTS February 20, 2019 Disapproval - Investigation Work Plan [SMW-2] and [GWM-1] Areas (August 2018)

NMED Comment 1:

The cover letter is titled as "Investigation Work Plan SMWU-1 and GMW-1" while the Work Plan is titled as "Investigation Work Plan SMW-1 & GMW-1 Areas." The content of the Work Plan suggests that the title of the submittal may be "Investigation Work Plan SMW-2 and GWM-1 Areas". Accordingly, NMED revised the title of the Work Plan for the purpose of correspondence. However, if the intended subject of this submittal is different, the Permittee may change the title. The title of all future documents must be reviewed before submittal to NMED to ensure that they do not contain typographical errors. Revise the title of the Work Plan, as appropriate.

MPC Response 1:

The title of the Work Plan has been changed to Investigation Work Plan SMW-2 & GWM-1 Areas.

NMED Comment 2:

The cover letter states that NMED's Comments 2, 8, and 9 in the June 4, 2018 *Disapproval of Annual Groundwater Monitoring Report- Gallup Refinery 2016*, required the Permittee to prepare a work plan. Comment 2 in the *Disapproval* is pertinent to the discussion of SPH in well RW-1 and outside of the scope of this Work Plan. Comment 2 was addressed in separate submittals. Revise the cover letter to remove reference to Comment 2.

MPC Response 2:

We acknowledge that this Work Plan does not address Comment 2 in the referenced June 4, 2018 letter. There is no further reference to said Comment 2 in this cover letter.

NMED Comment 3:

In the *Executive Summary* and Section 2.2, *GMW-1* [sic] Area, the Permittee states, "[i]n September 2015, a material apparently resembling separate-phase hydrocarbons (SPH) was observed in the well (GWM-1] for the first time." According to NMED's letter titled *Requirement to Remove Separate Phase Hydrocarbons and Monitor Groundwater Monitoring Well GWM-1*, dated October 28, 2015, the results of hydrocarbon fingerprint analysis indicated that the material resembling SPH collected from well GWM-1 consisted of 68% diesel range organics and 18% motor oil range organics. The material observed in well GWM-1 was SPH. Revise the statements and include information from the 2015 analysis in the revised Work Plan.

MPC Response 3:

The statements in the Executive Summary (page E-1) and Section 2.2 (page 2-2) are revised and the information from the 2015 analysis and a 2019 analysis of the SPH is included in the revised Work Plan (Appendix C).

NMED Comment 4:

In Section 2.1, *SMW-2 Area* first paragraph, the Permittee states, "[t]he results for SMW-2 provided in Table 1 indicate the detection of chloride, sulfate, manganese, and uranium at concentrations above the applicable screening levels per the RCRA Permit." Table 1, *SWM-2* [sic] and GWM-1 Area Water Analyses, does not list concentrations of manganese and uranium. Table 1 must be corrected to provide the detected concentrations of the referenced constituents in

the revised Work Plan.

MPC Response 4:

Table 1 is revised to include reported concentrations of manganese and uranium.

NMED Comment 5:

In Section 2.1, *SMW-2 Area* second paragraph, the Permittee states, "[i]t is noted that the area where the NMOCD Landfarm is currently located appears to overlie former Evaporation Pond #10 (Figure 3)." Figure 3, *Sulfate and Chloride Concentrations* does not present the locations of NMOCD Landfarm or former Evaporation Pond #10. Revise the figure to depict these locations and provide the revised Work Plan. In addition, NMED's Comment 2 in the *Approval with Modifications September and October 2016 Chloride Exceedance Excavation Report Central Oil Conservation Division Land/arm*, dated March 17, 2017 directed the Permittee to provide the dimensions of the pond and landfarm and documents from OCD related to use of the evaporation pond as a landfarm. Provide the information in the revised Work Plan. Furthermore, the response to March 17, 2017 *Approval with Modifications* should have been submitted to NMED by April 1, 2017; however, NMED's administrative record indicates that the Permittee has not submitted the response. The Permittee must respond to the March 17, 2017 letter by **April 5, 2019**.

MPC Response 5:

The response to the March 17, 2017 *Approval with Modifications* letter was previously submitted to NMED on April 11, 2019. As requested, Figure 3 has been revised to depict the location of the NMOCD Landfarm and suspected location of former Evaporation Pond #10. The approximate dimensions of the pond and landfarm (375 feet by 225 feet) are included in Section 2.1 (page 2-1).

NMED Comment 6:

In Section 2.1, *SMW-2 Area* third paragraph, the Permittee states, "(a] review of the boring/well completion logs for SMW-2 and SMW-4, as well as other wells in the immediate area, indicates that well SMW-4 is screened in the transmissive media (e.g., sands) that directly overlie the Chinle bedrock. A copy of the boring logs for SMW-2 and SMW-4 are included in Appendix A. The screened interval in well SMW-2 appears to include not only any transmissive materials on top of the bedrock, but also some of the upper sands." Soil boring logs for SMW-2 and SMW-4 are included in Appendix A, *Boring Logs;* however, well construction diagrams for these wells are not included. Provide well construction diagrams for SMW-2 and SMW-4 in the revised Work Plan. In addition, boring log SMW-2 indicates that the total depth of the boring is 40 feet below ground surface (bgs). According to Table 2, *Fluid Level Measurements*, the depth of screened interval in SMW-2 is recorded as 34.31 - 54.31 feet bgs. Provide an explanation for the discrepancy in the revised Work Plan. Furthermore, the soil boring log SMW-2 does not appear to indicate the presence of bedrock or to include screened interval over upper sand lenses present above 34 feet bgs. Provide a clarification for the statement in the revised Work Plan.

MPC Response 6:

The well construction diagram for SMW-2 has been added to Appendix A. The well construction diagram for SMW-4 could not be located; however, documentation of the elevations of the well screens in SMW-2 and SMW-4 were located in the 1990 Annual Groundwater Monitoring Report and this documentation has been added to Appendix A.

Based on the available information, it is apparent that SMW-2 was drilled deeper than recorded on the available boring log. This confirmed by recent field measurements of the well depth indicating depths greater than 52 feet, while the boring log only extends to a depth of 40 feet. The depth on the SMW-2 well completion log is also generally consistent with actual field measurements. As noted by NMED, the well screen in SMW-2 does not appear to extend to the sand intervals above 34 feet bgs. The Work Plan notes that the screened interval includes "some of the upper sands" (e.g., the sand that extends from 33 to 38 feet bgs. Additional clarifying information is included in Section 2.1 (page 2-2)

NMED Comment 7:

In Section 2.1, *SMW-2 Area* fourth paragraph, the Permittee states, "[i]n response to NMED's request [sic] for additional wells in the area to evaluate the source of chloride and sulfate, two new wells (OW-59 and OW-60) were installed up-gradient of SMW-2 in September 2016." NMED reviewed a work plan titled *Work Plan SMW-2 Area Investigation and Boundary Well Installations*, dated October 2016 and issued an *Approval with Modifications*, dated March 17, 2017. The Permittee references monitoring wells OW-59 and OW-60, which were installed near the OCD Landfarm, in t11e work plan. However, the Permittee has not submitted the investigation report associated with an installation of those wells. The Permittee must submit the investigation report for the SWM-2 Area Investigation and Boundary Well Installations before NMED can complete a review this Work Plan. Submit an investigation report for the SMW-2 Area Investigation report for the SMW-2 Area Investigation report for the SMW-2 Area Investigation and Boundary Well Installations before NMED can complete a review this Work Plan. Submit an investigation report for the SMW-2 Area Investigation sto NMED for review no later than April 5, 2019.

MPC Response 7:

The requested Investigation Report was sent on April 4, 2019 for delivery to MMED and MNOCD by April 5, 2019.

NMED Comment 8:

In Section 2.1, SMW-2 Area fifth paragraph, the Permittee states, "[b]oth the chloride and sulfate concentrations increased across the OCD landfarm area, but even higher chloride concentrations are up-gradient in well STP1-NW that is located east of Evaporation Pond No. 2. The sulfate concentrations observed in OW-59, at the down-gradient end of the OCD landfarm, are the highest observed in groundwater in the area. The sulfate concentrations in the groundwater sample collected at OW-59 are also higher than the historic sulfate concentrations in Evaporation Ponds 2 and 3 dating back to 2010." STP1-NW is located on the hill near pond STP-1 and most likely is capturing water from STP-1, rather than any other upgradient sources. Water from STP-1 as well as contaminant migration from the OCD Landfarm may be contributing to the elevated chloride and sulfate levels. In order to assess potential source areas for the elevated chloride and sulfate levels, provide a topographic map that includes the area in the vicinity of the OCD Landfarm, pond EP-10, pond STP-1 and pond EP-2 in the revised Work Plan. The map must be at a scale adequate to depict subtle changes in elevation contours. Also, explain whether the OCD Landfarm is still in active and if so provide a description of the activities associated with it. If the OCD Landfarm is determined to be the source of chloride and sulfate in groundwater, propose to submit a work plan to mitigate the issue (e.g., source removal). The OCD has regulatory authority regarding the chloride and sulfate exceedances in groundwater. Ensure that OCD is included on all correspondence related to this issue.

MPC Response 8:

A new figure (Figure 4) has been added to show the surface topography in the requested areas and is referenced in Section 3.1. Previous Figure 4 is now Figure 5. The OCD Landfarm is not active and this is now noted in Section 2.1 (fifth paragraph).

NMED Comment 9:

In Section 4.1, *SMW-2 Investigation*, the Permittee states, "[e]ach well will be screened in the upper-most saturated interval(s) with a maximum screen length of 10 feet. Due to concerns over the construction of SMW-2 using a 20-foot well screen, which possibly allows cross-communication between separate zones (upper sands vs. Chinle/alluvial Interface), care will be taken to avoid screening across intervals that may not otherwise be in hydraulic communication." NMED's Comment 8 in the June 4, 2018 *Disapproval* states, "[p]ropose to investigate whether wastewater is leaking from the northern perimeter or bottom of pond EP-2 through a work plan." The proposed locations of the two wells appear appropriate to detect potential leaks from pond EP-2; however, these wells must be screened across the depths corresponding to the base of pond EP-2. Presumably, pond EP-2 is relatively shallow and more comparable to the depths where the upper sands are present. Evaluate the depth of pond EP-2 and install the well screens at depths where the screens can detect potential leaks from the perimeter and bottom of pond EP-2. In addition, in order to accommodate the decreasing trend of groundwater elevations in recent years, a longer screened interval (e.g., 20-foot screen) may be more appropriate. The screened intervals of the proposed wells must also intersect the water table. Discuss the screened interval in the revised Work Plan.

MPC Response 9:

The discussion in Section 4.1 (page 4-1) is revised to incorporate the requirements above regarding well screen placement. We estimate the depth of EP-2 could range from 8 to 13 feet below ground level as measured from the north of the pond berms in the vicinity of the proposed wells. This will be taken into account when selecting the depth for well screen placement, along with indications of moist to saturated conditions (i.e., the potential for groundwater production).

NMED Comment 10:

In Section 4.2, *Installation of Well near GMW-1 [sic]*, the Permittee states, "[a] new shallow monitoring well will be installed to the west of GWM-1, approximately halfway between the former Aeration Basin and EP-2 (Figure 4). The well will be screened just above the Chinle bedrock in the Chinle/Alluvial Interface zone." NMED's Comment 9 in the June 4, 2018 *Disapproval* directs the Permittee to propose to install a monitoring well downgradient from well GWM-1 to evaluate the extent of SPH in the shallow aquifer. Note that the screened interval of the proposed well must intersect the water table to assess presence or absence of SPH. Include the provision in the revised Work Plan.

MPC Response 10:

The discussion in Section 4.2 (page 4-1) is revised to note the well screen will be placed to intersect the water table.

NMED Comment 11:

In Section 4.3, *Soil Sample Field Screening and Logging*, the Permittee states, "[a]lthough the borings are being drilled at locations outside known areas of concern, Western will collect soil samples for laboratory analysis if screening indicates the potential for site impacts." Whether or not field screening results indicates potential impacts, the Permittee must collect at least one soil sample per boring at the depth corresponding to the capillary fringe for laboratory analyses. The

analyses required for the samples must include all contaminants of potential concern. Additionally, it is the Permittee's responsibility to investigate outside "known areas of concern" in order to evaluate contaminant migration from SWMUs or AOCs. It is not acceptable to only collect samples when field screening indicates potential impacts. Revise the Work Plan to include the requirement.

MPC Response 11:

The discussion in Section 4.3 (page 4-2) has been revised to include, at a minimum, the collection of soil samples from the capillary fringe at each boring.

NMED Comment 12:

In Section 4.3.1, *Drilling Activities*, the Permittee states, "[s]lotted (0.01 inch) PVC well screen will be placed at the bottom of the borings and will extend for 10 feet." Comment 9 states, "in order to accommodate [the] decreasing trend of groundwater depth in recent years, a longer screened interval (e.g., 20-foot screen) may be more appropriate." Revise the Work Plan, if appropriate.

MPC Response 12:

The Work Plan is revised in Section 4.3.1 (page 4-3) to provide for the use of longer well screens, as appropriate, to meet the objectives for well screen placement discussed previously in Sections 4.1 and 4.2.

NMED Comment 13:

In Section 4.4, *Groundwater Sample Collection*, the Permittee states, "[g]roundwater samples will be collected from the new monitoring wells within 24 hours of the completion of well purging using disposable bailers. Alternatively, well sampling may also be conducted in accordance with the NMED's Position Paper Use of Low-Flow and other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring (October 30, 2001, as updated). Sample collection methods will be documented in the field monitoring reports. The samples will be transferred to the appropriate, clean, laboratory-prepared containers provided by the analytical laboratory." Prior to collection of groundwater samples for laboratory analyses, the Permittee must measure depth to water (DTW), the total depths of each well, and collect groundwater quality parameter data (e.g., dissolved oxygen, pH, temperature, conductivity, redox potential, turbidity) during well purging. Include descriptions of the field procedures in the revised Work Plan. In addition, the discussion regarding well development is not included in the Work Plan. Include a discussion of well development and monitoring methods in the revised Work Plan.

MPC Response 13:

The discussion in Section 4.4 (page 4-3) is revised to clarify that the depth to water and total well depth are measured prior to well purging. In addition, new Appendix D is added to address well purging and development.

NMED Comment 14:

In Section 4.7, *Chemical Analyses*, the Permittee states, "[g]roundwater samples will also be analyzed for major cations (calcium, magnesium, sodium, and potassium) and anions (e.g., carbonate, bicarbonate, sulfate, fluoride and chloride)." The listed cations and anions are not included in the table titled as Inorganic Analytical Methods (page 4-7). Revise the table to include all inorganic constituents that will be analyzed. In addition, groundwater samples must

also be analyzed for nitrate and nitrite. Include the nitrate and nitrite analyses for groundwater samples in the revised Work Plan.

MPC Response 14:

Section 4.7 (page 4-8) is revised to list the subject cations and anions in the included table, along with nitrate and nitrite.

Work Plan SMW-2 and GWM-1 Areas



Gallup Refinery Marathon Petroleum Company Gallup, New Mexico

EPA ID# NMD000333211

AUGUST 2018

(Revised AUGUST 2019)



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Appendix A Boring Logs

Appendix B Investigation Derived Waste Management Plan

Appendix C Analyses of SPH at GWM-1

Appendix D Well Development and Purging Procedures

List of Acronyms

- benzene, toluene, ethylbenzene, and xylene (BTEX)
- Code of Federal Regulations (CFR)
- Contract Laboratory Program (CLP)
- data quality objective (DQO)
- diesel range organics (DRO)
- dilution attenuation factor (DAF)
- Environmental Protection Agency (EPA)
- investigation derived waste (IDW)
- Maximum Contaminant Level (MCL)
- mean sea level (msl)
- monitoring well (MW)
- motor oil range organics (MRO)
- methyl tert butyl ether (MTBE)
- New Mexico Administrative Code (NMAC)
- New Mexico Environment Department (NMED)
- New Mexico Oil Conservation Division (NMOCD)
- photoionization detector (PID)
- polynuclear aromatic hydrocarbon (PAH)
- polyvinyl chloride (PVC)
- quality assurance/quality control (QA/QC)
- Resource Conservation and Recovery Act (RCRA)
- separate-phase hydrocarbon (SPH)
- semi-volatile organic compound (SVOC)
- Solid Waste Management Unit (SWMU)
- total petroleum hydrocarbon (TPH)
- toxicity characteristic leaching procedure (TCLP)
- volatile organic compound (VOC)

Executive Summary

The Gallup Refinery, which is located 17 miles east of Gallup, New Mexico, has been in operation since the 1950s. Pursuant to the terms and conditions of the facility Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit and 20.4.1.500 New Mexico Administrative Code, this Investigation Work Plan has been prepared for the area near the on-site evaporation ponds, specifically the area near well SMW-2 and Evaporation Pond No. 2. This area was initially identified by the New Mexico Environment Department (NMED) in comment letters regarding the 2013 and 2014 Annual Wide Ground Water Monitoring Reports as requiring additional groundwater monitoring wells and again in the a comment letter on the 2016 Annual Ground Water Monitoring Report

Groundwater samples collected from monitoring well SMW-2 have shown concentrations of chloride and sulfate above screening levels. SMW-2 is down-gradient of a nearby landfarm area and potentially the on-site evaporation ponds. In response to NMED's first request for additional monitoring wells, two new observation wells (OW-59 and OW-60) were installed up-gradient of SMW-2 in September 2016. Groundwater samples collected from these new wells confirmed the presence of chloride and sulfate above screening levels in the area of the landfarm that is authorized by the New Mexico Oil Conservation Division (NMOCD). This effort will further evaluate Evaporation Pond No. 2 (EP - 2) as a potential source of the elevated concentrations of chloride and sulfate detected at well SMW-2. To accomplish this objective, two new permanent monitoring wells will be installed immediately down-gradient of EP-2.

Monitoring well GWM-1 is located on the top of the dike that forms the western boundary of the former Aeration Basin (Solid Waste Management Unit No. 1) and lies a short distance to the east of EP-2. Groundwater samples collected at GWM-1 have routinely contained low concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tert butyl ether (MTBE) with benzene exceeding the screening level. In September 2015, separate-phase hydrocarbons (SPH) was observed in the well for the first time. Based on the presence of this material, a new well will be installed to the west of GWM-1, halfway between the Aeration Basin and EP-2.

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Section 1 Introduction

The Gallup Refinery is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County. The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Gallup Refinery is located on 810 acres. Figure 1 presents the refinery location and the regional vicinity.

The Gallup Refinery generally processes crude oil from the Four Corners area transported to the facility by pipeline or tanker truck. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, sulfur recovery, merox treater, and hydrotreating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

This investigation work plan addresses the area up-gradient of monitoring well SMW-2 and immediately down-gradient of EP-2, and the area between the former Aeration Basin and EP-2. The purposes of this investigation are to:

- determine the source of the elevated concentrations of chloride and sulfate detected in groundwater samples collected at SMW-2; and
- evaluate the extent of SPH that has been observed in GWM-1.

The investigation activities will be conducted in accordance with Section IV.H.5 of the Post-Closure Care Permit.

Section 2 Background

This section presents background information for the area of the refinery property near monitoring well SMW-2 and GWM-1, including a review of historical waste management activities to identity the following:

- Type and characteristics of all waste and all contaminants handled in the subject areas;
- Known and possible sources of contamination;
- History of operations; and
- Prior investigations.

2.1 SMW-2 Area

Monitoring well SMW-2 is located immediately south of the closed Land Treatment Unit (LTU). This well is not included in the RCRA Permit as part of the detection or shallow monitoring well networks, but groundwater samples are routinely collected and analyzed per the Facility-Wide Ground Water Monitoring Plan. Well SMW-2 is located on the up-gradient end of the LTU. Analytical results for groundwater samples collected since 2010 are included in Table 1. Also included in Table 1 are the analytical results for groundwater samples collected in SMW-4, which is located on the north (down-gradient) end of the LTU. The results for SMW-2 provided in Table 1 indicate the detection of chloride, sulfate, manganese, and uranium at concentrations above the applicable screening levels per the RCRA Permit. Uranium was also detected in groundwater samples collected from SMW-4 at concentrations above the screening level. MTBE has been detected in groundwater samples collected at SMW-2, but has remained below the screening level (NMED, 2017).

Well SMW-2 is located down-gradient of the Central Landfarm Area, which is permitted by the New Mexico Oil Conservation Division (NMOCD) and also potentially down-gradient of the evaporation ponds (Figure 2). It is noted that the area where the NMOCD Landfarm is currently located appears to overlie former Evaporation Pond #10 (Figure 3). The dimensions of the landfarm are approximately 375 feet by 225 feet. According to information provided in the *Inventory of Solid Waste Management Units,* cell or Evaporation Pond #10 was used for wastewater from the boiler house and water softener regeneration wastes, but did not receive process wastewater discharges through the API Separator. The process of discharging directly to Evaporation Pond #10 was

replaced with the addition of a neutralization tank in 1980 (Geoscience Consultants, Ltd., 1985a). Evaporation Pond #10 was no longer in service in 1985 based on information provided in the 1985 Discharge Plan Application (Geoscience Consultants, Ltd., 1985b).

A review of the boring/well completion logs for SMW-2 and SMW-4, as well as other wells in the immediate area, indicates that well SMW-4 is screened in the transmissive media (e.g., sands) that directly overlie the Chinle bedrock. A copy of the boring logs for SMW-2 and SMW-4 are included in Appendix A. The well completion log is included for SWMU-2, which indicates the well screen extending from a depth of approximately 34 feet to 54 feet below ground level. It is noted that the soil boring log for SMW-2 is only recorded to a depth of 40 feet, while the well was apparently drilled deeper to allow for well screen placement to a depth of 54 feet. The screened interval in well SMW-2 appears to include not only any transmissive materials on top of the bedrock, but also some of the upper sands (e.g., a sand interval logged from 33 feet to 38 feet bgs). While the well completion log for SMW-4 could not be located for inclusion in Appendix A, documentation of the elevations of the top and bottom of the well screen were located in the 1990 Annual Ground Water Report and these "Monitoring Well Identification Reports" are included for both SMW-2 and SMW-4 (Giant, 1991). Water levels measured in the nearby wells are provided in Table 2 and a map showing the potentiometric surface measured in the shallow wells is included as Figure 2.

In response to NMED's request for additional wells in the area to evaluate the source of chloride and sulfate, two new wells (OW-59 and OW-60) were installed up-gradient of SMW-2 in September 2016. Groundwater samples collected from these new wells confirmed the presence of chloride and sulfate above screening levels up-gradient of SMW-2 and in the area of the landfarm that is authorized by the New Mexico Oil Conservation Division (NMOCD). The analyses are summarized in Table 1 and shown on Figure 3. The boring/well completion logs for OW-59 and OW-60 are included in Appendix A.

Both the chloride and sulfate concentrations increased across the OCD landfarm area, but even higher chloride concentrations are up-gradient in well STP1-NW that is east of Evaporation Pond No. 2. The sulfate concentrations observed in OW-59, at the down-gradient end of the OCD landfarm, are the highest observed in groundwater in the area. The sulfate concentrations in the groundwater sample collected at OW-59 is also higher than the historic sulfate concentrations in Evaporation Ponds 2 and 3 dating back to 2010. The OCD landfarm is currently not active.

2.2 GWM-1 Area

Monitoring well GWM-1 is located on the top of the dike that forms the western boundary of the former Aeration Basin (Solid Waste Management Unit No. 1). This well was installed in 2004 and is screened in the Chinle/Alluvial Interface zone. The boring/well completion log is included in Appendix A. The groundwater samples collected at GWM-1 have routinely detected low concentrations of BTEX and MTBE with benzene exceeding the screening level (Table 1). In September 2015, separate-phase hydrocarbons (SPH) was observed in the well for the first time. A sample of the SPH was collected on September 18, 2015 and submitted to Hall Environmental for analysis by Method 8015. The analytical report is included in Appendix C and indicated diesel range organics (DRO) at 68 weight percent and motor oil range organics (MRO) 18 weight percent. Another sample was collected April 9, 2019 and also sent to Hall Environmental for analysis by Method 8015. The lab interpreted the sample to be "mostly diesel range and lower amount of motor oil range hydrocarbons." Based on the presence of this material, a request was made for a new well to the west of GWM-1, halfway between the Aeration Basin and EP-2.

Section 3 Site Conditions

3.1 Surface Conditions

Site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. The surface topography of the area of investigation is shown in Figure 4. Elevations on the refinery property range from 7,040 feet to 6,860 feet. Surface soils within most of the area of investigation are primarily Rehobeth silty clay loam. Rehobeth soil properties include a pH ranging from 8 to 9 standard units and salinity (naturally occurring and typically measuring up to approximately 8 mmhos/cm).

Regional surface water features include the refinery evaporation ponds and a number of small ponds (one cattle water pond and two small unnamed spring fed ponds). The site is located in the Puerco River Valley, north of the Zuni Uplift with overland flows directed northward to the tributaries of the Puerco River. The Puerco River continues to the west to the confluence with the Little Colorado River. The South Fork of the Puerco River is intermittent and retains flow only during and immediately following precipitation events.

3.2 Subsurface Conditions

The shallow subsurface soils consist of fluvial and alluvial deposits comprised of clay and silt with minor inter-bedded sand layers. Very low permeability bedrock (e.g., claystones and siltstones) underlie the surface soils and effectively form an aquitard. The Chinle Group, which is Upper Triassic, crops out over a large area on the southern margin of the San Juan Basin. The uppermost recognized local Formation is the Petrified Forest Formation and the Sonsela Sandstone Bed is the uppermost recognized regional aquifer. Aquifer test of the Sonsela Bed northeast of Prewitt indicated a transmissivity of greater than $100 \text{ ft}^2/\text{day}$ (Stone and others, 1983). The Sonsela Sandstone's highest point occurs southeast of the site and slopes downward to the northwest as it passes under the refinery. The Sonsela Sandstone forms a water-bearing reservoir with artesian conditions throughout the central and western portions of the refinery property.

The diverse properties and complex, irregular stratigraphy of the surface soils across the site cause a wide range of hydraulic conductivity ranging from less than 10⁻² cm/sec for gravel like sands immediately overlying the Petrified Forest Formation to 10⁻⁸ cm/sec in the clay soils located near the

surface (Western, 2009). Generally, shallow groundwater at the refinery follows the upper contact of the Petrified Forest Formation with prevailing flow from the southeast to the northwest, although localized areas may have varying flow directions (Figure 2). Fluid level measurements for wells in the immediate area are included in Table 2.

Section 4 Scope of Services

The site investigation of groundwater will be conducted to determine the source of elevated chloride and sulfate concentrations detected in groundwater samples collected at SMW-2. An additional monitoring well will be installed to the west of GWM-1 to delineate SPH on the west side of the former Aeration Basin. The investigation will commence upon approval of this investigation work plan by NMED.

4.1 SMW-2 Investigation

An investigation of groundwater conditions in the area near SMW-2 is proposed to determine the source of chloride and sulfate detected in groundwater samples collected at SMW-2. Two new shallow monitoring wells are proposed north and northwest of EP-2 (Figure 5). One well will be located near existing well MW-4, which is completed in the Sonsela aquifer, and a second well north of EP-2, approximately halfway between MW-4 and OW-60.

Each well will be screened in the upper-most saturated interval(s) with a maximum screen length of 20 feet. Due to concerns over the construction of SMW-2 using a 20-foot well screen, which possibly allows cross-communication between separate zones (upper sands vs. Chinle/alluvial Interface), care will be taken to avoid screening across intervals that may not otherwise be in hydraulic communication. In addition, wells will be screened across the depths corresponding to the base of pond EP-2 if there is any indication of the presence of groundwater at these depths. These depths are estimated to range from 8 feet to 13 feet bgs.

4.2 Installation of Well near GWM-1

A new shallow monitoring well will be installed to the west of GWM-1, approximately halfway between the former Aeration Basin and EP-2 (Figure 5). The well will be screened just above the Chinle bedrock in the Chinle/Alluvial Interface zone and placed to ensure it will intersect the water table.

4.3 Soil Sample Field Screening and Logging

Samples obtained from the soil borings will be screened in the field on 2.0 foot intervals for evidence of contaminants. Field screening results will be recorded on the exploratory boring logs. Field screening results will be used to aid in the possible selection of soil samples for laboratory analysis.

The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds.

Visual screening includes examination of soil samples for evidence of staining caused by petroleumrelated compounds or other substances that may cause staining of natural soils such as elemental sulfur or cyanide compounds. Headspace vapor screening targets volatile organic compounds and involves placing a soil sample in a plastic sample bag or a foil sealed container allowing space for ambient air. The container will be sealed and then shaken gently to expose the soil to the air trapped in the container. The sealed container will be allowed to rest for a minimum of 5 minutes while vapors equilibrate. Vapors present within the sample bag's headspace will then be measured by inserting the probe of the instrument in a small opening in the bag or through the foil. The maximum value and the ambient air temperature will be recorded on the field boring or test pit log for each sample.

The monitoring instruments will be calibrated each day to the manufacturer's standard for instrument operation. A photoionization detector (PID) equipped with a 10.6 or higher electron volt (eV) lamp or a combustible gas indicator may be used for VOC field screening. Field screening results may be site- and boring-specific and the results may vary with instrument type, the media screened, weather conditions, moisture content, soil type, and type of contaminant, therefore, all conditions capable of influencing the results of field screening will be recorded on the field logs.

Although the borings are being drilled at locations outside known areas of concern, soil samples will be collected at the capillary fringe in each boring at a minimum and addition soil samples will be collected for laboratory analysis if screening indicates the potential for site impacts. The physical characteristics of the samples (such as mineralogy, ASTM soil classification, moisture content, texture, color, presence of stains or odors, and/or field screening results), depth where each sample was obtained, method of sample collection, and other observations will be recorded in the field log by a qualified geologist or engineer. Detailed logs of each boring will be completed in the field by a qualified engineer or geologist. Additional information, such as the presence of water-bearing zones and any unusual or noticeable conditions encountered during drilling, will be recorded on the logs.

Quality Assurance/Quality Control (QA/QC) samples will be collected to monitor the validity of the soil sample collection procedures as follows:

• Field duplicates will be collected at a rate of 10 percent; and

• Equipment blanks will be collected from all sampling apparatus at a frequency of one per day.

4.3.1 Drilling Activities

Soil borings will be drilled using hollow-stem augers. The drilling equipment will be properly decontaminated before drilling each boring. The NMED will be notified as early as practicable if conditions arise or are encountered that do not allow the advancement of borings to the specified depths or at planned sampling locations. Appropriate actions (e.g., installation of protective surface casing or relocation of borings to a less threatening location) will be taken to minimize any negative impacts from investigative borings. Slotted (0.01 inch) PVC well screen will be placed at the bottom of the borings and will extend for an appropriate length to accommodate the objectives stated in Sections 4.1 and 4.2. A 10/20 sand filter pack will be installed to two feet over the top of the well screen.

4.4 Groundwater Sample Collection

Groundwater samples shall initially be obtained from newly installed monitoring wells between ten and 30 days after completion of well development. Well development and purging prior to sample collection will be in accordance with procedures described in Appendix D. Prior to collection of groundwater samples for laboratory analyses, the fluid levels and the total depths of each well will be measured. Groundwater samples will be collected from the new monitoring wells within 24 hours of the completion of well purging using disposal bailers. Alternatively, well sampling may also be conducted in accordance with the NMED's Position Paper *Use of Low-Flow and other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring* (October 30, 2001, as updated). Sample collection methods will be documented in the field monitoring reports. The samples will be transferred to the appropriate, clean, laboratory-prepared containers provided by the analytical laboratory. Sample handling and chain-of-custody procedures will be in accordance with the procedures presented below in Section 4.4.1.

Groundwater samples intended for metals analysis will be submitted to the laboratory as both total and dissolved metals samples. QA/QC samples will be collected to monitor the validity of the groundwater sample collection procedures as follows:

• Field duplicate water samples will be obtained at a frequency of ten percent, with a minimum, of one duplicate sample per sampling event;

- Equipment rinsate blanks will be obtained for chemical analysis at the rate of ten percent or a minimum of one rinsate blank per sampling day. Equipment rinsate blanks will be collected at a rate of one per sampling day if disposable sampling equipment is used.
 Rinsate samples will be generated by rinsing deionized water through unused or decontaminated sampling equipment. The rinsate sample will be placed in the appropriate sample container and submitted with the groundwater samples to the analytical laboratory for the appropriate analyses; and
- Trip blanks will accompany laboratory sample bottles and shipping and storage containers intended for VOC analyses. Trip blanks will consist of a sample of analyte-free deionized water prepared by the laboratory and placed in an appropriate sample container. The trip blank will be prepared by the analytical laboratory prior to the sampling event and will be kept with the shipping containers and placed with other water samples obtained from the site each day. Trip blanks will be analyzed at a frequency of one for each shipping container of groundwater samples to be analyzed for VOCs.

4.4.1 Sample Handling

At a minimum, the following procedures will be used at all times when collecting samples during investigation, corrective action, and monitoring activities:

- 1. Neoprene, nitrile, or other protective gloves will be worn when collecting samples. New disposable gloves will be used to collect each sample;
- 2. All samples collected of each medium for chemical analysis will be transferred into clean sample containers supplied by the project analytical laboratory with the exception of soil, rock, and sediment samples obtained in Encore® samplers. Sample container volumes and preservation methods will be in accordance with the most recent standard EPA and industry accepted practices for use by accredited analytical laboratories. Sufficient sample volume will be obtained for the laboratory to complete the method-specific QC analyses on a laboratory-batch basis; and
- 3. Sample labels and documentation will be completed for each sample following procedures discussed below. Immediately after the samples are collected, they will be stored in a cooler with ice or other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described below, will be followed for all samples collected. All samples will be submitted to the laboratory

soon enough to allow the laboratory to conduct the analyses within the method holding times.

Chain-of-custody and shipment procedures will include the following:

- 1. Chain-of-custody forms will be completed at the end of each sampling day, prior to the transfer of samples off site.
- 2. Individual sample containers will be packed to prevent breakage and transported in a sealed cooler with ice or other suitable coolant or other EPA or industry-wide accepted method. The drainage hole at the bottom of the cooler will be sealed and secured in case of sample container leakage. Temperature blanks will be included with each shipping container.
- 3. Each cooler or other container will be delivered directly to the analytical laboratory.
- 4. Glass bottles will be separated in the shipping container by cushioning material to prevent breakage.
- 5. Plastic containers will be protected from possible puncture during shipping using cushioning material.
- 6. The chain-of-custody form and sample request form will be shipped inside the sealed storage container to be delivered to the laboratory.
- 7. Chain-of-custody seals will be used to seal the sample-shipping container in conformance with EPA protocol.
- 8. Signed and dated chain-of-custody seals will be applied to each cooler prior to transport of samples from the site.
- 9. Upon receipt of the samples at the laboratory, the custody seals will be broken, the chainof-custody form will be signed as received by the laboratory, and the conditions of the samples will be recorded on the form. The original chain-of-custody form will remain with the laboratory and copies will be returned to the relinquishing party.
- 10. Copies of all chain-of-custody forms generated as part of sampling activities will be maintained on-site.

4.5 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with soil borings will be contained and characterized using methods based on the boring location, boring depth, drilling method, and type of contaminants suspected or

encountered. All purged groundwater and decontamination water will be characterized prior to disposal unless it is disposed in the refinery wastewater treatment system upstream of the API Separator. An IDW management plan is included as Appendix B.

Field equipment requiring calibration will be calibrated to known standards, in accordance with the manufacturers' recommended schedules and procedures. At a minimum, calibration checks will be conducted daily, or at other intervals approved by the Department, and the instruments will be recalibrated, if necessary. Calibration measurements will be recorded in the daily field logs. If field equipment becomes inoperable, its use will be discontinued until the necessary repairs are made. In the interim, a properly calibrated replacement instrument will be used.

4.6 Documentation of Field Activities

Daily field activities, including observations and field procedures, will be recorded in a field log book. Copies of the completed forms will be maintained in a bound and sequentially numbered field file for reference during field activities. Indelible ink will be used to record all field activities. Photographic documentation of field activities will be performed, as appropriate. The daily record of field activities will include the following:

- 1. Site or unit designation;
- 2. Date;
- 3. Time of arrival and departure;
- 4. Field investigation team members including subcontractors and visitors;
- 5. Weather conditions;
- 6. Daily activities and times conducted;
- 7. Observations;
- 8. Record of samples collected with sample designations and locations specified;
- 9. Photographic log, as appropriate;
- 10. Field monitoring data, including health and safety monitoring;
- 11. Equipment used and calibration records, if appropriate;
- 12. List of additional data sheets and maps completed;
- 13. An inventory of the waste generated and the method of storage or disposal; and
- 14. Signature of personnel completing the field record.
4.7 Chemical Analyses

All samples collected for laboratory analysis will be submitted to an accredited laboratory. The laboratory will use the most recent standard EPA and industry-accepted analytical methods for target analytes as the testing methods for each medium sampled. Chemical analyses will be performed in accordance with the most recent EPA standard analytical methodologies and extraction methods.

Groundwater and soil samples will be analyzed by the following methods:

- SW-846 Method 8260 for volatile organic compounds;
- SW-846 Method 8270 for semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.

Groundwater and soil samples will also be analyzed for the following Skinner List metals and iron and manganese using the indicated analytical methods shown. The groundwater samples collected for metals analysis will be analyzed for total and dissolved concentrations. Groundwater samples will also be analyzed for major cations (calcium, magnesium, sodium, and potassium) and anions (e.g., carbonate, bicarbonate, sulfate, fluoride and chloride).

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020

Inorganic Analytical Methods

Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020
Calcium	EPA method 200.7
Magnesium	EPA method 200.7
Sodium	EPA method 200.7
Potassium	EPA method 200.7
Carbonate	EPA method 300.0
Bicarbonate	EPA method 300.0
Sulfate	EPA method 300.0
Fluoride	EPA method 300.0
Chloride	EPA method 300.0
Nitrate	EPA method 300.0
Nitrite	EPA method 300.0

Groundwater field measurements will be obtained for pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, turbidity, and temperature.

4.8 Data Quality Objectives

The Data Quality Objectives (DQOs) were developed to ensure that newly collected data are of sufficient quality and quantity to address the project goals, including Quality Assurance/Quality Control (QA/QC) issues (EPA, 2006). The project goals are established to determine and evaluate the presence, nature, and extent of releases of contaminants at specified SWMUs. The type of data required to meet the project goals includes chemical analyses of soil and groundwater to determine if there has been a release of contaminants.

The quantity of data is location specific and is based on the historical operations at individual locations. Method detection limits should be 20% or less of the applicable background levels, cleanup standards and screening levels.

Additional DQOs include precision, accuracy, representativeness, completeness, and comparability. Precision is a measurement of the reproducibility of measurements under a given set of circumstances and is commonly stated in terms of standard deviation or coefficient of variation (EPA, 1987). Precision is also specific to sampling activities and analytical performance. Sampling precision will be evaluated through the analyses of duplicate field samples and laboratory replicates will be utilized to assess laboratory precision.

Accuracy is a measurement in the bias of a measurement system and may include many sources of potential error, including the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques (EPA, 1987). An evaluation of the accuracy will be performed by reviewing the results of field/trip blanks, matrix spikes, and laboratory QC samples.

Representativeness is an expression of the degree to which the data accurately and precisely represent the true environmental conditions. Sample locations and the number of samples have been selected to ensure the data is representative of actual environmental conditions. Based on SWMU specific conditions, this may include either biased (i.e., judgmental) locations/depths or unbiased (systematic grid samples) locations. In addition, sample collection techniques (e.g., field monitoring and decontamination of sampling equipment) will be utilized to help ensure representative results.

Completeness is defined as the percentage of measurements taken that are actually valid measurements, considering field QA and laboratory QC problems. EPA Contract Laboratory Program (CLP) data has been found to be 80-85% complete on a nationwide basis and this has been extrapolated to indicate that Level III, IV, and V analytical techniques will generate data that are approximately 80% complete (EPA, 1987). As an overall project goal, the completeness goal is 85%; however, some samples may be critical based on location or field screening results and thus a sample-by-sample evaluation will be performed to determine if the completeness goals have been obtained.

Comparability is a qualitative parameter, which expresses the confidence with which one data set can be compared to another. Industry standard sample collection techniques and routine EPA analytical methods will be utilized to help ensure data are comparable to historical and future data. Analytical results will be reported in appropriate units for comparison to historical data and cleanup levels. EPA, 1987, Data Quality Objectives for Remedial Response Activities; United States Environmental Protection Agency, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, OSWER Directive 9355.0-7B, 85p.

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Tables

Table 1SMW-2 and GWM-1 Area Water AnalysesTable 2Fluid Level Measurements

TABLE 1 - SWM-2 and GWM-1 AREA WATER ANALYSES Western Refining Southwest, Inc. - Gallup Refinery

Stratigraphic unit in which screen exists	Chinle/Alluvium Interface	Sonsela Sandstone	Sonsela Sandstone	Sonsela Sandstone	Sonsela Sandstone	Chinle/Alluvium Interface																							
Screened Interval Depth Top to Bottom (ft)	63 - 73	117.72 - 127.72	112 - 122	101 - 121	115 - 125	34.31 - 54.31	51.7 - 71.7	17.5 - 23.5	17.5 - 23.5	17.5 - 23.5	17.5 - 23.5	3.2 - 16.2	3.2 - 16.2	3.2 - 16.2	3.2 - 16.2	3 - 15	3 - 15	3 - 15	3 - 15	20 - 50	20 - 50	20 - 50	20 - 50	15 - 30	15 - 30	15 - 30	15 - 30	20 - 35	20 - 35
Corrected Water Table Elevation (Factor 0.8) (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6890.81	6890.98	6891.08	6892.71	N/A																	
Ground water Elevation (ft)	6,845.21	6,871.10	6,864.66	6,874.07	6,871.61	6,859.18	6,850.19	6,890.57	6,890.63	6,890.90	6,891.91	DRY	6,884.00	6,883.81	6,883.66	6,883.92	N/A	N/A	N/A	N/A	6,865.43	6,865.43							
Depth to Water (ft)	33.38	7.02	15.64	7.56	11.22	24.79	29.33	22.04	21.98	21.71	20.70	DRY	20.47	20.66	20.81	20.55	DRY	٧N	DRY	N/A	24.30	24.30							
SPH Column Thickness (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0:30	0.44	0.22	1.00	N/A																	
Depth to SPH (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21.74	21.54	21.49	19.70	N/A																	
Total Well Depth ft)	69.40	130.83	137.48	121.72	130.83	52.80	69.68	26.20	26.20	26.20	26.20	18.81	18.81	18.81	18.81	17.80	17.80	17.80	17.80	50.00	50.00	50.00	49.74	29.10	29.10	29.10	29.10	38.30	38.50
Well Casing Bottom Elevation (ft)	6,809.19	6,747.29	6,742.82	6,759.91	6,752.00	6,831.17	6,809.84	6,886.41	6,886.41	6,886.41	6,886.41	6,894.28	6,894.28	6,894.28	6,894.28	6,892.45	6,892.45	6,892.45	6,892.45	6,854.47	6,854.47	6,854.47	6,854.47	6,880.38	6,880.38	6,880.38	6,880.38	6,925.93	6,926.13
Stick-up length (ft)	2.43	1.49	1.91	1.74	2.63	2.34	1.89	2.39	2.39	2.39	2.39	2.77	2.77	2.77	2.77	2.90	2.90	2.90	2.90	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	2.10	2.10
Well Casing Rim Elevations (ft)	6,878.59	6,878.12	6,880.30	6,881.63	6,882.83	6,883.97	6,879.52	6,912.61	6,912.61	6,912.61	6,912.61	6,913.09	6,913.09	6,913.09	6,913.09	6,910.25	6,910.25	6,910.25	6,910.25	6,904.47	6,904.47	6,904.47	6,904.47	6,912.38	6,912.38	6,912.38	6,912.38	6,889.73	6,889.73
Ground Level Elevations (ft)	6,876.16	6,876.63	6,878.39	6,879.89	6,880.20	6,881.63	6,877.63	6,910.22	6,910.22	6,910.22	6,910.22	6,910.32	6,910.32	6,910.32	6,910.32	6,907.35	6,907.35	6,907.35	6,907.35	6,904.50	6,904.50	6,904.50	6,904.50	6,912.40	6,912.40	6,912.40	6,912.40	6,887.63	6,887.63
Casing Diameter (Inch)	2.00	5.00	5.00	5.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Inspection or Sample Date	09/13/17	09/20/17	09/20/17	09/21/17	09/11/17	09/11/17	09/11/17	03/16/17	06/02/17	09/08/17	12/04/17	03/16/17	06/02/17	09/05/17	12/04/17	03/16/17	06/02/17	09/05/17	12/04/17	02/21/17	06/02/17	09/05/17	12/04/17	02/21/17	06/02/17	09/05/17	12/04/17	09/21/17	12/05/17
Well ID Number	BW-3B	MW-1	MW-2	MW-4	MW-5	SMW-2	SMW-4	GWM-1				GWM-2				GWM-3				STP1-NW				STP1-SW				OW-59	
Date of Installation	10/15/2003	10/14/1981	10/15/1981	10/16/1981	7/21/1986	9/26/1985	9/25/1985	7/8/2004				9/25/2005				9/25/2005				5/6/2014				5/6/2014				6/29/2017	

TABLE 2 - FLUID LEVEL MEASUREMENTS Western Refining Southwest, Inc. - Gallup Refinery

N/A = Not Available NS = Not Surveyed Negative number in Stick up Length column indicates well is flushmount and located at or below ground level. Depth to Water Column - if 0.00 is indicated - means water is at top of casing (full) under artesian flow conditions. Dry indicates no water was detected.

DEFINITIONS:

DTB - Depth to Bottom DTW - Depth to Water SPH = Separate Phase Hydrocarbons * Wells also checked for Artesian flow conditions.

Figures

Figure 1	L Site	Location	Мар
----------	--------	----------	-----

- Figure 2 Chinle/Alluvial Interface Potentiometric Map
- Figure 3 Sulfate and Chloride Concentrations Map
- Figure 4 Topographic Map
- Figure 5 Proposed Monitoring Well Locations











Appendix A Boring Logs

Geoscier	Ce
mountanc	Client_GIANT REFINING COMPANY Well NumberSMW_2
	T 15 N R 15 W State New Mexico
	County Ackinley Contractor Fox
7/1770	Logs Run Lith from Cores
	Elevation 68.82.83 Spud In (Fm.) Still
	Remarks Drilled Hollow Stor Augon & Continuous Continues
	samples @ 2.5 and 5.0' intervals for %H_O. Comp. as SS monitor Well
+	RUN From To Samole#/Et Lith/Remarks
1	
-	55 course of GTA Times should be
01	850925 15 XX, not 14 XX
4	\$ 0 5 1415/40 0-1.5 5011 etc
	2 5 10 1400 /00
10 -	
15 -	5 10 15 1426/15 1.5 - H.C CLAY
×0	4 15 20 1452 /20'
-	5 20 25 1438/25' H. 0-19.0 50 MDV 510V
	6 25 30 1445 p.2.550
30	1462/32.5
35	1 30 55 1453 35 50 19.0 - 24 SAND; grrd (SRY/2); med gr
40	8 35 to 1459 1 40.0 poir set at this on frag
-	34 - 75 - 6141
1	Star Cary
1	
-	25-28 SAND, as above
1	
-	78-33 014/04 54/10 40/14
-	A 33 CATEL SAME & CLAY
1	
-	5 33-38 SAND (WET) med ad hom (IDRY/1)
1	med an und at at
-	The first was seen to be and
-	5H-40 \$5AY
-	9/2/85 Hz fevel 29'1" 9:40
1	11/20° 55M42
- 1	14 71 #8509261445



COMPLETION DIAGRAM FOR WELL SMW-2

SMW-4 Upusterius rage_ OI. Consultants, Ltd. Client_GIANT REFINING COMPANY Well Number SMW - 4 S____T 15 N R 15 W State New Mexico *___ * * * County_McKinley 95 TAY 4 Contractor Fox Spud Date 9/25/85 Completion Date _ 1/25/85 .v., 12 Logs Run_Lith from Cores Logged By J.C. Hunter 25.4 Elevation 6878, 84 __ Spud In (Fm.)_Chinle 0 ÷ Remarks Drilled w/Hollow Stem Auger & Continuous Sampler. Collected LA samples @ 2.5 and 5.0" intervals for %H_0. Comp. as SS monitor Well Depth RUN From To Sample#/Ft Lith/Remarks Betwoon Depthe from ton MW1- + MW-2 0 auger AGL A50925:0 5 0 1 (10F 1/2) 0840/40 TTRO830 Soll. 5 gryrd CL. 10 5 2 0847 110.0 MINOT 10 rasts tora me CA 3 10 15 5220 Gry rd (SR4/2 15 15 d, 4 15 0859 20 20 IDR 3/4). dense plastic P 1 182.124 ---20 50 5 20 125 25 0906 9.0-SANDY CLAY : gry rd (IOR4) 25 DTW 0913/27.5 44 6 25 30 2015 V 0714/30.3 503 - dsky rd (5R3/4); cly w/ 15-20%. 30 29.52 0917/32504 30 35 gr - engr ad, local ford, poor sor 51-711? 135.0 54 CLY BOUSAN 3 K 35-0927/37.5 CL 8 35 1 40 40 0528/ 4/0.0 cm 0936/425 CL 9 145 40 sur culing - to de 45-14S.C. EL 1750/ 4x550/ 10 43 50 gry rd (sey/2) 50 5.2. JCLY 15.0-23.0 12.0 0854 975 30 70 1000- 55 11 50 55 enal sero cu 5-10-10 CLY 650 \$ LOINS/ 67 60 55 13 can lacino pale rd bra 102 5/4 More 10 20 1241/62.5 65 14 60 1248/65,0 LIDE 4/ AFH LOASP gty + K-spen 9/30/85 15 65 18 1259, 19-0 @ 100 SILTY CLAY - madral (SRSL) 24,0-33.019 13 cly w/ 10-20% 5/t loc Same 26 33-0-55-0 mod rd SIty sandy 57.5 - 59.5 59-(u:= f) ined ad bon 6 Suct 19 mid My Sometarene iday) pelied (ICR 1/2)

MONITORING WELL IDENTIFICATION REPORT

ENVIRONMENTAL IMPROVEMENT DIVISION HAZARDOUS WASTE SECTION 1190 ST. FRANCIS DR./HAROLD RUNNELS BLDG. SANTA FE, NEW MEXICO 87503									
FACILITY NAME Giant Refi	ning Company								
EPA I.D. NUMBER NMD0003332	211-2								
COUNTY McKinley									
WELL NUMBER SMW-2									
WELL LOCATION (LONGITUDE	o ' ''								
WELL LOCATION (LATITUDE)	0 1 11								
AQUIFER NAME Ci	niza Sand								
AQUIFER CONFINED X	UNCONFINED								
WELL INSTALLATION DATE	9-26-85								
DRILLING METHOD	HLWAG								
INNER CASING DIAMETE	R2.0"								
BOREHOLE DIAMETER	6.5"								
CASING MATERIAL	SS304								
METHOD OF DEVELOPMEN	TCOMPR								
ELEV BOTTOM OF BOREHOLE	6826.73								
ELEV BOTTOM OF WELL CASING	G 6827.13								
ELEV BOTTOM OF SCREENED I	NT 6830 13								
ELEVATION OF SCREENED INT	6250 12								
SURVEYED FLEV OF CASING TH									
CONTRACTOR PREV OF CASING I	<u> 6881./3</u>								

DATE OF REPORT Jan. 28, 1991 SIGNATURE Claud C. Rosungland NAME (TYPED) Claud C. Rosendale

b:wellid/bas

MONITORING WELL IDENTIFICATION REPORT

ENVIRONMENTAL IMPROVEMENT DIVISION HAZARDOUS WASTE SECTION 1190 ST. FRANCIS DR./HAROLD RUNNELS BLDG. SANTA FE, NEW MEXICO 87503

FAC	LITY	NAME	Giant Re	fini	ng Compa	any					
EPA	I.D.	NUMBER _	NMD000333211-2								
	COUN	TY	McKinley	r 							
	WELL	NUMBER	SMW-4								
	WELL	LOCATION	(LONGITUD	E)	0 108		01				
	WELL	LOCATION	(LATITUDE)	0 35		44				
	AQUI	FER NAME	C	liniza	a Sand						
	AQUI	FER CONFI	NED X	ť	NCONFIN						
	WELL	INSTALLA	TION DATE		9-2	5-85					
		DRILLING	METHOD		HLW	AG					
		INNER CAS	SING DIAMET	ER	2.0	11					
		BOREHOLE	DIAMETER		6.5						
		CASING M	ATERIAL		SS3	04		·			
		METHOD OI	F DEVELOPME	NT	COM	PR					
	ELEV	BOTTOM OI	F BOREHOLE		680	6.74					
	ELEV	BOTTOM OI	F WELL CASI	NG	680	7.84					
	ELEV	BOTTOM OI	SCREENED	INT	6810	0.84					
	ELEV	ATION OF S	SCREENED IN	T	6830	0.84					
	SURVI	EYED ELEV	OF CASING	TOP	687	7.74					
			<u>م</u>								

DATE OF REPORT Jan. 28, 1991 SIGNATURE Claud C. Kosenstal NAME (TYPED) Claud C. Rosendale

b:wellid/bas

Appendix B

Investigation Derived Waste Management Plan

Investigation Derived Waste (IDW) Management Plan

All IDW will be properly characterized and disposed of in accordance with all federal, State, and local rules and regulations for storage, labeling, handling, transport, and disposal of waste. The IDW may be characterized for disposal based on the known or suspected contaminants potentially present in the waste.

A dedicated decontamination area will be setup prior to any sample collection activities. The decontamination pad will be constructed so as to capture and contain all decontamination fluids (e.g., wash water and rinse water) and foreign materials washed off the sampling equipment. The fluids will be pumped directly into suitable storage containers (e.g., labeled 55-gallon drums), which will be located at satellite accumulation areas until the fluids are disposed in the refinery wastewater treatment system upstream of the API separator. The solids captured in the decontamination pad will be shoveled into 55-gallon drums and stored at the designated satellite accumulation area pending proper waste characterization for off-site disposal.

Drill cuttings generated during installation of soil borings will be placed directly into 55-gallon drums and staged in the satellite accumulation area pending results of the waste characterization sampling. The portion of soil cores, which are not retained for analytical testing, will be placed into the same 55-gallon drums used to store the associated drill cuttings.

The solids (e.g., drill cuttings and used soil cores) will be characterized by testing to determine if there are any hazardous characteristics in accordance with 40 Code of Federal Regulations (CFR) Part 261. This includes tests for ignitability, corrosivity, reactivity, and toxicity. If the materials are not characteristically hazardous, then further testing will be performed pursuant to the requirements of the facility to which the materials will be transported. Depending upon the results of analyses for individual investigation soil samples, additional analyses may include VOCs, TPH and polynuclear aromatic hydrocarbons (PAHs).

Appendix C Analyses of SPH at GWM-1



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

September 23, 2015

Cheryl Johnson Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-0231 FAX (505) 722-0210

RE: 2015-3rd Qtr-GWM-1

OrderNo.: 1509910

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2015 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1509910

Date Reported: 9/23/2015
Client Sample ID: GWM-1

CLIENT:	Western Refining Southwest	t, Gallup		C	lient Sampl	e ID: GV	VM-1	
Project:	2015-3rd Qtr-GWM-1				Collection 1	Date: 9/1	8/2015 9:45:00 AM	
Lab ID:	1509910-001	Matrix:	PRODUCT	•	Received	Date: 9/1	8/2015 4:15:00 PM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
DRO BY	8015D						Analyst	: KJH
Diesel Ra	ange Organics (DRO)	68	1.2		wt%	20	9/21/2015 2:03:14 PM	21396
Motor Oi	I Range Organics (MRO)	18	5.9		wt%	20	9/21/2015 2:03:14 PM	21396
Surr: [DNOP	0	72.8-129	S	%REC	20	9/21/2015 2:03:14 PM	21396
GRO BY	8015D						Analyst	: NSB
Gasoline	Range Organics (GRO)	ND	2.5		wt%	1	9/22/2015 9:56:59 AM	21410
Surr: F	BFB	88.0	80-120		%RFC	1	9/22/2015 9:56:59 AM	21410

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
- R RPD outside accepted recovery limits
- 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 Page 1 of 3
- P Sample pH Not In Range
- RL Reporting Detection Limit

ND

0.10

Wester 2015-3	rn Refining So Brd Qtr-GWM	outhwe	st, Gallup							
96	SampTy	ype: MI	BLK	Tes	tCode:	ORO by 8015	D			
	Batch	ID: 21	396	F	RunNo:	28995				
015	Analysis Da	ate: 9/	21/2015	S	SeqNo:	879731	Units: wt%			
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Motor Oil Range Organics (MRO) Surr: DNOP	ND 0.094	0.50	0.1000		93.5	72.8	129			
Sample ID LCSD-21396	SampT	ype: LC	SD	Tes	tCode: D	RO by 8015	D			
Client ID: LCSS02	Batch	ID: 21	396	F	RunNo: 2	8995				
Prep Date: 9/21/2015	Analysis D	ate: 9/	21/2015	S	SeqNo: 8	79766	Units: wt%			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	0.41	0.10	0.5000	0	82.8	80	120	3.10	20	
Surr: DNOP	0.046		0.05000		92.7	72.8	129	0	0	

Qualifiers:

Client:

Project:

Analyte

Sample ID MB-21396 Client ID: PBW Prep Date: 9/21/2015

Diesel Range Organics (DRO)

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit

WO#: **1509910**

Page 2 of 3

Client:	Western Ref	ining Sout	hwest, Gallı	ıp						
Project:	2015-3rd Qt	r-GWM-1								
Sample ID MB-2	1410	SampType	BLK		TestCode:	GRO by 801	5D			
Client ID: PBW		Batch ID	21410		RunNo:	29020				
Prep Date: 9/21	/2015 Ar	alysis Date	9/22/2015		SeqNo:	880756	Units: wt%			
Analyte	F	Result P	QL SPK va	lue SPK Re	ef Val %REC	C LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Orgar	iics (GRO)	ND	2.5							
Surr: BFB		880	10	000	87.	7 80	120			
Sample ID LCS-	21410	SampType	LCS		TestCode:	GRO by 801	5D			
Client ID: LCSV	v	Batch ID	21410		RunNo:	29020				
Prep Date: 9/21	/2015 Ar	alysis Date	9/22/2015		SeqNo:	880757	Units: wt%			
Analyte	F	Result P	QL SPK va	lue SPK Re	ef Val %REC	C LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Orgar	nics (GRO)	21	2.5 25	.00	0 82.9	69.3	137			
Surr: BFB		970	10	000	96.7	7 80	120			
Sample ID LCSD	-21410	SampType	LCSD		TestCode:	GRO by 801	5D			
Client ID: LCSS	602	Batch ID	21410		RunNo:	29020				
Prep Date: 9/21	/2015 Ar	alysis Date	9/22/2015		SeqNo:	880758	Units: wt%			
Analyte	F	Result P	QL SPK va	lue SPK Re	ef Val %REC	C LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Orgar	iics (GRO)	21	2.5 25	.00	0 85.0) 69.3	137	2.48	20	
Surr: BFB		980	1(000	98.0) 80	120	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
- R RPD outside accepted recovery limits
- 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 Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Western Refining Gallup	Work Order Number	150991	0	<u></u>	RcptNo	1
Received by/date:	07/18/15 9/18/2015 4:15:00 PM			AZ		
Completed By: Ashley Gallogos	9/19/2015 11:00:08 A	vi.		Az		
Completed By. Ashley Gallegos	- 0 / 1	*1		24J		
Reviewed By:	04/21/19					
Chain of Custody			,	· - 1		
1. Custody seals intact on sample bottles?	?	Yes]	No []	Not Present	
2. Is Chain of Custody complete?		Yes		NO []	Not Present []	
3. How was the sample delivered?		<u>Courie</u>	ĩ			
<u>Log In</u>						
4. Was an attempt made to cool the sam	ples?	Yes		No []	NA [
5. Were all samples received at a temper	ature of >0° C to 6.0°C	Yes		No [_]	NA	
6. Sample(s) in proper container(s)?		Yes		No []		
7. Sufficient sample volume for indicated	test(s)?	Yes		No []]		
8. Are samples (except VOA and ONG) p	roperly preserved?	Yes		No 🗔		-
9. Was preservative added to bottles?		Yes	[]	No 🛃	NA [].	
10.VOA vials have zero headspace?		Yes	[]	No []	No VOA Vials 🐱	
11. Were any sample containers received	broken?	Yes		No 🛃	# of preserved	
			(🛋	Nto []	bottles checked	
12.Does paperwork match bottle labels? (Note discrepancies on chain of custor	Iv)	Yes		INO L.I	(<:	2 or >12 unless noted)
13 Are matrices correctly identified on Cha	ain of Custody?	Yes		No []	Adjusted?	
14. Is it clear what analyses were requested	ed?	Yes		No []		
15. Were all holding times able to be met? (If no, notify customer for authorization	,)	Yes		No []	Checked by	:
Special Handling (if applicable)						
16. Was client notified of all discrepancies	with this order?	Yes	[]]	No []]	NA 🛃	8
Person Notified:	Date	******	age of the second	ld in indiate an ann a dhig badh i a dhùachad a bha an		
By Whom:	Via:	[]] eMa	,il [_]	Phone []] Fax	[] In Person	
Regarding:	n an	n alatak kata kata kata k	27326826 076.0204			
Client Instructions:	aan haaraan sadaada di da di da	an ainin 2011 (1911) (1913) (1914) (1914)	999.2691.000/line.	n an	an a	
17. Additional remarks:						
18. <u>Cooler Information</u>						
Cooler No Temp °C Condition	Seal Intact Seal No	Seal Da	ite	Signed By	4	
1 5.1 Good	Yes				1	

Clien):	Vestern R	sfining Con	nbanv	Charles of	× num			1		0105	TRUNING	YOUT
		20		Standard Decised Norm	A Rush			4	NAL	ASIS	LABORA	IOKI
GAL	LUP REFIN	ERY		Project Nam	ti i				ww.hal	environm	iental.com	
Mailing Addre	SS:			2015 - 3rd Q	tr - GWM-1		4901	Hawkim	SNE -	Vibuquerq	ue, NM 87109	
5	12 Giant Cr	ossing Roa	1d, Gallup, NM 87301	Project #:			Tel. 5	505-345	3975	Fax 505	-345-4107	
Phone #: 5	05-722-38	533		PO #208252	20					Analysis I	Request	
email or Fax#:		505-863-	0630	Project Man	ager.			1	Y			
CA/OC Packag	'n		C Level 4 (Full Validation)	C. JOHNSO	V (cheryl johns	son@wnr.com)	(0	Part	024			
Accreditation:				Sampler:			am)	(8	SUC	200		
CI NELAP		C Other		On Ice:	KYes	D No	'Ob	10/2	in A			_
II EDD (Type				Sample Tem	perature: 6.	1-100F=5.1°C	9/0	- sle	sier	(art)		
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO. 150009/10	807208 180) 05108	MOCC Wel	(beretiiii)	8053 CAsnide		
9/18/2015	945	OIL	GWM-1	2-40ML VOAS	NONE	100-	×		1			
Date 9/18/2015 Date	Time 1045 Time	Relinquich	- Contraction	Received by	The	Pate Time PAR-15 1.30 Date Time	Remarks:	-				
10101	and -	New 2	July	CLEW	- JUL -	The service as notice of the	a noschitte Arr	v subschilte	Alabi dala	with the clearly in	needed on the analytical rec	-



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

Brian Moore Marathon 92 Giant Crossing Rd Gallup, NM 87301 TEL: (505) 722-3833 FAX:

RE: SPH Investigation

OrderNo.: 1904580

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/10/2019 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

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109



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

Case Narrative

WO#: Date:

1904580

CLIENT: Marathon Project: SPH Investigation

Hall Environmental has analyzed NAPIS-1 and GMW-1 for hydrocarbons using EPA Method 8015D. Our interpretation of the type of hydrocarbons present in each sample is detailed below. Copies of the chromatograms for each sample and standards are provided after this narrative.

NAPIS-1 - This product sample appears to be fairly fresh gasoline.

GMW-1 - This product sample does not contain gasoline range hydrocarbons. The sample appears to be mostly diesel range and lower amount of motor oil range hydrocarbons.

NAPIS-1

Instrument: SmaugFID (Offline) Sample ID: 1904580-001A

Vial #: 27 Data Description: PRODUCT X10

User: System

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met File: H:\EZsemi\8015dro\DATA\Smaug\Data\2019\APRIL 2019\041519\PROD RE-INT's\1904580-001A X10 4-15-2019 7-26-40 PM.dat Aquired: 4/15/2019 7:32:51 PM



FID-2010 Plus Results

Name	Retention Time	Area	ua/ml
DNOP	11.056	25724	0.874
DRO		2818833	93.142
MRO		1837	16.244

Analyst

Reviewed By _____

Gwm-1

Instrument: SmaugFID (Offline) Sample ID: 1904580-002A

Vial #: 28 Data Description: PRODUCT X20 User: System

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met File: H:\EZsemi\8015dro\DATA\Smaug\Data\1904580-002A X20 4-15-2019 8-33-35 PM.dat Aquired: 4/15/2019 8:39:52 PM



Name	Retention Time	Area	unimi	
DNOP DRO MRO	11.061	106224 12611601 1660723	3.938 404.713 73.257	1



.

Surrogate not recovered due to dilution

500 ppm Gasoline standard

Instrument: SmaugFID (Offline) Sample ID: CONDITIONER

Vial #: 23 Data Description: ~500 ppm Gasoline User: System

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met File: H:\EZsemi\8015dro\DATA\Smaug\Data\CONDITIONER 4-25-2019 10-53-34 AM.dat Aquired: 4/25/2019 10:58:57 AM



DNOP	10.997	182	0.000
DRO		1058065	35.142
MRO		2753	16.275

Analyst

Reviewed By _____

100 ppm Diesel Standard

Instrument: SmaugFID (Offline) Sample ID: 100 PPM DRO CCV

Vial #: 3 Data Description: SV195-3268 User: System

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met File: H:\EZsemi\8015dro\DATA\Smaug\Data\042519\100 PPM DRO CCV 4-25-2019 7-32-54 AM.dat Aquired: 4/25/2019 7:38:35 AM

3



Analyst	
Analyst	

Reviewed By _____
Appendix D

Well Development and Purging Procedures

Well Development

All monitoring wells will be developed to create an effective filter pack around the well screen, correct damage to the formation caused by drilling, remove fine particles from the formation near the borehole, and assist in restoring the natural water quality of the aquifer in the vicinity of the well. Newly installed monitoring wells will not be developed for at least 48 hours after the surface pad and outer protective casing are installed. This will allow sufficient time for the well materials to cure before the development procedures are initiated. A new monitoring well will be developed until the column of water in the well is free of visible sediment, and the pH, temperature, turbidity, and specific conductivity have stabilized. In most cases, the above requirements can be satisfied. However, in some cases, the pH, temperature, and specific conductivity may stabilize but the water remains turbid. In this case, continuous flushing may be necessary to complete the well development. If the well is pumped dry, the water level will be allowed to sufficiently recover before the next development period is initiated. The common methods used for developing wells include:

- (1) pumping and over-pumping;
- (2) backwashing;
- (3) surging (with a surge block);
- (4) bailing;
- (5) jetting; and
- (6) airlift pumping.

These development procedures will be used, either individually or in combination, to achieve the most effective well development. However, the most favorable well development methods include pumping, over-pumping, bailing, surging, or a combination of these methods. Well development methods and equipment that alter the chemical composition of the groundwater will not be used.

Development methods that involve adding water or other fluids to the well or borehole, or that use air to accomplish well development will be avoided, if possible. Approval will be obtained from the NMED prior to introducing air, water, or other fluids into the well for the purpose of well development. If water is introduced to a borehole during well drilling and completion, then the same or greater volume of water will be removed from the well during development. In addition, the volume of water withdrawn from a well during development will be recorded, and best efforts will be used to avoid pumping wells dry during development activities.

Well Purging

All zones in each monitoring well will be purged by removing groundwater prior to sampling and in order to ensure that formation water is being sampled. Purge volumes will be determined by monitoring, at a minimum, groundwater pH, specific conductance, dissolved oxygen concentrations, turbidity, redox potential, and temperature during purging of volumes and at measurement intervals of not less than ¹/₄ the pre-purge well volume. The groundwater quality parameters and fluid levels will be measured using a YSI Professional Plus Multiparameter Meter, YSI Water Quality Sonde, Hach Portable Turbidimeter, and a Geotech Interface Meter. The volume of groundwater purged, the instruments used, and the readings obtained at each interval will be recorded on the field monitoring log. In general, water samples may be obtained from the well after the measured parameters of the purge water have stabilized to within ten percent for three consecutive measurements. Well purging

may also be conducted in accordance with the NMED's Position Paper "Use of Low-Flow and other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring" (October 30, 2001). If necessary, a written request for a variance from the described methods of well purging for individual wells may be submitted to NMED no later than 90 days prior to scheduled sampling activities.



Michelle Lujan Grisham Governor

Howie C. Morales

NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau 2905 Rodeo Park Drive East, Building 1 Santa Fe, New Mexico 87505-6313 Phone (505) 476-6000 Fax (505) 476-6030 www.env.nm.gov



James C. Kenney Cabinet Secretary

Jennifer J. Pruett Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

May 21, 2019

John Moore Environmental Superintendent Western Refining, Southwest Inc., Gallup Refinery 92 Giant Crossing Road Gallup, New Mexico 87301

RE: DISAPPROVAL SMW-2 AREA AND BOUNDARY WELL INSTALLATION REPORT WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY EPA ID # NMD000333211 HWB-WRG-19-008

Dear Mr. Moore:

The New Mexico Environment Department (NMED) has reviewed the *SMW-2 Area and Boundary Well Installation Report* (Report), dated April 2019, submitted on behalf of Marathon Petroleum Company dba Western Refining Southwest Inc., Gallup Refinery (the Permittee). NMED hereby issues this Disapproval. The Permittee must address the following comments.

Comment 1

The cover letter states, "[t]his report was prepared in response to New Mexico Environmental Department (NMED) comments in the 2013 and 2014 Annual Facility-Wide Ground Water Monitoring Reports." More accurately, the Report was submitted based on the Permittee's Investigation Work Plan and NMED's comments. No response is necessary.

Comment 2

The Executive Summary, page E-i, states, "[t]he sample was very turbid and dissolved metals analyses were not performed." A turbid groundwater sample should have been filtered to remove excessive suspended solids. Turbidity in groundwater should not prevent collection of

groundwater samples for dissolved metals analysis. Provide a more detailed explanation in a response letter.

Comment 3

The Executive Summary, page E-i, states, "[c]hloride was detected at a concentration (1,400 mg/L) above the screening level (250 mg/L) in one sample collected from well BW-5C. Diesel range organics (DRO) were detected at low concentrations of 0.47 mg/L and 0.74 mg/L in groundwater samples collected at wells BW-4B and BW-5B, respectively, in comparison to the screening level of 0.086 mg/L." There are currently no other groundwater monitoring wells west of these boundary wells. The extent of groundwater contamination west of pond EP-9 is not delineated. Comment 1 in NMED's *Disapproval Annual Groundwater Monitoring Report: Gallup Refinery* – 2017, dated March 21, 2019, requires installation of more wells west of these boundary wells. These new wells are intended to delineate the contaminant plumes west of Pond EP-9. In addition, other organic constituents (e.g., MTBE, EDC) were detected in the groundwater sample collected from well BW-5C according to Appendix E (Groundwater Analytical Reports). Revise the Report for accuracy.

Comment 4

In Section 2.1 (SMW-2 Area), page 2-1, the Permittee states, "MTBE has been detected in groundwater samples collected at SMW-2, but has remained below the screening level." According to the 2017 Annual Groundwater Monitoring Report, the MTBE concentration in the groundwater sample collected from well SMW-2 exceeded the screening level in August 2015. Revise the Report for accuracy.

Comment 5

In Section 2.2 (OW-1 Area), page 2-2, the Permittee states, "[o]ther organic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-1 include benzene, toluene, and total xylenes." According to the 2017 Annual Groundwater Monitoring Report, the MTBE, ethylbenzene, and EDC concentrations in groundwater samples collected from well OW-1 were also detected (below the screening levels). The detection of MTBE in the groundwater samples collected from well OW-1 see Comment 3). Revise the Report for accuracy.

Comment 6

In Section 2.2 (OW-1 Area), page 2-2, the Permittee states, "[o]rganic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-10 include 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene." According to the 2017 Annual Groundwater Monitoring Report, the cis-1, 2-DCE, 1, 2, 4-trimethylbenzene, toluene, ethylbenzene, and xylenes were also detected at concentrations below the screening levels in groundwater samples collected from well OW-10. Revise the Report for accuracy.

Comment 7

Section 3.1.1 (Boundary Wells), page 3-1, states, "[n]o discrete soil samples were retained for laboratory analysis since the field screening methods did not indicate any potential contamination." As stated numerous times in previous NMED's comments, it is necessary to

collect soil samples for laboratory analysis even though field screening did not indicate any potential contamination. At a minimum of three soil samples should have been collected from each boring (e.g., from the bottom of boring, at the water table, and from vadose zone at the depth with the highest PID readings). Include the provision for all future work plans. No revision required.

Comment 8

Section 3.1.2 (SMW-2 Area), page 3-2, states, "[o]ne discrete soil sample was collected from each soil boring. The samples were from the interval exhibiting the highest soil vapor reading." Soil samples should have been collected from each boring to delineate the extent of chloride exceedance. In addition, one discrete sample per boring is not adequate (see Comment 7). NMED's *Approval, Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report]*, dated May 16, 2019 requires the Permittee to submit a work plan to install soil borings to investigate the extent of chloride exceedances. If soil data had been collected from the borings, it could be used to guide the investigation. It is important to collect soil data to provide characterization data for the site.

Comment 9

Section 4.3.1 (Well Installation and Groundwater Sample Collection) includes two subsections titled as "Boundary Wells" and "SMW-2 Areas". The section numbers of "Boundary Wells" and "SMW-2 Areas" are presented incorrectly. The sections regarding "Boundary Wells" and "SMW-2 Areas" are numbered as Section 3.3.1.1 and 3.3.1.2, respectively. These sections should be numbered as Section 4.3.1.1 and 4.3.1.2. Correct the typographical errors in the revised Report.

Comment 10

Section 3.3.1.1 (sic) (Boundary Wells), page 4-7, states, "[t]he well [BW-5A] was installed with the screened interval ranging from 10 feet bgl to 20 feet bgl. The screen was set to intercept possible groundwater that may exist in the gravel and sand encountered from 12 feet bgl to 14 feet bgl and the very fine grain sands encountered within the silty clay from 14 feet bgl to 20.50 feet bgl." The screened interval of well BW-5A should have been set deeper with longer screen. The lithology description for the boring (page 4-6) indicates that the targeted sandy layers were dry. Potential water presence is first recorded at the depth of 30 feet bgs in nearby boring BW-5B. Therefore, groundwater production is unlikely at the depth shallower than 30 feet bgs at the location. In addition, the depth-to-water (DTW) measurements in the closest upgradient groundwater monitoring well MKTF-44 ranged from 22.85 to 31.16 feet bgs in 2017. Since the upper sandy layer and Chinle/Alluvial Interface are unlikely to be different water bearing zones, the groundwater elevation at the location of BW-5A is expected to be comparable to that of well MKTF-44. The DTW data in MKTF-44 should have been used to guide the decision regarding the placement of the well screen. In the future, in order to make appropriate decisions regarding the placement of screened intervals in unconfined or semi-confined aquifers, review the boring logs for nearby wells for the depths where water is potentially present and historic groundwater elevation data in nearby wells. Also, a longer screen (e.g., 20 feet) is acceptable to intercept the water table and to accommodate the trend of decreasing groundwater levels in recent years.

Include the measure to appropriately select screened intervals in future work plans. No revision is required.

Comment 11

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, "[t]he sampling was terminated at 58.5 feet bgl." The statement is misleading. No soil samples were collected from the boring. The statement "[t]he sampling was terminated at..." appears multiple times in the Report. Revise this statement as well as all similar statements that appear in the Report for clarity.

Comment 12

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, "[n]o apparent saturated sediments were encountered [at boring BW-5B]." Although no apparent saturated sediments are encountered, groundwater is produced from well BW-5B. Indications of saturation are not always obvious in tight clay characteristic of the Chinle formation. A 24-hour delay prior to well construction to allow water to enter the boring could aid in appropriate screened interval selection. No response required.

Comment 13

Section 3.3.1.1 (sic) (Boundary Wells), page 4-8, states, "[t]he screen [for well BW-5B] was set to intercept possible groundwater that may exist in the sandstone encountered within the silty clays from 48 feet bgl to 54 feet bgl." Well BW-5B is screened across the Chinle/Alluvial Interface according to Table 7 (Fluid Levels). However, since the sandstone describes the Sonsela formation, well BW-5B is likely screened across Sonsela/Chinle rather than Chinle/Alluvial Interface. Additionally, the DTW measurements for well BW-5B ranged from 8.65 to 10.57 feet bgs according to Table 7. The higher groundwater elevation in well BW-5B in comparison to that of upgradient well MKTF-44 is indicative of confined conditions, typically seen in the Sonsela formation. Revise the Report accordingly or provide explanation for why the Permittee believes well BW-5B is screened to Chinle/Alluvial Interface.

Comment 14

In Section 5 (Regulatory Criteria), page 5-2, the Permittee states, "[o]nly one constituent (dioctyl-phthalate) was detected in groundwater that does not have a screening level." Table 8.2.3 (OW-59 and OW-60 Semi-Volatile and Volatile Organic Compounds, Analytical Results Summary) does not present the detection of di-n-octyl-phthalate. Include all detections of SVOCs and VOCs regardless of presence or absence of screening levels in the table. Revise the Report accordingly.

Comment 15

In Section 6.2 (Groundwater Analytical Results), page 6-3, the Permittee states, "[g]roundwater samples were also analyzed for the following total metals using the indicated analytical methods." Cyanide and mercury are listed following the statement. However, cyanide is not a RCRA metal. Revise the Report accordingly.

Comment 16

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, "[d]etectable concentrations of acetone and benzoic acid were reported in the sample collected from BW-4B. The concentrations were below the screening levels." The tables presenting the analytical results for groundwater samples collected from well BW-4B are not included in the Report. Provide these tables in the revised Report.

Comment 17

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, "[i]n the sample collected from BW-5B acetone, toluene and benzoic acid were reported at concentrations below the screening levels. Detectable concentrations of 1,1-dichloroethane, 1,2-dichloroethane, acetone, MTBE, benzoic acid, di-n-octyl phthalate, and GRO were reported in the sample collected from BW-5C." According to Table 8.1 (BW-5B and BW-5C BTEX and MTBE Analytical Result Summary) and Table 8.1.1 (BW-5B and BW-5C General Chemistry and DRO/GRO/MRO Analytical Result Summary), MTBE and GRO are detected below the screening level in the groundwater sample collected from well BW-5B; however, these detections are not included in the statement. In addition, the detections of acetone and benzoic acid in the groundwater samples collected from well BW-5B are not presented in any tables included in the Report. Similarly, the detections of 1,1-dichloroethane, 1,2-dichloroethane, acetone, benzoic acid, and di-n-octyl phthalate are not presented in any tables included in the Report. Revise the Report for accuracy and include the analytical data tables pertinent to the discussion in the revised Report.

Comment 18

In Section 6.2 (Groundwater Analytical Results), page 6-5, the Permittee states, "[d]etectable concentrations of 1,2,4-trimethybenzene, acetone, MTBE, and benzoic acid, were reported in the groundwater sample collected from OW-59." The tables presenting the detection of 1,2,4-trimethybenzene and benzoic acid are not included in the Report. Include the analytical data tables pertinent to the discussion in the revised Report.

Comment 19

In Section 6.2 (Groundwater Analytical Results), page 6-6, the Permittee states, "[d]etectable concentrations of 4-isopropyltoluene, acetone, MTBE, toluene, benzoic acid, and bis(2-ethyhexyl) phthalate were reported in the groundwater sample collected from OW-60." The tables presenting the detection of 4-isopropyltoluene and benzoic acid are not included in the Report. Include the analytical data tables pertinent to the discussion in the revised Report. In addition, toluene is not detected from well OW-60 according to Table 8.2 (OW-59 and OW-60 BTEX, MTBE, General Chemistry and DRO/GRO/MRO Analytical Result Summary). Revise the Report for accuracy.

Comment 20

In Section 6.3 (SMW-2 Area – Additional Sampling), page 6-7, the Permittee states, "[b]ased on the flow direction of groundwater and the reported concentrations, the elevated chloride concentrations in SMW-2 may be originating from a source located in the area of the OCD Central landfarm, or further up-gradient." The laboratory reports included in the *Response to*

Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report] indicate that the chloride concentrations in the soil samples collected from the OCD Central Landfarm range from 170 mg/kg to 570 mg/kg. With exception of one sample, the chloride concentrations in soil samples collected from the landfarm did not exceed the screening level of 500 mg/kg. Although the chloride concentrations in the excavation confirmation samples, collected from depths of approximately six feet bgs, exceed the screening level in multiple locations, these soil samples were likely collected within the footprint of Evaporation Pond (EP)-10 or native soils below the pond, rather than shallow soils within the OCD Landfarm. Therefore, the landfarm is not the likely source of chloride in groundwater. Since the landfarm overlies former Pond EP-10 and Pond EP-10 may be the source of the chloride contamination in groundwater, the depth of Pond EP-10 must be identified and the soils below the landfarm must be investigated (see Comment 8). Note that the OCD has regulatory authority regarding the chloride and sulfate exceedances in groundwater. Ensure that OCD is included on all correspondence related to this issue.

Comment 21

In Section 6.3 (SMW-2 Area – Additional Sampling), page 6-7, the Permittee states, "[t]he sulfate concentrations increase across the OCD Central landfarm moving down-gradient, with the highest reported concentrations in the area in the groundwater sample collected in OW-59. This could suggest the OCD Central landfarm is a source of the sulfate." The laboratory reports included in the *Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 [Chloride Exceedance Excavation Report]* indicate that the sulfate concentrations in the soil samples collected from the OCD Central Landfarm range from 400 mg/kg to 770 mg/kg. Since the sulfate concentration in groundwater sample collected from well OW-59 is recorded as 3,000 mg/L, the landfarm is not the likely source of sulfate in groundwater. Pond EP-10 that underlies the landfarm also must be investigated for sulfate contamination (see Comment 20).

Comment 22

In Section 7 (Conclusions and Recommendations), page 7-1, the Permittee states, "[i]t is recommended to install additional monitoring wells to better determine if a local source of chloride and/or sulfate is present. An Investigation Work Plan for additional monitoring wells was submitted in August, 2018 pursuant to NMED's request." NMED issued a disapproval for the work plan on February 20, 2019 and required a revised work plan by August 9, 2019. This comment serves as a reminder. No response is required.

Comment 23

The groundwater elevation data collected from well SMW-2 is not included in Figure 5 (Chinle/Alluvium Interface Potentiometric Map September 2017). Although well SMW-2 is screened to the Chinle/Alluvial Interface, the groundwater elevation in well SMW-2 is significantly higher compared to the rest of the wells screened within the same formation in the area. Provide an explanation for the higher groundwater elevation in well SMW-2 in the revised Report.

The Permittee must address all comments in this Disapproval and submit a revised Report. Two bound hard copies and an electronic version of the revised Report must be submitted to NMED. In addition, include a red-line strikeout version in electronic format showing where all revisions to the Report have been made. The revised Report must be accompanied with a response letter that details where revisions have been made, cross-referencing NMED's numbered comments. The revised Report must be submitted to NMED no later than **October 4, 2019**.

If you have questions regarding this Disapproval, please contact Michiya Suzuki of my staff at 505-476-6059.

Sincerely, John E. Kieling Chief

Hazardous Waste Bureau

- cc: K. Van Horn, NMED HWB D. Cobrain, NMED HWB M. Suzuki, NMED HWB C. Chavez, OCD L. King, EPA Region 6 (6LCRRC) B. Moore, WRG
- File: Reading File and WRG 2019 File HWB-WRG-19-008

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April 11, 2019

Mr. John E. Kieling, Chief New Mexico Environmental Department 2905 Rodeo Park Drive East, Building 1 Santa Fe, NM 87505-6303

RE: Response to Comments NMED Approval with Modifications Letter dated March 17, 2017 Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.) EPA ID# NMD000333211 HWB-WRG-17-003

Dear Mr. Kieling:

Attached please find the Response to Comment 5 in the New Mexico Environmental Department (NMED) Disapproval Letter, dated February 20, 2019, regarding the Investigation Work Plan for the SMW-2 and GWM-1 Area. Comment 5 requested a response to the NMED Approval with Modifications Letter, dated March 17, 2017, regarding the September and October 2016 chloride exceedance excavation report for the Central Oil Conservation Division (OCD) Landfarm.

If you have any questions or comments regarding the information contained in the attached report, please do not hesitate to contact Mr. Brian Moore at 505-726-9745.

Certification

I certify under penalty of bw that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properlygatherandevaluate the information submitted. Basedon myinquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of myknowledge and belief, true, accurate, and complete. I amaware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Robert S. Hadr

Robert S. Hanks Refinery General Manager Marathon Petroleum Company – Gallup Refinery

Cc: C. Chavez (OCD)

92 Giant Crossing Road Jamestown, NM 87347

RESPONSE TO COMMENTS

Comments on the September and October 2016 Chloride Exceedance Excavation Report (March 17, 2017 Approval with Modifications Letter)

1. <u>NMED Comment 1:</u>

Generally, NMED has not reviewed the Permittee's chloride reports regarding the OCD Central Landfarm, because they do not fall within NMED's regulatory authority. However, as pointed out in the Report, the Central OCD Landfarm lies within the footprint of Evaporation Pond 10 (EP-10), which is part of Solid Waste Management Unit (SWMU) 2. The OCD regulates the Central OCD Landfarm under 19.15.36 NMAC (also known as Part 36) and required the Permittee to address chloride exceedances discovered in the landfarm. On page 3, paragraph 1, the Permittee states:

"The Response Action Plan and subsequent excavations were intended to satisfy Rule 36 requirements and Central OCD Landfarmspecific agreements reached between Western and OCD. In light of the information presented in this correspondence, Western does not believe that vadose zone chloride concentrations in excess of the 500 mg/kg action level/ABRSC are a result of landfarm operation. Accordingly, Western does not believe that vadose zone chloride contamination needs to be addressed or remediated in accordance with NMAC Rule 36 or previous Central OCD Landfarm-specific agreements. The elevated chloride concentrations are believed to be associated with former Evaporation Pond #10. Former Evaporation Pond #10 is part of Solid Waste Management Unit (SWMU) 2. Therefore, Western believes that it would be appropriate to address the chloride contaminated soils as part of SWMU 2 remedies."

The updated corrective action schedule in the RCRA Permit defers corrective action at SWMU 2 because the unit is an active unit. However, because EP-10 is not being used as an evaporation pond and the Permittee not only has access, but is currently conducting work within the footprint of the pond/landfarm, the Permittee can address OCD's concerns and continue to follow through with the Response Action Plan and Central Landfarm-specific agreements with the OCD.

MPC Response 1:

No comment.

2. <u>NMED Comment 2:</u>

On page 2, under the heading "Former Evaporation Pond #10", the Permittee discusses the rationale behind the belief that the chlorides in the landfarm are from use of EP-10 for boiler house and water softener regeneration effluent.

The Permittee states in paragraph 2 of that section,

"This idea is further supported by soil data collected from the landfarm's treatment zone over the past 4 years. Western has collected 6 treatment zone samples since 2013 to assist in determining if the landfarm may be eligible for closure or soil reuse. As shown in Table 2, the maximum reported chloride concentration for samples collected from the treatment zone (1 ft bgs) is 310 mg/kg. This is less than the 500 mg/kg action level/ABRSC and far less than some of the more elevated vadose zone samples which are in excess of 2,500 mg/kg (see Table I); If soils in the landfarm were the source of the vadose zone chloride concentrations, it would be greater that the treatment zone chloride concentrations, but the data indicate the opposite. This line of evidence suggests a non-landfarm source."

NMED disagrees with this line of evidence. EP-10 has been used at the OCD Central Landfarm since the mid-1990s. Chloride is highly soluble and moves through the vadose zone relatively quickly. It is possible that the high levels of chlorides beneath the treatment zone are from the landfarm and not from former EP-10 discharges. There are also high levels of chlorides in groundwater in this area and NMED and OCD required the Permittee to submit a work plan to investigate this issue. The work plan is currently under review. Provide the dimensions of EP-10 and documents from OCD related to use of the evaporation pond as a landfarm (email response is sufficient).

MPC Response 2:

While Marathon Petroleum Company (MPC) is unaware of any design drawings for Pond 10, the surface expression of the pond currently appears to be approximately 325 feet by 200 feet. The figure included as Attachment A illustrates the possible location of former Pond 10. Also, please find attached an email exchange with Carl Chavez regarding the possible location of Pond 10 over the OCD Landfarm.

3. <u>NMED Comment 3:</u>

OCD's Rule 36 requires that semiannual vadose zone samples be analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and, chloride. Sampling results for TPH and BTEX were not included with the Report. If samples were collected for TPH and BTEX analyses, provide the results to OCD and NMED.

MPC Response 3:

Attachment B to this response provides the analytical results for samples collected in 2016.

4. NMED Comment 4:

If, at a future time, the Permittee chooses to close the OCD Central Landfarm, then the Permittee may also propose to conduct corrective action under the RCRA Permit and submit a work plan to NMED for review. The information gathered at that time may be used to support future corrective action activities at SWMU 2. A letter titled *Clarification of RCRA Corrective Action Process Evaporation Pond Closure Plan*, dated April 11, 2008 outlined the general requirements for the RCRA corrective action process and NMED can provide additional guidance when the time comes.

MPC Response 4:

No comment.



Attachment A Pond 10 Location Map OCD Email Exchange



AP - 111

LANDFARMS

2017

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Thursday, February 2, 2017 10:57 AM
То:	'Ed.Riege@wnr.com'
Cc:	Griswold, Jim, EMNRD; Smith, Cory, EMNRD; VanHorn, Kristen, NMENV
Subject:	Gallup Refinery (AP-111) "September and October 2016 Chloride Exceedance Excavation Report" dated January 25, 2017

Mr. Riege:

Re: OCD Central Landfarm

The New Mexico Oil Conservation Division (OCD) and New Mexico Environment Department (NMED) (Agencies) have completed review of the above subject report (report).

On page 3, "Proposed Path Forward", paragraph 1: The OCD Central Landfarm was built within Evaporation Pond 10 which is part of SWMU 2 (Evaporation Ponds) under Western's RCRA Permit. The updated schedule in the RCRA Permit lists corrective action at SWMU 2 as deferred since the SWMU is still in use. However, since Evaporation Pond 10 is not in use as an evaporation pond, Western can access soils for chloride remediation to address OCD's concerns. Additionally, the landfarm is permitted by OCD under Part 36 (i.e., 19.15.36 NMAC), so the continued operation of the landfarm also falls under OCD Regulations. OCD agrees with Western's proposed hot spot corrective actions in the report. Documentation (i.e., photos of excavation, C-138 manifest, etc. is required within 30-days of completion of corrective actions to verify the remediation was completed.

If Western plans to close the OCD Central Landfarm, NMED recommends in addition to OCD Regulations that NMED RCRA requirements also be addressed at the same time to avoid re-investigation of the area during SWMU 2 corrective action. OCD cannot guarantee that alternate remedial limits would be required based on the proposed source of contamination; however, OCD would consider recommended closure limits with the scientific basis if proposed in a landfarm closure plan by Western to the agencies.

Please contact me if you have questions, to request a telephone conference call, or wish to discuss this matter further. Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490 E-mail: <u>CarlJ.Chavez@state.nm.us</u>

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: <u>http://www.emnrd.state.nm.us/OCD</u> and see "Publications")

Chavez, Carl J, EMNRD

From:	Riege, Ed <ed.riege@wnr.com></ed.riege@wnr.com>
Sent:	Thursday, January 26, 2017 10:19 AM
То:	Chavez, Carl J, EMNRD
Cc:	Griswold, Jim, EMNRD; VanHorn, Kristen, NMENV; Hains, Allen
Subject:	September and October 2016 Chloride Exceedance Excavation Report
Attachments:	201701250903.pdf

Carl,

Please see attached correspondence chloride excavation report. The email does not include attachments due to size. A hard copy is being sent certified mail to you and Kristen.

Thanks, Ed

Ed Riege Remediation Manager

Western Refining Gallup Refinery 92 Giant Crossing Road Gallup, NM 87301 (505) 722-0217 ed.riege@wnr.com





January 25, 2017

Mr. Carl J. Chavez Environmental Engineer New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division 1220 South St. Francis Drive Santa Fe, NM 87505

RE: September and October 2016 Chloride Exceedance Excavation Report Central Oil Conservation Division Landfarm Western Refining Company Southwest, Inc., Gallup Refinery, Gallup, New Mexico

Dear Mr. Chavez:

Western Refining Company Southwest, Inc. (Western) is submitting this correspondence to present the results of chloride-contaminated soil excavation and confirmation sampling conducted in accordance with the "Chloride Exceedance Response Action Plan, Central Oil Conservation Division Landfarm, Western Refining Company Southwest, Inc., Gallup Refinery, Gallup, New Mexico" (Response Action Plan), dated July 26, 2016. This correspondence is also intended to inform the Oil Conservation Division (OCD) of a recently discovered non-landfarm chloride potential alternate source believed to be the cause of the elevated chloride concentrations reported in samples collected from the vadose zone beneath the Central OCD Landfarm.

Background

Semiannual vadose zone monitoring is conducted at random locations in accordance with New Mexico Administrative Code (NMAC) Rule 36 (19.15.36 NMAC). The landfarm had been divided into 6 foot (ft) by 6 ft grids to assist with random sample location selection. As required by the Response Action Plan, Western excavated chloride-contaminated soil associated with two these grids. Chloride contamination was originally identified within these grids during the April 2016 semiannual vadose zone sampling event and the June 2016 confirmation sampling event. Per the Response Action Plan, soils with chloride concentrations in excess of the 500 milligram per kilogram (mg/kg) action level/alternate beneficial reuse screening concentration (ABRSC) were to be excavated. Confirmation samples were to be collected from the floor of the excavations, as well as the from the sidewalls of the excavation at the depths of the original exceedances (6 ft below ground surface (bgs)) in the four cardinal directions. The excavations were to be extended or deepened in the direction of chloride concentrations in excess of 500 mg/kg, as determined via the confirmation sampling.

Excavation Extents and Confirmation Sampling Results

Excavation of chloride-contaminated soils began in September 2016 and continued through October 2016. Western contracted Trihydro Corporation (Trihydro) to oversee excavation completion and collect confirmation samples. The two grids scheduled for excavation were grids 1021 and 2271. The

Mr. Carl J. Chavez January 25, 2017 Page 2

excavations associated with each grid are shown on Figure 1. Confirmation sampling results are summarized in Table 1. Analytical laboratory reports and data validation reports are provided as Attachments A and B, respectively.

As shown in Table 1, the chloride concentrations reported for the September 2016 floor and sidewall samples associated with Grid 1021 are below the 500 mg/kg action level/ARBSC. Accordingly, the excavation of chloride-contaminated soil associated with Grid 1021 was deemed complete. The approximate excavation extents are illustrated on Figure 1, and the total depth of the excavation is 8 ft bgs.

Chloride concentrations reported for two of the September 2016 sidewall samples associated with Grid 2271 exceed the 500 mg/kg action level/ARBSC. In response to these confirmation sample exceedances, the excavation was expanded in the direction of the exceedances and additional confirmation samples were collected. Two such excavation expansion/resampling events were conducted in October 2016, and as shown on Figure 1, sidewall sample exceedances persist on the northern and eastern excavation boundaries. The growing size of the Grid 2271 excavation and the fact that contamination appears to extend to and possibly beyond the berms of the landfarm prompted Gallup and Trihydro to regroup and assess whether the current excavation plans (those outlined in the Response Action Plan) remain appropriate. This resulted in the acknowledgement that the refinery's former Evaporation Pond #10 occupied nearly the exact footprint of the Central OCD Landfarm prior to landfarm operation. Figure 2 illustrates the location of the former Evaporation Pond #10 is believed to be the source of the elevated chloride concentrations present in the vadose zone soils beneath the Central OCD Landfarm.

Former Evaporation Pond # 10

According to the "Inventory of Solid Waste Management Units", dated June 14, 1985, "cell" or Evaporation Pond # 10 received "wastewater from the boiler house and water softener regeneration wastes". The pond was replaced in 1980 with an in-line neutralization tank. Both of these wastes would be expected to contain elevated chloride concentrations. Since these wastes were stored in the unlined evaporation pond whose footprint is similar to the Central OCD Landfarm prior to landfarm operation, it is likely that the pond may have contributed to the chloride contamination in the area and may be the cause of the vadose zone chloride exceedances.

This idea is further supported by soil data collected from the landfarm's treatment zone over the past four years. Western has collected 6 treatment zone samples since 2013 to assist in determining if the landfarm may be eligible for closure or soil reuse. As shown in Table 2, the maximum reported chloride concentration for samples collected from the treatment zone (1 ft bgs) is 310 mg/kg. This is less than the 500 mg/kg action level/ABRSC and far less than some of the more elevated vadose zone samples which are in excess of 2,500 mg/kg (see Table 1). If soils treated in the landfarm were the source of the vadose zone chloride contamination, it would be expected that the treatment zone chloride concentrations would be greater than the vadose zone chloride concentrations, but the data indicate the opposite. This line of evidence suggests a non-landfarm chloride source.

Mr. Carl J. Chavez January 25, 2017 Page 3

Proposed Path Forward

OCD Landfarm operation is governed by NMAC Rule 36. The Response Action Plan and subsequent excavations were intended to satisfy Rule 36 requirements and Central OCD Landfarm-specific agreements reached between Western and OCD. In light of the information presented in this correspondence, Western does not believe that vadose zone chloride concentrations in excess of the 500 mg/kg action level/ABRSC are a result of landfarm operation. Accordingly, Western does not believe vadose zone chloride contamination needs be addressed or remedied in accordance with NMAC Rule 36 or previous Central OCD Landfarm-specific agreements. The elevated chloride concentrations are believed to be associated with former Evaporation Pond # 10. Former Evaporation Pond # 10 is part of Solid Waste Management Unit (SWMU) 2. Therefore, Western believes that it would be appropriate to address the chloride contaminated soil as part of SWMU 2 remedies.

Western does intend to dispose of the already excavated chloride contaminated soil at an off-site disposal facility permitted to receive such wastes and to the fill the excavations with clean fill material. The excavated soil is currently stock piled on plastic sheeting within the landfarm berms. Pending OCD approval of this correspondence, Western will begin soil disposal and excavation backfilling.

Western is also still considering closure of the Central OCD landfarm. When closure is sought, Western believes that closure should still be conducted in general accordance with NMAC Rule 36. However, Central OCD Landfarm-specific agreements reached between Western and OCD, as well as the alternate chloride source identified in this correspondence (i.e., former Evaporation Pond # 10) should be taken into consideration. Pending OCD approval of this correspondence, Western will discuss closure details and expectations with OCD. If you have any questions or comments, please do not hesitate to call me at (505) 722-0217.

Sincerely, Western Refining Company Southwest, Inc.

Ed Riege Remediation Manager

697-052-003

Attachments

cc: G. Price, Trihydro Corporation K. Van Horn, NMED TABLES

1

ample Type	Sample ID	Date Sampled	Chloride (mg/kg)
irid 1021 Confirmation Sample	CentralOCD-1021-09062016-F	09/06/16	270
irid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-E	09/06/16	130
irid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-E Dup	09/06/16	110
irid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-N	09/06/16	160
irid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-S	09/06/16	280
irid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-W	09/06/16	490
irid 2271 Confirmation Sample	CentralOCD-2271-09062016-F	09/06/16	170
irid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-E	09/06/16	1500
rid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-N	09/06/16	2200
irid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-S	09/06/16	160
irid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-W	09/06/16	300
irid 2271 Confirmation Sample	CentralOCD-2271-10062016-SW-E	10/06/16	800
trid 2271 Confirmation Sample	CentralOCD-2271-10062016-SW-E Dup	10/06/16	480
irid 2271 Confirmation Sample	CentralOCD-2271-10062016-SW-N	10/06/16	790
irid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-E	10/20/16	640
irid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-E Dup	10/20/16	600
irid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-NE	10/20/16	2600
irid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-NW	10/20/16	2600

Action Level and ABRSC

Notes: Action Level/Alternate Beneficial Reuse Soil Screening Level (ABRSC) exceedances are shown in bold font. ProjectDirect Analytical Chloride Excavation Report Table 1 PK:87 RK:52965

1 of 1

500

Sample Type Sample ID Date Sampled Chloride Treatment Zone Sample CentralOCD-TZ_032713 03/27/13 03/27/13 03/27/13 Treatment Zone Sample CentralOCD-TZ_030614 09/16/14 130 130 Treatment Zone Sample CentralOCD-TZ_04052015 04/06/15 130 130 Treatment Zone Sample CentralOCD-TZ_04072015 04/07/16 260 260 Treatment Zone Sample CentralOCD-TZ-04072015 06/16/16 260 260		TABLE 2. HISTORICAL TREATMENT ZO WESTERN REFINING COMPANY S(DNE CHLORIDE ANALYTICAL DATA S OUTHWEST, INC., GALLUP, NEW ME	SUMMARY EXICO	
Treatment Zone Sample CentralOCD-TZ_032713 03/27/13 310 Treatment Zone Sample CentralOCD-TZ_091614 0.0/6/14 1.30 Treatment Zone Sample CentralOCD-TZ_0402015 0.40/6/15 1.30 Treatment Zone Sample CentralOCD-TZ_04072015 0.40/0716 2.80 Treatment Zone Sample CentralOCD-TZ_0402015 0.40/0716 2.80 Treatment Zone Sample CentralOCD-TZ_0612016 0.6/16/16 2.80 Treatment Zone Sample CentralOCD-TZ_0612016 0.6/16/16 2.80	Sample Type	Sample ID	Date Sampled	Chloride (ma/ka)	
Tireatment Zone Sample Central OCD-T-IZ_03161 09/16/14 130 Treatment Zone Sample Central OCD-T-IZ_1032015 04/06/15 130 Treatment Zone Sample Central OCD-TZ-142015 04/07/16 280 Treatment Zone Sample Central OCD-TZ-142015 04/07/16 280 Treatment Zone Sample Central OCD-TZ-06162016 06/16/16 280 Treatment Zone Sample Central OCD-TZ-06162016 06/16/16 280	Treatment Zone Sample	CentralOCD-TZ_032713	03/27/13	310	ľ
Treatment Zone Sample CentralOCD-TZ-04082015 04/06/15 130 Treatment Zone Sample CentralOCD-TZ-04072015 04/07/15 280 Treatment Zone Sample CentralOCD-TZ-04072015 04/07/16 260 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290	Treatment Zone Sample	CentralOCD-TZ_091614	09/16/14	130	
Treatment Zone Sample Central OCD-TZ-1124015 11/24/15 280 Treatment Zone Sample CentralOCD-TZ-04072016 04/07/16 260 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290	Treatment Zone Sample	CentralOCD-TZ-04062015	04/06/15	130	
Treatment Zone Sample CentralOCD-TZ-04072016 04/07/16 260 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290	Treatment Zone Sample	Central OCD-TZ-11242015	11/24/15	280	
Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290 290	Treatment Zone Sample	CentralOCD-TZ-04072016	04/07/16	260 J	
	Treatment Zone Sample	CentralOCD-TZ-06162016	06/16/16	290	
Action Level and ABRSC 500	Action Level and ABRSC			500	

Notes: Action Level/Atternate Beneficial Reuse Soll Screening Level (ABRSC) exceedances are shown in bold font. J - Estimated concentration

ProjectDirect: Analytical Chloride Excavation Report Table 2 PK:87 RK:52988

1 of 1

FIGURES





Attachment B 2016 Analytical Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

July 19, 2016

Ed Riege Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-3833 FAX (505) 722-0210

RE: OCD Central Landfarm Semiannual Sampling

OrderNo.: 1606995

Dear Ed Riege:

Hall Environmental Analysis Laboratory received 9 sample(s) on 6/17/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 15, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> or the state specific web sites. 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. All samples are reported as received unless otherwise indicated.

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

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-01-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:20:00 PM Lab ID: 1606995-001 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 4.4 0.042 0.30 mg/Kg 1 6/27/2016 10:00:56 PM 26092 Chloride 330 12 30 mg/Kg 20 6/27/2016 10:13:21 PM 26092 Nitrogen, Nitrate (As N) 2.9 0.016 0.30 mg/Kg 6/27/2016 10:00:56 PM 1 26092 20 6/27/2016 10:13:21 PM Sulfate 550 5.4 30 mg/Kg 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD Mercury 0.013 0.00053 0.031 J mg/Kg 1 6/28/2016 9:21:40 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED 0.70 6/30/2016 10:50:31 AM Arsenic 1.1 2.4 J mg/Kg 1 26123 Barium 150 0.046 0.096 6/30/2016 10:50:31 AM 26123 mg/Kg 1 Cadmium ND 0.061 0.096 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Chromium 8.0 0.12 0.29 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Copper 0.15 0.29 mg/Kg 1 6/30/2016 10:50:31 AM 3.4 26123 Iron 13000 93 240 100 mg/Kg 6/30/2016 10:31:34 AM 26123 0.17 Lead 3.2 0.24 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Manganese 280 0.085 0.19 mg/Kg 2 6/30/2016 11:28:12 AM 26123 Selenium ND 1.0 2.4 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Silver ND 0.030 0.24 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Uranium ND 0.95 4.8 6/30/2016 10:50:31 AM 26123 mg/Kg 1 Zinc 14 0.54 2.4 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 0.17 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.16 D 6/30/2016 2:11:19 PM Acenaphthylene 0.40 mg/Kg 1 26116 Aniline ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Anthracene ND 0.13 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.24 D 6/30/2016 2:11:19 PM Azobenzene 0.40 mg/Kg 1 26116 Benz(a)anthracene ND 0.17 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.15 0.40 D 6/30/2016 2:11:19 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.18 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D Benzo(g,h,i)perylene 0.17 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Benzo(k)fluoranthene ND 0.17 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Benzoic acid ND 0.16 0.99 6/30/2016 2:11:19 PM mg/Kg 1 26116 Benzvl alcohol ND 0.16 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Bis(2-chloroethoxy)methane ND 0.22 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Bis(2-chloroethyl)ether ND 0.15 0.40 D mg/Kg 6/30/2016 2:11:19 PM 26116 1 D Bis(2-chloroisopropyl)ether ND 0.18 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Bis(2-ethylhexyl)phthalate 0.99 JD 6/30/2016 2:11:19 PM 0.19 0.16 mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Butyl benzyl phthalate ND 0.18 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 1 of 49

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-01-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:20:00 PM Lab ID: 1606995-001 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Carbazole ND 0.13 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 4-Chloro-3-methylphenol ND 0.24 0.99 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.22 0.99 D 6/30/2016 2:11:19 PM 4-Chloroaniline mg/Kg 1 26116 2-Chloronaphthalene ND D 6/30/2016 2:11:19 PM 0.16 0.50 mg/Kg 1 26116 ND D 2-Chlorophenol 0.16 0.40 mg/Kg 6/30/2016 2:11:19 PM 1 26116 4-Chlorophenyl phenyl ether ND 0.23 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Chrysene ND 0.17 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Di-n-butyl phthalate 0.17 0.15 0.79 JD mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Di-n-octyl phthalate ND 0.17 0.79 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Dibenz(a,h)anthracene ND 0.16 0.40 D 6/30/2016 2:11:19 PM mg/Kg 1 26116 Dibenzofuran ND 0.20 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 1,2-Dichlorobenzene ND 0.15 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.15 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 1,3-Dichlorobenzene D ND 0.17 0.40 6/30/2016 2:11:19 PM 1,4-Dichlorobenzene mg/Kg 1 26116 ND D 3,3'-Dichlorobenzidine 0.15 0.50 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D Diethyl phthalate 0.20 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Dimethyl phthalate ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2,4-Dichlorophenol ND 0.18 0.79 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2,4-Dimethylphenol ND 0.22 0.60 D 6/30/2016 2:11:19 PM 26116 mg/Kg 1 D 4,6-Dinitro-2-methylphenol ND 0.12 0.79 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D 6/30/2016 2:11:19 PM 2,4-Dinitrophenol 0.13 0.99 mg/Kg 1 26116 2,4-Dinitrotoluene ND 0.18 0.99 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2,6-Dinitrotoluene ND 0.21 0.99 D 6/30/2016 2:11:19 PM 26116 mg/Kg 1 Fluoranthene ND 0.40 D 6/30/2016 2:11:19 PM 26116 0.11 mg/Kg 1 ND 0.18 D Fluorene 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D Hexachlorobenzene 0.16 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.22 0.40 D 6/30/2016 2:11:19 PM Hexachlorobutadiene mg/Kg 1 26116 Hexachlorocyclopentadiene ND 0.23 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.17 D Hexachloroethane 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.15 0.40 D mg/Kg 6/30/2016 2:11:19 PM 26116 Indeno(1,2,3-cd)pyrene 1 D 1-Methylnaphthalene ND 0.20 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 2-Methylnaphthalene ND 0.24 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2-Methylphenol ND 0.17 0.79 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 3+4-Methylphenol ND 0.14 0.40 D 6/30/2016 2:11:19 PM 26116 mg/Kg 1 N-Nitrosodi-n-propylamine ND 0.19 0.40 D 6/30/2016 2:11:19 PM mg/Kg 1 26116 N-Nitrosodiphenylamine ND 0.19 D 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Naphthalene ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 D 2-Nitroaniline ND 0.40 6/30/2016 2:11:19 PM 0.21 mg/Kg 1 26116 3-Nitroaniline ND 0.17 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Oualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 2 of 49

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semiann	Client Sample ID: CentralOCD-01-6/16/2016 Collection Date: 6/16/2016 12:20:00 PM							
Lab ID: 1606995-001	SOIL	SOIL Received Date: 6/17/2016 10:00:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	0.14	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Nitrobenzene	ND	0.20	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
2-Nitrophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
4-Nitrophenol	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Pentachlorophenol	ND	0.13	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Phenanthrene	ND	0.13	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Phenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Pyrene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Pyridine	ND	0.16	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
1,2,4-Trichlorobenzene	ND	0.21	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
2,4,5-Trichlorophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
2,4,6-Trichlorophenol	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Surr: 2-Fluorophenol	63.8	0	28.3-102	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: Phenol-d5	69.5	0	35.7-103	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: 2,4,6-Tribromophenol	80.0	0	35.2-108	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: Nitrobenzene-d5	75.2		24-118	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: 2-Fluorobiphenyl	86.6		35.4-111	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: 4-Terphenyl-d14	65.6		15-91.7	D	%Rec	1	6/30/2016 2:11:19 PM	26116
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.018	0.023		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Toluene	ND	0.0027	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Ethylbenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Methyl tert-butyl ether (MTBE)	ND	0.014	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2,4-Trimethylbenzene	ND	0.0034	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,3,5-Trimethylbenzene	ND	0.0033	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dichloroethane (EDC)	ND	0.012	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dibromoethane (EDB)	ND	0.0032	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Naphthalene	ND	0.0071	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1-Methylnaphthalene	ND	0.010	0.18		mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Methylnaphthalene	ND	0.0098	0.18		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Acetone	ND	0.059	0.68		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromobenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromodichloromethane	ND	0.0027	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromoform	ND	0.0056	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromomethane	0.019	0.017	0.14	J	mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Butanone	ND	0.026	0.46		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Carbon disulfide	ND	0.015	0.46		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Carbon tetrachloride	ND	0.0030	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Chlorobenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923

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

R RPD outside accepted recovery limits

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	VT: Western Refining Southwest, Gallup			Client Sample ID: CentralOCD-01-6/16/2016					
Project:	OCD Central Landfarm Semiannual Sam			Collection Date: 6/16/2016 12:20:00 PM					
Lab ID:	1606995-001 Matrix: SOIL			Received Date: 6/17/2016 10:00:00 AM					
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA MET	HOD 8260B: VOLATILES							Analyst: DJF	
Chloroeth	ane	ND	0.0091	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Chlorofor	m	ND	0.0034	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Chlorome	thane	0.081	0.0041	0.14	J	mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Chlorote	oluene	ND	0.0034	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
4-Chlorote	oluene	ND	0.0040	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
cis-1,2-D0	CE	ND	0.0027	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
cis-1,3-Di	chloropropene	ND	0.0042	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dibroi	mo-3-chloropropane	ND	0.014	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Dibromoc	hloromethane	ND	0.0041	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Dibromon	nethane	ND	0.0040	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dichlo	probenzene	ND	0.0040	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,3-Dichlo	probenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,4-Dichlo	probenzene	ND	0.0057	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Dichlorod	ifluoromethane	ND	0.014	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1-Dichlo	proethane	ND	0.0025	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1-Dichlo	proethene	ND	0.015	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dichlo	propropane	ND	0.0038	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,3-Dichlo	propropane	ND	0.0052	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
2,2-Dichlo	propropane	ND	0.0026	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1-Dichlo	propropene	ND	0.0036	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Hexachlo	robutadiene	ND	0.0056	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Hexano	ne	ND	0.025	0.46		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Isopropyl	penzene	ND	0.0039	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
4-Isoprop	yltoluene	ND	0.0041	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
4-Methyl-2	2-pentanone	ND	0.013	0.46		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Methylene	e chloride	ND	0.013	0.14		mg/Kg	1	6/20/2016 8:01:30 PM	25923
n-Butylbe	nzene	ND	0.0040	0.14		mg/Kg	1	6/20/2016 8:01:30 PM	25923
n-Propylb	enzene	ND	0.0035	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
sec-Butyll	benzene	ND	0.0063	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Styrene		ND	0.0041	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
tert-Butylk	penzene	ND	0.0038	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1,1,2-Te	etrachloroethane	ND	0.0044	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1,2,2-Te	etrachloroethane	ND	0.0074	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Tetrachlo	roethene (PCE)	ND	0.0038	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
trans-1,2-	DCE	ND	0.013	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
trans-1,3-	Dichloropropene	ND	0.0067	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2,3-Tric	hlorobenzene	ND	0.0068	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2,4-Tric	hlorobenzene	ND	0.0049	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1,1-Tric	hloroethane	ND	0.0028	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923

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

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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 49
Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-01-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:20:00 PM Lab ID: 1606995-001 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Analyses MDL Qual Units DF **Date Analyzed Batch ID EPA METHOD 8260B: VOLATILES** Analyst: DJF 6/20/2016 8:01:30 PM 1,1,2-Trichloroethane ND 0.0054 0.046 mg/Kg 1 25923 Trichloroethene (TCE) ND 0.0049 0.046 mg/Kg 1 6/20/2016 8:01:30 PM 25923 Trichlorofluoromethane ND 0.0034 0.046 mg/Kg 6/20/2016 8:01:30 PM 25923 1 1,2,3-Trichloropropane ND 0.0079 0.091 mg/Kg 6/20/2016 8:01:30 PM 25923 1 Vinyl chloride ND 0.0037 0.046 mg/Kg 1 6/20/2016 8:01:30 PM 25923 Xylenes, Total ND 0.0086 0.091 mg/Kg 1 6/20/2016 8:01:30 PM 25923 Surr: Dibromofluoromethane 108 70-130 %Rec 1 6/20/2016 8:01:30 PM 25923 Surr: 1,2-Dichloroethane-d4 106 70-130 %Rec 1 6/20/2016 8:01:30 PM 25923 6/20/2016 8:01:30 PM Surr: Toluene-d8 95.3 70-130 %Rec 1 25923 Surr: 4-Bromofluorobenzene 98.7 70-130 %Rec 1 6/20/2016 8:01:30 PM 25923 EPA METHOD 418.1: TPH Analyst: TOM Petroleum Hydrocarbons, TR 8.5 6/23/2016 25996 33 20 mg/Kg 1

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-02-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:50:00 PM Lab ID: 1606995-002 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT 6/27/2016 10:25:45 PM Fluoride 3.4 0.042 0.30 mg/Kg 1 26092 Chloride 350 12 30 mg/Kg 20 6/27/2016 10:38:10 PM 26092 Nitrogen, Nitrate (As N) 8.8 0.016 0.30 mg/Kg 1 6/27/2016 10:25:45 PM 26092 mg/Kg 20 6/27/2016 10:38:10 PM Sulfate 400 5.4 30 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD Mercury 0.0033 0.00057 0.033 J mg/Kg 1 6/28/2016 9:25:13 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED 6/30/2016 3:45:33 PM Arsenic 0.88 0.71 2.4 J mg/Kg 1 26123 Barium 170 0.047 0.098 6/30/2016 3:45:33 PM 26123 mg/Kg 1 Cadmium ND 0.062 0.098 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Chromium 8.1 0.12 0.29 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Copper 0.15 0.29 mg/Kg 1 6/30/2016 3:45:33 PM 26123 2.4 Iron 13000 95 240 100 mg/Kg 6/30/2016 10:33:05 AM 26123 0.17 Lead 3.6 0.24 mg/Kg 1 6/30/2016 3:45:33 PM 26123 0.098 Manganese 230 0.043 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Selenium ND 1.1 2.4 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Silver ND 0.031 0.24 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Uranium ND 0.97 4.9 1 6/30/2016 3:45:33 PM 26123 mg/Kg Zinc 13 0.56 2.4 mg/Kg 1 6/30/2016 3:45:33 PM 26123 **EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Acenaphthene ND 0.085 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 0.081 0.20 6/30/2016 2:39:19 PM Acenaphthylene ND mg/Kg 1 26116 Aniline ND 0.094 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Anthracene ND 0.066 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.20 Azobenzene 0.12 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Benz(a)anthracene ND 0.086 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.075 0.20 6/30/2016 2:39:19 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.090 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.088 Benzo(g,h,i)perylene 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Benzo(k)fluoranthene ND 0.088 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Benzoic acid ND 0.082 0.50 1 6/30/2016 2:39:19 PM mg/Kg 26116 Benzvl alcohol ND 0.078 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Bis(2-chloroethoxy)methane ND 0.11 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Bis(2-chloroethyl)ether ND 0.073 0.20 6/30/2016 2:39:19 PM 26116 mg/Kg 1 Bis(2-chloroisopropyl)ether ND 0.089 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Bis(2-ethylhexyl)phthalate 0.081 0.50 J 6/30/2016 2:39:19 PM 0.10 mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.095 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Butyl benzyl phthalate ND 0.088 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order **1606995** Date Reported: **7/19/2016**

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-02-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:50:00 PM Lab ID: 1606995-002 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 6/30/2016 2:39:19 PM Carbazole ND 0.067 0.20 mg/Kg 1 26116 4-Chloro-3-methylphenol ND 0.12 0.50 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.50 4-Chloroaniline 0.11 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2-Chloronaphthalene ND 0.078 0.25 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 2-Chlorophenol 0.078 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 4-Chlorophenyl phenyl ether ND 0.11 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Chrysene ND 0.085 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Di-n-butyl phthalate 0.092 0.074 0.40 J mg/Kg 1 6/30/2016 2:39:19 PM 26116 Di-n-octyl phthalate ND 0.085 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Dibenz(a,h)anthracene ND 0.080 0.20 6/30/2016 2:39:19 PM mg/Kg 1 26116 Dibenzofuran ND 0.10 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 1,2-Dichlorobenzene ND 0.076 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.077 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 1,3-Dichlorobenzene ND 0.084 0.20 1 1,4-Dichlorobenzene mg/Kg 6/30/2016 2:39:19 PM 26116 ND 3,3'-Dichlorobenzidine 0.073 0.25 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND Diethyl phthalate 0.10 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Dimethyl phthalate ND 0.097 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,4-Dichlorophenol ND 0.093 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,4-Dimethylphenol ND 0.11 0.30 6/30/2016 2:39:19 PM 26116 mg/Kg 1 4,6-Dinitro-2-methylphenol ND 0.060 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.066 2,4-Dinitrophenol 0.50 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,4-Dinitrotoluene ND 0.089 0.50 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,6-Dinitrotoluene ND 0.11 0.50 1 6/30/2016 2:39:19 PM 26116 mg/Kg Fluoranthene ND 0.057 0.20 6/30/2016 2:39:19 PM 26116 mg/Kg 1 ND Fluorene 0.091 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Hexachlorobenzene ND 0.078 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Hexachlorobutadiene ND 0.11 0.20 6/30/2016 2:39:19 PM mg/Kg 1 26116 Hexachlorocyclopentadiene ND 0.11 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.085 Hexachloroethane 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.078 0.20 1 6/30/2016 2:39:19 PM 26116 Indeno(1,2,3-cd)pyrene mg/Kg 1-Methylnaphthalene ND 0.10 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 0.12 2-Methylnaphthalene ND 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2-Methylphenol ND 0.083 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 3+4-Methylphenol ND 0.072 0.20 6/30/2016 2:39:19 PM 26116 mg/Kg 1 N-Nitrosodi-n-propylamine ND 0.096 0.20 6/30/2016 2:39:19 PM mg/Kg 1 26116 N-Nitrosodiphenylamine ND 0.097 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Naphthalene ND 0.095 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2-Nitroaniline ND 0.20 1 0.11 mg/Kg 6/30/2016 2:39:19 PM 26116 3-Nitroaniline ND 0.088 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Oualifiers:

- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semiann Lab ID: 1606995-002	llup wal Sam Matrix:	SOIL	Client Sample ID: CentralOCD-02-6/16/2016 Collection Date: 6/16/2016 12:50:00 PM OIL Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC			
4-Nitroaniline	ND	0.070	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
Nitrobenzene	ND	0.10	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
2-Nitrophenol	ND	0.099	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
4-Nitrophenol	ND	0.076	0.25		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
Pentachlorophenol	ND	0.064	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
Phenanthrene	ND	0.068	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
Phenol	ND	0.075	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
Pyrene	ND	0.075	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
Pyridine	ND	0.079	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
2,4,5-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
2,4,6-Trichlorophenol	ND	0.083	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116		
Surr: 2-Fluorophenol	59.5	0	28.3-102		%Rec	1	6/30/2016 2:39:19 PM	26116		
Surr: Phenol-d5	69.6	0	35.7-103		%Rec	1	6/30/2016 2:39:19 PM	26116		
Surr: 2,4,6-Tribromophenol	80.2	0	35.2-108		%Rec	1	6/30/2016 2:39:19 PM	26116		
Surr: Nitrobenzene-d5	68.1		24-118		%Rec	1	6/30/2016 2:39:19 PM	26116		
Surr: 2-Fluorobiphenyl	75.7		35.4-111		%Rec	1	6/30/2016 2:39:19 PM	26116		
Surr: 4-Terphenyl-d14	58.0		15-91.7		%Rec	1	6/30/2016 2:39:19 PM	26116		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
Benzene	ND	0.020	0.025		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Toluene	ND	0.0030	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Ethylbenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Methyl tert-butyl ether (MTBE)	ND	0.016	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
1,2,4-Trimethylbenzene	ND	0.0037	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
1,3,5-Trimethylbenzene	ND	0.0036	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
1,2-Dichloroethane (EDC)	ND	0.013	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
1,2-Dibromoethane (EDB)	ND	0.0035	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Naphthalene	ND	0.0078	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
1-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
2-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Acetone	ND	0.064	0.75		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Bromobenzene	ND	0.0040	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Bromodichloromethane	ND	0.0029	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Bromoform	ND	0.0061	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Bromomethane	ND	0.018	0.15		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
2-Butanone	ND	0.028	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Carbon disulfide	ND	0.016	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Carbon tetrachloride	ND	0.0033	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Chlorobenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
					-					

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

R RPD outside accepted recovery limits

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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semiann Lab ID: 1606995-002	llup ual Sam Matrix:	SOIL	Client Sample ID: CentralOCD-02-6/16/2016 Collection Date: 6/16/2016 12:50:00 PM Received Date: 6/17/2016 10:00:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8260B: VOLATILES							Analyst: DJF		
Chloroethane	ND	0.0099	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Chloroform	ND	0.0038	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Chloromethane	0.080	0.0044	0.15	J	mg/Kg	1	6/20/2016 8:29:59 PM	25923	
2-Chlorotoluene	ND	0.0037	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
4-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
cis-1,2-DCE	ND	0.0029	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
cis-1,3-Dichloropropene	ND	0.0046	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2-Dibromo-3-chloropropane	ND	0.015	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Dibromochloromethane	ND	0.0045	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Dibromomethane	ND	0.0043	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,3-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,4-Dichlorobenzene	ND	0.0062	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Dichlorodifluoromethane	ND	0.015	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,1-Dichloroethane	ND	0.0027	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,1-Dichloroethene	ND	0.016	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2-Dichloropropane	ND	0.0042	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,3-Dichloropropane	ND	0.0057	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
2,2-Dichloropropane	ND	0.0029	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,1-Dichloropropene	ND	0.0040	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Hexachlorobutadiene	ND	0.0061	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
2-Hexanone	ND	0.027	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Isopropylbenzene	ND	0.0043	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
4-Isopropyltoluene	ND	0.0045	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
4-Methyl-2-pentanone	ND	0.015	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Methylene chloride	ND	0.014	0.15		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
n-Propylbenzene	ND	0.0038	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
sec-Butylbenzene	ND	0.0069	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Styrene	ND	0.0045	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
tert-Butylbenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,1,1,2-Tetrachloroethane	ND	0.0048	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,1,2,2-Tetrachloroethane	ND	0.0081	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Tetrachloroethene (PCE)	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
trans-1,2-DCE	ND	0.014	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
trans-1,3-Dichloropropene	ND	0.0073	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2,3-Trichlorobenzene	ND	0.0075	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2,4-Trichlorobenzene	ND	0.0053	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,1,1-Trichloroethane	ND	0.0030	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	

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

*	Value exceeds Maximum Contaminant Level.
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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwe Project: OCD Central Landfarm Se	est, Gallup emiannual Sam	Client Sample ID: CentralOCD-02-6/16/2016 Collection Date: 6/16/2016 12:50:00 PM								
Lab ID: 1606995-002	Matrix:	Matrix: SOIL		Received Date: 6/17/2016 10:00:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
1,1,2-Trichloroethane	ND	0.0059	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Trichloroethene (TCE)	ND	0.0053	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Trichlorofluoromethane	ND	0.0037	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
1,2,3-Trichloropropane	ND	0.0086	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Vinyl chloride	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Xylenes, Total	ND	0.0094	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923		
Surr: Dibromofluoromethane	105		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923		
Surr: 1,2-Dichloroethane-d4	97.2		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923		
Surr: Toluene-d8	95.7		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923		
Surr: 4-Bromofluorobenzene	101		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923		
EPA METHOD 418.1: TPH							Analyst: TOM			
Petroleum Hydrocarbons, TR	ND	8.0	19		mg/Kg	1	6/23/2016	25996		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-03-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 1:20:00 PM Lab ID: 1606995-003 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 2.6 0.042 0.30 mg/Kg 1 6/27/2016 10:50:35 PM 26092 Chloride 570 12 30 mg/Kg 20 6/27/2016 11:02:59 PM 26092 Nitrogen, Nitrate (As N) 21 0.32 6.0 mg/Kg 20 6/27/2016 11:02:59 PM 26092 mg/Kg 540 20 6/27/2016 11:02:59 PM Sulfate 5.4 30 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD mg/Kg Mercury 0.0048 0.00058 0.034 J 1 6/28/2016 9:34:18 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED ND 2 6/30/2016 11:41:01 AM Arsenic 1.5 5.1 mg/Kg 26123 Barium 220 0.099 0.20 2 6/30/2016 11:41:01 AM 26123 mg/Kg Cadmium ND 0.13 0.20 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Chromium 11 0.26 0.61 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Copper 3.4 0.32 0.61 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Iron 17000 100 260 100 mg/Kg 6/30/2016 10:34:35 AM 26123 0.36 2 Lead 4.7 0.51 mg/Kg 6/30/2016 11:41:01 AM 26123 2 6/30/2016 11:41:01 AM Manganese 290 0.091 0.20 mg/Kg 26123 Selenium ND 2.2 5.1 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Silver ND 0.065 0.51 2 6/30/2016 11:41:01 AM mg/Kg 26123 Uranium ND 2.0 10 2 6/30/2016 11:41:01 AM 26123 mg/Kg 2 Zinc 18 1.2 5.1 mg/Kg 6/30/2016 11:41:01 AM 26123 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 0.086 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 0.081 6/30/2016 4:03:22 PM Acenaphthylene ND 0.20 mg/Kg 1 26116 Aniline ND 0.095 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Anthracene ND 0.066 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 ND 0.20 Azobenzene 0.12 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Benz(a)anthracene ND 0.086 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 ND 0.076 0.20 6/30/2016 4:03:22 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.090 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 ND 0.088 Benzo(g,h,i)perylene 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Benzo(k)fluoranthene ND 0.088 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Benzoic acid ND 0.083 0.50 1 6/30/2016 4:03:22 PM mg/Kg 26116 Benzvl alcohol ND 0.078 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Bis(2-chloroethoxy)methane ND 0.11 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Bis(2-chloroethyl)ether ND 0.074 0.20 6/30/2016 4:03:22 PM 26116 mg/Kg 1 Bis(2-chloroisopropyl)ether ND 0.089 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Bis(2-ethylhexyl)phthalate 0.082 0.50 J 6/30/2016 4:03:22 PM 0.11 mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.096 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Butyl benzyl phthalate ND 0.089 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr	llup wal Sam	SOIL	Client Sample ID: CentralOCD-03-6/16/2016 Collection Date: 6/16/2016 1:20:00 PM					
Lab ID: 1000995-005	Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Carbazole	ND	0.068	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4-Chloro-3-methylphenol	ND	0.12	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4-Chloroaniline	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Chloronaphthalene	ND	0.079	0.25		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Chlorophenol	ND	0.079	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Chrysene	ND	0.085	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Di-n-butyl phthalate	ND	0.075	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Di-n-octyl phthalate	ND	0.085	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Dibenz(a,h)anthracene	ND	0.081	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1,2-Dichlorobenzene	ND	0.077	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1,3-Dichlorobenzene	ND	0.077	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1,4-Dichlorobenzene	ND	0.085	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
3,3´-Dichlorobenzidine	ND	0.074	0.25		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Diethyl phthalate	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Dimethyl phthalate	ND	0.098	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dichlorophenol	ND	0.093	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4,6-Dinitro-2-methylphenol	ND	0.060	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dinitrophenol	ND	0.066	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dinitrotoluene	ND	0.089	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,6-Dinitrotoluene	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Fluoranthene	ND	0.058	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Fluorene	ND	0.092	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachlorobenzene	ND	0.079	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Indeno(1,2,3-cd)pyrene	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1-Methylnaphthalene	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Methylnaphthalene	ND	0.12	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
3+4-Methylphenol	ND	0.072	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
N-Nitrosodi-n-propylamine	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
N-Nitrosodiphenylamine	ND	0.098	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Naphthalene	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Nitroaniline	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
3-Nitroaniline	ND	0.088	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
					-			

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semian	allup nual Sam	Client Sample ID: CentralOCD-03-6/16/2016 Collection Date: 6/16/2016 1:20:00 PM								
Lab ID: 1606995-003	Matrix:	SOIL	R	eceived l	Date: 6/17	/2016	10:00:00 AM			
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC			
4-Nitroaniline	ND	0.071	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
Nitrobenzene	ND	0.10	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
2-Nitrophenol	ND	0.099	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
4-Nitrophenol	ND	0.076	0.25		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
Pentachlorophenol	ND	0.064	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
Phenanthrene	ND	0.068	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
Phenol	ND	0.075	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
Pyrene	ND	0.076	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
Pyridine	ND	0.079	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
2,4,5-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
2,4,6-Trichlorophenol	ND	0.083	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116		
Surr: 2-Fluorophenol	50.9	0	28.3-102		%Rec	1	6/30/2016 4:03:22 PM	26116		
Surr: Phenol-d5	59.5	0	35.7-103		%Rec	1	6/30/2016 4:03:22 PM	26116		
Surr: 2,4,6-Tribromophenol	73.1	0	35.2-108		%Rec	1	6/30/2016 4:03:22 PM	26116		
Surr: Nitrobenzene-d5	59.0		24-118		%Rec	1	6/30/2016 4:03:22 PM	26116		
Surr: 2-Fluorobiphenyl	72.0		35.4-111		%Rec	1	6/30/2016 4:03:22 PM	26116		
Surr: 4-Terphenyl-d14	59.7		15-91.7		%Rec	1	6/30/2016 4:03:22 PM	26116		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
Benzene	ND	0.019	0.024		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Toluene	ND	0.0029	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Ethylbenzene	ND	0.0040	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Methyl tert-butyl ether (MTBE)	ND	0.015	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
1.2.4-Trimethylbenzene	ND	0.0036	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
1.3.5-Trimethylbenzene	ND	0.0035	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
1.2-Dichloroethane (EDC)	ND	0.013	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
1.2-Dibromoethane (EDB)	ND	0.0034	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Naphthalene	ND	0.0076	0.097		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
1-Methylnaphthalene	ND	0.011	0.19		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
2-Methylnaphthalene	ND	0.010	0.19		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Acetone	ND	0.063	0.73		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Bromobenzene	ND	0.0039	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Bromodichloromethane	ND	0.0028	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Bromoform	ND	0.0059	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Bromomethane	0.018	0.018	0 15	.1	ma/Ka	1	6/20/2016 9:55:03 PM	25923		
2-Butanone	ND	0.078	0.48	0	ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Carbon disulfide	ND	0.020	0.48		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Carbon tetrachloride	ND	0.010	0.48		ma/Ka	1	6/20/2016 9:55:03 PM	25923		
Chlorobenzene		0.0032	0.040		ma/Ka	1	6/20/2016 0·55·03 PM	25923		
		0.0039	0.040		iiig/itg	I	0/20/2010 9.00.00 FIVI	20020		

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

R RPD outside accepted recovery limits

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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semiant	F: Western Refining Southwest, Gallup OCD Central Landfarm Semiannual Sam					Client Sample ID: CentralOCD-03-6/16/2016 Collection Date: 6/16/2016 1:20:00 PM						
Lab ID: 1606995-003	Matrix:	SOIL	R	eceived l	Date: 6/17	/2016	10:00:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA METHOD 8260B: VOLATILES							Analyst: DJF					
Chloroethane	ND	0.0096	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Chloroform	ND	0.0036	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Chloromethane	0.070	0.0043	0.15	J	mg/Kg	1	6/20/2016 9:55:03 PM	25923				
2-Chlorotoluene	ND	0.0036	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
4-Chlorotoluene	ND	0.0043	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
cis-1,2-DCE	ND	0.0028	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
cis-1,3-Dichloropropene	ND	0.0045	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,2-Dibromo-3-chloropropane	ND	0.015	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Dibromochloromethane	ND	0.0044	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Dibromomethane	ND	0.0042	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,2-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,3-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,4-Dichlorobenzene	ND	0.0060	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Dichlorodifluoromethane	ND	0.015	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,1-Dichloroethane	ND	0.0026	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,1-Dichloroethene	ND	0.016	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,2-Dichloropropane	ND	0.0041	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,3-Dichloropropane	ND	0.0055	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
2,2-Dichloropropane	ND	0.0028	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,1-Dichloropropene	ND	0.0038	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Hexachlorobutadiene	ND	0.0059	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
2-Hexanone	ND	0.026	0.48		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Isopropylbenzene	ND	0.0042	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
4-Isopropyltoluene	ND	0.0043	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
4-Methyl-2-pentanone	ND	0.014	0.48		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Methylene chloride	ND	0.014	0.15		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
n-Butylbenzene	ND	0.0043	0.15		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
n-Propylbenzene	ND	0.0037	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
sec-Butylbenzene	ND	0.0067	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Styrene	ND	0.0043	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
tert-Butylbenzene	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,1,1,2-Tetrachloroethane	ND	0.0046	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,1,2,2-Tetrachloroethane	ND	0.0078	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
Tetrachloroethene (PCE)	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
trans-1,2-DCE	ND	0.014	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
trans-1,3-Dichloropropene	ND	0.0071	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,2,3-Trichlorobenzene	ND	0.0072	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,2,4-Trichlorobenzene	ND	0.0052	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				
1,1,1-Trichloroethane	ND	0.0030	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923				

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

*	Value exceeds Maximum Contaminant Level.	
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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest, OCD Central Landfarm Semi		Client Sample ID: CentralOCD-03-6/16/2016 Collection Date: 6/16/2016 1:20:00 PM								
Lab ID:	1606995-003	Matrix: SOIL		R	Received Date: 6/17/2016 10:00:00 AM						
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METH	IOD 8260B: VOLATILES							Analyst: DJF			
1,1,2-Trich	loroethane	ND	0.0057	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Trichloroet	thene (TCE)	ND	0.0052	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Trichloroflu	uoromethane	ND	0.0036	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
1,2,3-Trich	loropropane	ND	0.0084	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Vinyl chlor	ide	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Xylenes, T	otal	ND	0.0092	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Surr: Di	bromofluoromethane	105		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
Surr: 1,2	2-Dichloroethane-d4	99.5		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
Surr: To	oluene-d8	97.5		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
Surr: 4-	Bromofluorobenzene	103		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
	IOD 418.1: TPH							Analyst: TOM			
Petroleum	Hydrocarbons, TR	ND	8.6	20		mg/Kg	1	6/23/2016	25996		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-04-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 11:45:00 AM Lab ID: 1606995-004 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 2.9 0.042 0.30 mg/Kg 1 6/27/2016 11:40:14 PM 26092 Chloride 170 12 30 mg/Kg 20 6/27/2016 11:52:38 PM 26092 Nitrogen, Nitrate (As N) 7.1 0.016 0.30 mg/Kg 6/27/2016 11:40:14 PM 1 26092 mg/Kg 20 6/27/2016 11:52:38 PM Sulfate 630 5.4 30 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD mg/Kg Mercury 0.0042 0.00054 0.031 J 1 6/28/2016 9:36:06 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED ND 2 6/30/2016 11:42:53 AM Arsenic 1.4 4.8 mg/Kg 26123 Barium 200 0.093 0.19 2 6/30/2016 11:42:53 AM 26123 mg/Kg Cadmium ND 0.12 0.19 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Chromium 9.5 0.24 0.57 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Copper 3.0 0.30 0.57 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Iron 15000 93 240 100 mg/Kg 6/30/2016 10:36:09 AM 26123 0.33 2 Lead 5.2 0.48 mg/Kg 6/30/2016 11:42:53 AM 26123 Manganese 310 0.085 0.19 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Selenium ND 2.1 4.8 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Silver ND 0.061 2 0.48 mg/Kg 6/30/2016 11:42:53 AM 26123 Uranium ND 1.9 9.6 2 6/30/2016 11:42:53 AM 26123 mg/Kg 2 Zinc 15 1.1 4.8 mg/Kg 6/30/2016 11:42:53 AM 26123 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 0.085 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 0.081 0.20 6/30/2016 4:31:23 PM Acenaphthylene ND mg/Kg 1 26116 Aniline ND 0.094 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Anthracene ND 0.066 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 ND 0.20 Azobenzene 0.12 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Benz(a)anthracene ND 0.086 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 ND 0.075 0.20 6/30/2016 4:31:23 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.090 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 ND 0.088 Benzo(g,h,i)perylene 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Benzo(k)fluoranthene ND 0.088 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Benzoic acid ND 0.083 0.50 1 6/30/2016 4:31:23 PM mg/Kg 26116 Benzvl alcohol ND 0.078 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Bis(2-chloroethoxy)methane ND 0.11 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Bis(2-chloroethyl)ether ND 0.073 0.20 6/30/2016 4:31:23 PM 26116 mg/Kg 1 Bis(2-chloroisopropyl)ether ND 0.089 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Bis(2-ethylhexyl)phthalate 0.099 0.081 0.50 J 6/30/2016 4:31:23 PM mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.095 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Butyl benzyl phthalate ND 0.088 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory, Inc.

OCD Central Landfarm Semiannual Sam

CLIENT: Western Refining Southwest, Gallup

Project:

 Laboratory, Inc.
 Date Reported: 7/19/2016

 up
 Client Sample ID: CentralOCD-04-6/16/2016

 al Sam
 Collection Date: 6/16/2016 11:45:00 AM

 Matrix: SOIL
 Received Date: 6/17/2016 10:00:00 AM

Lab ID: 1606995-004	Matrix: SOIL			Received Date: 6/17/2016 10:00:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC			
Carbazole	ND	0.067	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
4-Chloro-3-methylphenol	ND	0.12	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
4-Chloroaniline	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2-Chloronaphthalene	ND	0.078	0.25		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2-Chlorophenol	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Chrysene	ND	0.085	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Di-n-butyl phthalate	ND	0.074	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Di-n-octyl phthalate	ND	0.085	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Dibenz(a,h)anthracene	ND	0.080	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
1,2-Dichlorobenzene	ND	0.076	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
1,3-Dichlorobenzene	ND	0.077	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
3,3´-Dichlorobenzidine	ND	0.073	0.25		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Diethyl phthalate	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Dimethyl phthalate	ND	0.097	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2,4-Dichlorophenol	ND	0.093	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
4,6-Dinitro-2-methylphenol	ND	0.060	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2,4-Dinitrophenol	ND	0.066	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2,4-Dinitrotoluene	ND	0.089	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2,6-Dinitrotoluene	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Fluoranthene	ND	0.057	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Fluorene	ND	0.091	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Hexachlorobenzene	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Indeno(1,2,3-cd)pyrene	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
1-Methylnaphthalene	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2-Methylnaphthalene	ND	0.12	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2-Methylphenol	ND	0.083	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
3+4-Methylphenol	ND	0.072	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
N-Nitrosodi-n-propylamine	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
N-Nitrosodiphenylamine	ND	0.097	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Naphthalene	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2-Nitroaniline	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
3-Nitroaniline	ND	0.088	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr Lab ID: 1606995-004	llup wal Sam Matrix:	SOIL	Clier Col Re	Client Sample ID: CentralOCD-04-6/16/2016 Collection Date: 6/16/2016 11:45:00 AM Received Date: 6/17/2016 10:00:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC			
4-Nitroaniline	ND	0.070	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Nitrobenzene	ND	0.10	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2-Nitrophenol	ND	0.099	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
4-Nitrophenol	ND	0.076	0.25		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Pentachlorophenol	ND	0.064	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Phenanthrene	ND	0.068	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Phenol	ND	0.075	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Pyrene	ND	0.075	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Pyridine	ND	0.079	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2,4,5-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
2,4,6-Trichlorophenol	ND	0.083	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116		
Surr: 2-Fluorophenol	69.7	0	28.3-102		%Rec	1	6/30/2016 4:31:23 PM	26116		
Surr: Phenol-d5	76.7	0	35.7-103		%Rec	1	6/30/2016 4:31:23 PM	26116		
Surr: 2,4,6-Tribromophenol	84.1	0	35.2-108		%Rec	1	6/30/2016 4:31:23 PM	26116		
Surr: Nitrobenzene-d5	81.5		24-118		%Rec	1	6/30/2016 4:31:23 PM	26116		
Surr: 2-Fluorobiphenyl	84.2		35.4-111		%Rec	1	6/30/2016 4:31:23 PM	26116		
Surr: 4-Terphenyl-d14	71.3		15-91.7		%Rec	1	6/30/2016 4:31:23 PM	26116		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
Benzene	ND	0.020	0.025		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Toluene	ND	0.0029	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Ethylbenzene	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Methyl tert-butyl ether (MTBE)	ND	0.016	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2,4-Trimethylbenzene	ND	0.0037	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,3,5-Trimethylbenzene	ND	0.0036	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2-Dichloroethane (EDC)	ND	0.013	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2-Dibromoethane (EDB)	ND	0.0035	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Naphthalene	ND	0.0078	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
2-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Acetone	ND	0.064	0.75		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Bromobenzene	ND	0.0040	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Bromodichloromethane	ND	0.0029	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Bromoform	ND	0.0061	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Bromomethane	0.023	0.018	0.15	J	mg/Kg	1	6/23/2016 12:50:04 PM	25923		
2-Butanone	ND	0.028	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Carbon disulfide	ND	0.016	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Carbon tetrachloride	ND	0.0033	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Chlorobenzene	ND	0.0040	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: OCD Central Landfarm Semian Lab ID: 1606995-004	allup nual Sam Matrix:	SOIL	Client Sample ID: CentralOCD-04-6/16/2016 Collection Date: 6/16/2016 11:45:00 AM Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
Chloroethane	ND	0.0099	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Chloroform	ND	0.0038	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Chloromethane	0.065	0.0044	0.15	J	mg/Kg	1	6/23/2016 12:50:04 PM	25923		
2-Chlorotoluene	ND	0.0037	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
4-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
cis-1,2-DCE	ND	0.0029	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
cis-1,3-Dichloropropene	ND	0.0046	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2-Dibromo-3-chloropropane	ND	0.015	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Dibromochloromethane	ND	0.0045	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Dibromomethane	ND	0.0043	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,3-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,4-Dichlorobenzene	ND	0.0062	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Dichlorodifluoromethane	ND	0.015	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,1-Dichloroethane	ND	0.0027	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,1-Dichloroethene	ND	0.016	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2-Dichloropropane	ND	0.0042	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,3-Dichloropropane	ND	0.0056	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
2,2-Dichloropropane	ND	0.0028	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,1-Dichloropropene	ND	0.0039	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Hexachlorobutadiene	ND	0.0061	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
2-Hexanone	ND	0.027	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Isopropylbenzene	ND	0.0043	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
4-Isopropyltoluene	ND	0.0045	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
4-Methyl-2-pentanone	ND	0.014	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Methylene chloride	ND	0.014	0.15		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
n-Propylbenzene	ND	0.0038	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
sec-Butylbenzene	ND	0.0069	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Styrene	ND	0.0044	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
tert-Butylbenzene	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,1,1,2-Tetrachloroethane	ND	0.0048	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,1,2,2-Tetrachloroethane	ND	0.0081	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
Tetrachloroethene (PCE)	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
trans-1,2-DCE	ND	0.014	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
trans-1,3-Dichloropropene	ND	0.0073	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2,3-Trichlorobenzene	ND	0.0074	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,2,4-Trichlorobenzene	ND	0.0053	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		
1,1,1-Trichloroethane	ND	0.0030	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923		

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest,		Client Sample ID: CentralOCD-04-6/16/2016 Collection Date: 6/16/2016 11:45:00 AM							
Lah ID:	1606995-004	Matrix:								
	1000775 001	Matrix. 5012				Dute: 0/11	2010	10.00.00710		
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
	OD 8260B: VOLATILES							Analyst: DJF		
1,1,2-Trich	nloroethane	ND	0.0059	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Trichloroe	thene (TCE)	ND	0.0053	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Trichlorofl	uoromethane	ND	0.0037	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
1,2,3-Trich	nloropropane	ND	0.0086	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Vinyl chlor	ride	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Xylenes, T	Total	ND	0.0094	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Surr: Di	bromofluoromethane	99.8		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
Surr: 1,	2-Dichloroethane-d4	102		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
Surr: To	bluene-d8	92.8		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
Surr: 4-	Bromofluorobenzene	103		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
EPA METH	IOD 418.1: TPH							Analyst: TOM		
Petroleum	Hydrocarbons, TR	ND	8.0	19		mg/Kg	1	6/23/2016	25996	

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Lab Order **1606995**

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BD-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 Lab ID: 1606995-005 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 2.7 0.042 0.30 mg/Kg 1 6/28/2016 12:05:03 AM 26092 Chloride 360 12 30 mg/Kg 20 6/28/2016 12:17:27 AM 26092 Nitrogen, Nitrate (As N) 3.0 0.016 0.30 mg/Kg 6/28/2016 12:05:03 AM 1 26092 20 6/28/2016 12:17:27 AM Sulfate 770 5.4 30 mg/Kg 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD mg/Kg 0.0054 0.00053 0.031 J 1 6/28/2016 9:37:56 AM 26093 Mercurv EPA METHOD 6010B: SOIL METALS Analyst: MED 2 6/30/2016 11:45:00 AM Arsenic ND 1.4 4.8 mg/Kg 26123 Barium 190 0.094 0.19 2 6/30/2016 11:45:00 AM 26123 mg/Kg Cadmium ND 0.12 0.19 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Chromium 11 0.24 0.58 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Copper 3.8 0.30 0.58 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Iron 15000 94 240 100 mg/Kg 6/30/2016 10:45:16 AM 26123 0.34 2 Lead 3.6 0.48 mg/Kg 6/30/2016 11:45:00 AM 26123 6/30/2016 11:45:00 AM Manganese 240 0.086 0.19 mg/Kg 2 26123 Selenium ND 2.1 4.8 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Silver ND 0.061 2 0.48 mg/Kg 6/30/2016 11:45:00 AM 26123 Uranium ND 1.9 9.7 2 6/30/2016 11:45:00 AM 26123 mg/Kg 2 Zinc 17 1.1 4.8 mg/Kg 6/30/2016 11:45:00 AM 26123 **EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Acenaphthene ND 0.17 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 0.16 D 6/30/2016 4:59:04 PM Acenaphthylene ND 0.40 mg/Kg 1 26116 Aniline ND 0.19 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Anthracene ND 0.13 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 ND 0.24 D Azobenzene 0.40 mg/Kg 1 6/30/2016 4:59:04 PM 26116 Benz(a)anthracene ND 0.17 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 ND 0.15 0.40 D 6/30/2016 4:59:04 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.18 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 ND D Benzo(g,h,i)perylene 0.18 0.40 mg/Kg 6/30/2016 4:59:04 PM 26116 1 D Benzo(k)fluoranthene ND 0.18 0.40 mg/Kg 1 6/30/2016 4:59:04 PM 26116 D Benzoic acid ND 0.17 1.0 mg/Kg 1 6/30/2016 4:59:04 PM 26116 Benzvl alcohol ND 0.16 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Bis(2-chloroethoxy)methane ND 0.22 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Bis(2-chloroethyl)ether ND 0.15 0.40 D mg/Kg 6/30/2016 4:59:04 PM 26116 1 D Bis(2-chloroisopropyl)ether ND 0.18 0.40 mg/Kg 1 6/30/2016 4:59:04 PM 26116 Bis(2-ethylhexyl)phthalate ND D 0.16 1.0 mg/Kg 1 6/30/2016 4:59:04 PM 26116 4-Bromophenyl phenyl ether ND 0.19 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Butyl benzyl phthalate ND 0.18 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr		Client Sample ID: BD-6/16/2016 Collection Date: 6/16/2016							
Lab ID: 1606995-005	Matrix:	Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC		
Carbazole	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4-Chloro-3-methylphenol	ND	0.24	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4-Chloroaniline	ND	0.22	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Chloronaphthalene	ND	0.16	0.50	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Chlorophenol	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4-Chlorophenyl phenyl ether	ND	0.23	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Chrysene	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Di-n-butyl phthalate	0.16	0.15	0.80	JD	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Di-n-octyl phthalate	ND	0.17	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Dibenz(a,h)anthracene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Dibenzofuran	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1,2-Dichlorobenzene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1,3-Dichlorobenzene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1,4-Dichlorobenzene	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
3,3'-Dichlorobenzidine	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Diethyl phthalate	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Dimethyl phthalate	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dichlorophenol	ND	0.19	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dimethylphenol	ND	0.22	0.60	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4,6-Dinitro-2-methylphenol	ND	0.12	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dinitrophenol	ND	0.13	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dinitrotoluene	ND	0.18	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,6-Dinitrotoluene	ND	0.21	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Fluoranthene	ND	0.12	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Fluorene	ND	0.18	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachlorobenzene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachlorobutadiene	ND	0.23	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachlorocyclopentadiene	ND	0.23	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachloroethane	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Indeno(1,2,3-cd)pyrene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1-Methylnaphthalene	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Methylnaphthalene	ND	0.24	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Methylphenol	ND	0.17	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
3+4-Methylphenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
N-Nitrosodi-n-propylamine	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
N-Nitrosodiphenylamine	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Naphthalene	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Nitroaniline	ND	0.22	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
3-Nitroaniline	ND	0.18	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semian Lab ID: 1606995-005	allup nual Sam Matrix:	Client Sample ID: BD-6/16/2016 Sam Collection Date: 6/16/2016 Iatrix: SOIL Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC		
4-Nitroaniline	ND	0.14	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Nitrobenzene	ND	0.21	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Nitrophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4-Nitrophenol	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Pentachlorophenol	ND	0.13	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Phenanthrene	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Phenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Pyrene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Pyridine	ND	0.16	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1,2,4-Trichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4,5-Trichlorophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4,6-Trichlorophenol	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Surr: 2-Fluorophenol	63.7	0	28.3-102	D	%Rec	1	6/30/2016 4:59:04 PM	26116	
Surr: Phenol-d5	66.9	0	35.7-103	D	%Rec	1	6/30/2016 4:59:04 PM	26116	
Surr: 2,4,6-Tribromophenol	79.4	0	35.2-108	D	%Rec	1	6/30/2016 4:59:04 PM	26116	
Surr: Nitrobenzene-d5	68.2		24-118	D	%Rec	1	6/30/2016 4:59:04 PM	26116	
Surr: 2-Fluorobiphenyl	73.5		35.4-111	D	%Rec	1	6/30/2016 4:59:04 PM	26116	
Surr: 4-Terphenyl-d14	102		15-91.7	SD	%Rec	1	6/30/2016 4:59:04 PM	26116	
EPA METHOD 8260B: VOLATILES							Analyst: DJF		
Benzene	ND	0.019	0.023		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Toluene	ND	0.0028	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Ethylbenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Methyl tert-butyl ether (MTBE)	ND	0.015	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
1,2,4-Trimethylbenzene	ND	0.0034	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
1,3,5-Trimethylbenzene	ND	0.0034	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
1,2-Dichloroethane (EDC)	ND	0.012	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
1,2-Dibromoethane (EDB)	ND	0.0033	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Naphthalene	ND	0.0073	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
1-Methylnaphthalene	ND	0.010	0.19		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
2-Methylnaphthalene	ND	0.010	0.19		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Acetone	ND	0.060	0.70		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Bromobenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Bromodichloromethane	ND	0.0027	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Bromoform	ND	0.0057	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Bromomethane	0.021	0.017	0.14	J	mg/Kg	1	6/23/2016 1:18:39 PM	25923	
2-Butanone	ND	0.027	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Carbon disulfide	ND	0.015	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Carbon tetrachloride	ND	0.0031	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	
Chlorobenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923	

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

R RPD outside accepted recovery limits

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: OCD Central Landfarm Semian Lab ID: 1606995-005	allup nual Sam Matrix:	SOIL	Client Sample ID: BD-6/16/2016 Collection Date: 6/16/2016 Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
Chloroethane	ND	0.0093	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Chloroform	ND	0.0035	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Chloromethane	0.058	0.0041	0.14	J	mg/Kg	1	6/23/2016 1:18:39 PM	25923		
2-Chlorotoluene	ND	0.0034	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
4-Chlorotoluene	ND	0.0041	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
cis-1,2-DCE	ND	0.0027	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
cis-1,3-Dichloropropene	ND	0.0043	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,2-Dibromo-3-chloropropane	ND	0.014	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Dibromochloromethane	ND	0.0042	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Dibromomethane	ND	0.0040	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,2-Dichlorobenzene	ND	0.0041	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,3-Dichlorobenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,4-Dichlorobenzene	ND	0.0058	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Dichlorodifluoromethane	ND	0.014	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,1-Dichloroethane	ND	0.0025	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,1-Dichloroethene	ND	0.015	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,2-Dichloropropane	ND	0.0039	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,3-Dichloropropane	ND	0.0053	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
2,2-Dichloropropane	ND	0.0027	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,1-Dichloropropene	ND	0.0037	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Hexachlorobutadiene	ND	0.0057	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
2-Hexanone	ND	0.025	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Isopropylbenzene	ND	0.0040	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
4-Isopropyltoluene	ND	0.0042	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
4-Methyl-2-pentanone	ND	0.014	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Methylene chloride	ND	0.013	0.14		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
n-Butylbenzene	ND	0.0041	0.14		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
n-Propylbenzene	ND	0.0036	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
sec-Butylbenzene	ND	0.0065	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Styrene	ND	0.0042	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
tert-Butylbenzene	ND	0.0039	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,1,1,2-Tetrachloroethane	ND	0.0045	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,1,2,2-Tetrachloroethane	ND	0.0076	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
Tetrachloroethene (PCE)	ND	0.0039	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
trans-1,2-DCE	ND	0.013	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
trans-1,3-Dichloropropene	ND	0.0068	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,2,3-Trichlorobenzene	ND	0.0070	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,2,4-Trichlorobenzene	ND	0.0050	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		
1,1,1-Trichloroethane	ND	0.0028	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923		

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

*	Value exceeds Maximum Contaminant Level.	
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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1606995

Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest, OCD Central Landfarm Semi		Client Sample ID: BD-6/16/2016 Collection Date: 6/16/2016						
Lab ID:	1606995-005	Matrix:	SOIL	R	eceived 1	Date: 6/17	7/2016	10:00:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	OD 8260B: VOLATILES							Analyst: DJF	
1,1,2-Trichl	loroethane	ND	0.0055	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Trichloroeth	hene (TCE)	ND	0.0050	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Trichloroflu	oromethane	ND	0.0035	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2,3-Trichl	loropropane	ND	0.0081	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Vinyl chlori	de	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Xylenes, To	otal	ND	0.0088	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Surr: Dib	promofluoromethane	102		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
Surr: 1,2	2-Dichloroethane-d4	100		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
Surr: Tol	luene-d8	91.6		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
Surr: 4-E	Bromofluorobenzene	103		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
EPA METH	IOD 418.1: TPH							Analyst: TOM	
Petroleum	Hydrocarbons, TR	ND	8.7	21		mg/Kg	1	6/23/2016	25996

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-TZ-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 1:40:00 PM Lab ID: 1606995-006 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE ORGANICS Analyst: JME Diesel Range Organics (DRO) 180 1.8 9.6 mg/Kg 1 6/23/2016 6:14:17 PM 25944 Motor Oil Range Organics (MRO) 200 48 48 mg/Kg 1 6/23/2016 6:14:17 PM 25944 Surr: DNOP 115 0 70-130 %Rec 6/23/2016 6:14:17 PM 25944 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: RAA Gasoline Range Organics (GRO) 0.96 6/24/2016 7:46:24 PM ND 4.6 mg/Kg 1 25923 Surr: BFB 86.5 0 80-120 %Rec 1 6/24/2016 7:46:24 PM 25923 **EPA METHOD 300.0: ANIONS** Analyst: LGT 0.84 6/28/2016 12:42:17 AM Fluoride 9.4 6.0 mg/Kg 20 26092 mg/Kg Chloride 290 12 30 20 6/28/2016 12:42:17 AM 26092 Nitrogen, Nitrate (As N) 5.2 0.016 0.30 mg/Kg 1 6/28/2016 12:29:52 AM 26092 Sulfate 860 5.4 30 mg/Kg 20 6/28/2016 12:42:17 AM 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD Mercury 0.35 0.0011 0.064 mg/Kg 2 6/28/2016 9:45:27 AM 26093 **EPA METHOD 6010B: SOIL METALS** Analyst: MED Arsenic 1.4 0.71 2.4 J mg/Kg 1 6/30/2016 11:12:22 AM 26123 Barium 0.047 6/30/2016 11:12:22 AM 26123 170 0.097 mg/Kg 1 Cadmium ND 0.062 0.097 mg/Kg 6/30/2016 11:12:22 AM 26123 1 Chromium 10 0.12 0.29 mg/Kg 1 6/30/2016 11:12:22 AM 26123 0.15 6/30/2016 11:12:22 AM Copper 8.9 0.29 mg/Kg 1 26123 Iron 15000 95 240 mg/Kg 100 6/30/2016 10:46:51 AM 26123 Lead 9.0 0.17 0.24 6/30/2016 11:12:22 AM 26123 mg/Kg 1 280 0.086 0.19 6/30/2016 11:46:55 AM 26123 Manganese mg/Kg 2 2.4 ND 1.1 Selenium mg/Kg 6/30/2016 11:12:22 AM 26123 1 0.031 Silver ND 0.24 mg/Kg 1 6/30/2016 11:12:22 AM 26123 Uranium ND 0.96 6/30/2016 11:12:22 AM 26123 4.9 mg/Kg 1 Zinc 38 0.55 2.4 mg/Kg 1 6/30/2016 11:12:22 AM 26123 EPA METHOD 8270C: SEMIVOLATILES Analyst: JDC ND 0.17 0.40 D 6/30/2016 5:26:58 PM Acenaphthene mg/Kg 1 26116 0.16 D Acenaphthylene ND 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Aniline ND 0.19 0.40 D mg/Kg 6/30/2016 5:26:58 PM 1 26116 Anthracene ND 0.13 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Azobenzene ND 0.24 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benz(a)anthracene ND 0.17 0.40 D mg/Kg 6/30/2016 5:26:58 PM 26116 1 Benzo(a)pyrene ND 0.15 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benzo(b)fluoranthene ND D 0.18 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benzo(g,h,i)perylene ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benzo(k)fluoranthene ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116

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

Qualifiers: * Value exceed

- 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-TZ-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 1:40:00 PM Lab ID: 1606995-006 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 6/30/2016 5:26:58 PM Benzoic acid ND 0.17 1.0 D mg/Kg 1 26116 Benzyl alcohol ND 0.16 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Bis(2-chloroethoxy)methane ND 0.22 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Bis(2-chloroethyl)ether ND D 0.15 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D Bis(2-chloroisopropyl)ether 0.18 0.40 mg/Kg 6/30/2016 5:26:58 PM 1 26116 Bis(2-ethylhexyl)phthalate 0.18 0.16 1.0 JD mg/Kg 1 6/30/2016 5:26:58 PM 26116 D 4-Bromophenyl phenyl ether ND 0.19 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Butyl benzyl phthalate ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 0.40 D Carbazole ND 0.13 mg/Kg 1 6/30/2016 5:26:58 PM 26116 4-Chloro-3-methylphenol ND 0.24 1.0 D 6/30/2016 5:26:58 PM mg/Kg 1 26116 4-Chloroaniline ND 0.22 1.0 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 2-Chloronaphthalene ND 0.16 0.50 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 2-Chlorophenol ND 0.16 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 D 4-Chlorophenyl phenyl ether ND 0.23 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D Chrysene 0.17 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 JD Di-n-butyl phthalate 0.15 0.15 0.80 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Di-n-octyl phthalate ND 0.17 0.80 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND 0.40 D Dibenz(a,h)anthracene 0.16 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Dibenzofuran ND 0.20 0.40 D 6/30/2016 5:26:58 PM 26116 mg/Kg 1 D 1,2-Dichlorobenzene ND 0.15 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D 1,3-Dichlorobenzene 0.15 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 1,4-Dichlorobenzene ND 0.17 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 3,3'-Dichlorobenzidine ND 0.15 0.50 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND 0.20 0.40 D 6/30/2016 5:26:58 PM Diethyl phthalate mg/Kg 1 26116 ND 0.20 D Dimethyl phthalate 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D 2.4-Dichlorophenol 0.19 0.80 mg/Kg 1 6/30/2016 5:26:58 PM 26116 2,4-Dimethylphenol ND 0.22 0.60 D 6/30/2016 5:26:58 PM mg/Kg 1 26116 4,6-Dinitro-2-methylphenol ND 0.12 0.80 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D 2,4-Dinitrophenol 0.13 1.0 mg/Kg 1 6/30/2016 5:26:58 PM 26116 2,4-Dinitrotoluene ND 0.18 1.0 D mg/Kg 6/30/2016 5:26:58 PM 26116 1 D 2,6-Dinitrotoluene ND 0.21 1.0 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Fluoranthene ND 0.11 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Fluorene ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Hexachlorobenzene ND 0.16 0.40 D 6/30/2016 5:26:58 PM 26116 mg/Kg 1 ND 0.22 0.40 D 6/30/2016 5:26:58 PM Hexachlorobutadiene mg/Kg 1 26116 ND 0.23 D Hexachlorocyclopentadiene 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Hexachloroethane ND 0.17 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 D ND 0.16 0.40

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

0.40

0.20

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Indeno(1,2,3-cd)pyrene

1-Methylnaphthalene

Oualifiers:

Н Holding times for preparation or analysis exceeded

ND

- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В

1

1

6/30/2016 5:26:58 PM

6/30/2016 5:26:58 PM

26116

26116

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Е Value above quantitation range

mg/Kg

mg/Kg

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

D

- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Date Reported: 7/19/2016

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GaProject:OCD Central Landfarm SemiannLab ID:1606995-006	llup ual Sam Matrix:	SOIL	Client Sample ID: CentralOCD-TZ-6/16/2016 Collection Date: 6/16/2016 1:40:00 PM SOIL Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC			
2-Methylnaphthalene	ND	0.24	0.40	D	ma/Ka	1	6/30/2016 5:26:58 PM	26116		
2-Methylphenol	ND	0.17	0.80	D	ma/Ka	1	6/30/2016 5:26:58 PM	26116		
3+4-Methylphenol	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
N-Nitrosodi-n-propylamine	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
N-Nitrosodiphenylamine	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Naphthalene	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
2-Nitroaniline	ND	0.21	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
3-Nitroaniline	ND	0.18	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
4-Nitroaniline	ND	0.14	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Nitrobenzene	ND	0.21	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
2-Nitrophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
4-Nitrophenol	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Pentachlorophenol	ND	0.13	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Phenanthrene	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Phenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Pyrene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Pyridine	ND	0.16	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
1,2,4-Trichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
2,4,5-Trichlorophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
2,4,6-Trichlorophenol	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116		
Surr: 2-Fluorophenol	67.1	0	28.3-102	D	%Rec	1	6/30/2016 5:26:58 PM	26116		
Surr: Phenol-d5	71.9	0	35.7-103	D	%Rec	1	6/30/2016 5:26:58 PM	26116		
Surr: 2,4,6-Tribromophenol	80.0	0	35.2-108	D	%Rec	1	6/30/2016 5:26:58 PM	26116		
Surr: Nitrobenzene-d5	75.6		24-118	D	%Rec	1	6/30/2016 5:26:58 PM	26116		
Surr: 2-Fluorobiphenyl	86.3		35.4-111	D	%Rec	1	6/30/2016 5:26:58 PM	26116		
Surr: 4-Terphenyl-d14	73.4		15-91.7	D	%Rec	1	6/30/2016 5:26:58 PM	26116		
EPA METHOD 8260B: VOLATILES							Analyst: DJF			
Benzene	ND	0.019	0.023		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
Toluene	0.0090	0.0027	0.046	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923		
Ethylbenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
Methyl tert-butyl ether (MTBE)	ND	0.015	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
1,2,4-Trimethylbenzene	ND	0.0034	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
1,3,5-Trimethylbenzene	ND	0.0034	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
1,2-Dichloroethane (EDC)	ND	0.012	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
1,2-Dibromoethane (EDB)	ND	0.0033	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
Naphthalene	ND	0.0073	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
1-Methylnaphthalene	ND	0.010	0.19		mg/Ka	1	6/23/2016 1:47:16 PM	25923		
2-Methylnaphthalene	ND	0.0099	0.19		mg/Kg	1	6/23/2016 1:47:16 PM	25923		
Acetone	ND	0.060	0.70		mg/Kg	1	6/23/2016 1:47:16 PM	25923		

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr Lab ID: 1606995-006	llup wal Sam Matrix:	SOIL	Client Sample ID: CentralOCD-TZ-6/16/2016 Collection Date: 6/16/2016 1:40:00 PM Received Date: 6/17/2016 10:00:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromobenzene	ND	0.0037	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Bromodichloromethane	ND	0.0027	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Bromoform	ND	0.0057	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Bromomethane	0.024	0.017	0.14	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
2-Butanone	0.070	0.027	0.46	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
Carbon disulfide	ND	0.015	0.46		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Carbon tetrachloride	ND	0.0030	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chlorobenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chloroethane	ND	0.0093	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chloroform	ND	0.0035	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chloromethane	0.056	0.0041	0.14	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
2-Chlorotoluene	ND	0.0034	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
4-Chlorotoluene	ND	0.0041	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
cis-1,2-DCE	ND	0.0027	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
cis-1,3-Dichloropropene	ND	0.0043	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dibromo-3-chloropropane	ND	0.014	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Dibromochloromethane	ND	0.0042	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Dibromomethane	ND	0.0040	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dichlorobenzene	ND	0.0041	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,3-Dichlorobenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,4-Dichlorobenzene	ND	0.0058	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Dichlorodifluoromethane	ND	0.014	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1-Dichloroethane	ND	0.0025	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1-Dichloroethene	ND	0.015	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dichloropropane	ND	0.0039	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,3-Dichloropropane	ND	0.0053	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
2,2-Dichloropropane	ND	0.0027	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1-Dichloropropene	ND	0.0037	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Hexachlorobutadiene	ND	0.0057	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
2-Hexanone	ND	0.025	0.46		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Isopropylbenzene	ND	0.0040	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
4-Isopropyltoluene	ND	0.0042	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
4-Methyl-2-pentanone	ND	0.014	0.46		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Methylene chloride	ND	0.013	0.14		mg/Kg	1	6/23/2016 1:47:16 PM	25923
n-Butylbenzene	ND	0.0041	0.14		mg/Kg	1	6/23/2016 1:47:16 PM	25923
n-Propylbenzene	ND	0.0036	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
sec-Butylbenzene	ND	0.0064	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Styrene	ND	0.0041	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
tert-Butylbenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 29 of 49

Date Reported: 7/19/2016

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-TZ-6/16/2016								
Project: OCD Central Landfarm Semian	nual Sam		Co	llection 1	Date: 6/16	5/2016	1:40:00 PM	
Lab ID: 1606995-006	Matrix:	SOIL	Received Date: 6/17/2016 10:00:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
1,1,1,2-Tetrachloroethane	ND	0.0044	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1,2,2-Tetrachloroethane	ND	0.0075	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Tetrachloroethene (PCE)	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
trans-1,2-DCE	ND	0.013	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
trans-1,3-Dichloropropene	ND	0.0068	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2,3-Trichlorobenzene	ND	0.0069	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2,4-Trichlorobenzene	ND	0.0050	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1,1-Trichloroethane	ND	0.0028	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1,2-Trichloroethane	ND	0.0055	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Trichloroethene (TCE)	ND	0.0050	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Trichlorofluoromethane	ND	0.0035	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2,3-Trichloropropane	ND	0.0080	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Vinyl chloride	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Xylenes, Total	0.010	0.0088	0.093	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
Surr: Dibromofluoromethane	103		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
Surr: 1,2-Dichloroethane-d4	105		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
Surr: Toluene-d8	93.7		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
Surr: 4-Bromofluorobenzene	100		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
EPA METHOD 418.1: TPH							Analyst: TOM	
Petroleum Hydrocarbons, TR	610	83	200		mg/Kg	10	6/23/2016	25996

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

Q	ualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank	
		D Sample Diluted Due to Matrix		Е	Value above quantitation range	
	H Holding times for preparation or analysis exceeded		J	Analyte detected below quantitation limits	Page 30 of 49	
		ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	1 460 50 01 15
		R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
		S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Lab Order 1606995

Date Reported: 7/19/2016

CLIENT:	Western Refining Southw	est Gallun		Clier	nt Samn	e ID: EB-	6/16/2	016		
Project:	OCD Central Landfarm S	emiannual Sam		Co	llection 1	Date: 6/16	5/2016	2:00:00 PM		
Lab ID: 1606995-007 Matrix: AQUEOUS					Received Date: 6/17/2016 10:00:00 AM					
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
	IOD 8260: VOLATILES SI	HORT LIST						Analyst: BCN		
Benzene		ND	0.096	1.0		µg/L	1	6/28/2016 2:06:00 AM	A35246	
Toluene		ND	0.12	1.0		µg/L	1	6/28/2016 2:06:00 AM	A35246	
Ethylbenze	ene	ND	0.11	1.0		µg/L	1	6/28/2016 2:06:00 AM	A35246	
Xylenes, T	otal	ND	0.37	1.5		µg/L	1	6/28/2016 2:06:00 AM	A35246	
Surr: 1,	2-Dichloroethane-d4	86.2	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246	
Surr: 4-	Bromofluorobenzene	101	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246	
Surr: Di	bromofluoromethane	95.3	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246	
Surr: To	bluene-d8	101	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246	

Hall Environmental Analysis Laboratory, Inc.

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

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mits
f limit as specified

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Lab Order 1606995

Date Reported: 7/19/2016

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CLIENT:	Western Refining Southw	est, Gallup		Clier	nt Sampl	le ID: FB-	6/16/20)16	
Project:	OCD Central Landfarm S	emiannual Sam		Со	llection 1	Date: 6/10	5/2016	2:15:00 PM	
Lab ID: 1606995-008 Matrix: AQUEOUS Received Date: 6/17/2016 10:00:00 AM									
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	IOD 8260: VOLATILES SI	HORT LIST						Analyst: BCN	
Benzene		ND	0.096	1.0		µg/L	1	6/28/2016 2:29:00 AM	A35246
Toluene		ND	0.12	1.0		µg/L	1	6/28/2016 2:29:00 AM	A35246
Ethylbenze	ene	ND	0.11	1.0		µg/L	1	6/28/2016 2:29:00 AM	A35246
Xylenes, T	otal	ND	0.37	1.5		µg/L	1	6/28/2016 2:29:00 AM	A35246
Surr: 1,2	2-Dichloroethane-d4	88.0	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246
Surr: 4-E	Bromofluorobenzene	103	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246
Surr: Dil	bromofluoromethane	92.7	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246
Surr: To	luene-d8	98.7	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Lab Order 1606995

Date Reported: 7/19/2016

CLIENT: Western Refining Southwest, Gallup Client Sample ID: Trip Blank **Project:** OCD Central Landfarm Semiannual Sam **Collection Date:** Lab ID: 1606995-009 Matrix: AQUEOUS Received Date: 6/17/2016 10:00:00 AM Result PQL Units Analyses MDL Qual DF **Date Analyzed Batch ID EPA METHOD 8260: VOLATILES SHORT LIST** Analyst: BCN 6/28/2016 3:40:00 AM A35246 Benzene ND 0.096 1.0 µg/L 1 Toluene ND 0.12 1.0 µg/L 1 6/28/2016 3:40:00 AM A35246 Ethylbenzene ND 0.11 1.0 1 6/28/2016 3:40:00 AM A35246 µg/L Xylenes, Total ND 0.37 1.5 µg/L 1 6/28/2016 3:40:00 AM A35246 Surr: 1,2-Dichloroethane-d4 0 86.1 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246 Surr: 4-Bromofluorobenzene 99.5 0 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246 Surr: Dibromofluoromethane 0 91.7 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246 Surr: Toluene-d8 99.0 0 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Anatek Labs, Inc.

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-001 1606995-001B / CENTRA Soil	Samp	ling Date 6/2016	6/16/2016	Date/T Sa	ime Received ampling Time	6/22/2016 12:20 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 15.5	mg/Kg Percent	0.283	6/30/2016 5:55:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-002 1606995-002B / CENTRA Soil	Samp LOCD-02-6/1	ling Date 6/2016	6/16/2016	Date/T Sa	ime Received ampling Time	6/22/2016 12:50 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture	,	ND 17.2	mg/Kg Percent	0.297	6/30/2016 5:51:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-003 1606995-003B / CENTRA Soi!	Samp LOCD-03-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	ime Received ampling Time	6/22/2016 1:20 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 16.8	mg/Kg Percent	0.3	6/30/2016 5:57:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-004 1606995-004B / CENTRA Soil	Samp LOCD-04-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	me Received	6/22/2016 11:45 AM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.4	mg/Kg Percent	0.295	6/30/2016 6:05:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099 Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com 504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-005 1606995-005B / BD-6/16/20 Soil	Samp 16	bling Date	6/16/2016	Date/Ti Sa	me Received Impling Time	6/22/2016	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.6	mg/Kg Percent	0.29	6/30/2016 6:06:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-006 1606995-006B / CENTRALC Soil	Samp DCD-TZ-6/*	ling Date 16/2016	6/16/2016	Date/Ti Sa	me Received	6/22/2016 1:40 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		0.487 8.6	mg/Kg Percent	0.25	6/30/2016 6:08:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Authorized Signature

lohn. Coff

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level

ND Not Detected

PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory. The results reported relate only to the samples indicated. Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; C0:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Quality Control Data

Lab Control Sample											
Parameter Cyanide	LCS Result 0.501	Units mg/kg	LCS Spike 0.5		% Re c 100.2	AR %Rec 90-110		Prep Date 6/30/2016		Analysis Date 6/30/2016	
Matrix Spike	<u> </u>										
Sample Number Parameter		Sample Result	MS Result	Inite		MS Spike	%Rec	AR %Rec	Pren Data	Analysis Data	
160622057-002 Cyanide		ND	14.6	mg/kg	, J	15.1	96.7	70-130	6/30/2016	6/30/2016	
Matrix Spike Duplicate											
Parameter	MSD Booult	Unite	MSD Spike	0/ D/		% DDD	AR % PDD	Bro	n Doto	Ártalunia Data	
Cyanide	14.7	mg/kg	Зріке 14.9	98.	90 7	0.7	%RPL 0-25	6/3	0/2016	6/30/2016	
Method Blank									i		
Parameter		Result		Un	its	PQL		Prep Date		Analysis Date	
Cyanide		ND		mg/	′Kg	5		6/30/2016		6/30/2016	

 AR
 Acceptable Range

 ND
 Not Detected

 PQL
 Practical Quantitation Limit

 DBD
 Deleting Researchers Difference

RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Pace Analytical www.pacelabs.com

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:		1606995								
Pace Pro	oject No.:	30187563								
Sample:	1606995-0 01-6/1	01C CentralOCD-	Lab ID: 301875	63001	Collecte	ed: 06/16/16 12:20	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:		Sample	е Туре:				
Comment	ts: • Sam	n a "dry-weight" ba ple Acceptance Polic	s <i>is</i> cy Waiver on file fro	om the cl	ient.					
	Parame	ters	Method	Ac	t ± Unc (I	MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	226	EPA	A 901.1	1.255	± 2.582	(3.112)	pCi/g	07/14/16 12:0	6 13982-63-3	
Radium-228		EP4	EPA 901.1		2.152 ± 0.446 (0.252) C:NA T:NA			07/14/16 12:0	6 15262-20-1	
Sample:	1606995-0	02C CentralOCD-	Lab ID: 301875	63002	Collecte	ed: 06/16/16 12:50	Received:	06/23/16 10:50	Matrix: Solid	
PWS:	02-0, I		Site ID:		Sample	Type:				
Results r	reported of	n a "dry-weight" ba	sis		-					
	Parame	ters	Method	Ac	t ± Unc (l	MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	226	EPA	901.1	4.070	± 2.123	(2.252)	pCi/g	07/14/16 12:2	2 13982-63-3	
Radium-2	228	EPA	\901.1	1.806 C:NA	± 0.441 T:NA	(0.138)	pCi/g	07/14/16 12:2	2 1 5262-20 -1	
Sample: PWS:	1606995-0 03-6/1	03C CentralOCD-	Lab ID: 301875	63003	Collecte	d: 06/16/16 13:20	Received:	06/23/16 10:50	Matrix: Solid	
Results r	reported or	n a "dry-weight" ba	sis							
	Parame	ters	Method	Ac	t ± Unc (ľ	ADC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	226	EPA	901.1	2.237	± 2.544	(3.016)	pCi/g	07/14/16 12:3	9 13982-63-3	
Radium-2	228	EPA	901.1	C:NA 2.290 C:NA	T:NA ± 0.514 T:NA	(0.145)	pCi/g	07/14/16 12:3	9 15262-20-1	
Sample:	1606995-0	04C CentralOCD-	Lab ID: 301875	63004	Collecte	d: 06/16/16 11:45	Received:	06/23/16 10:50	Matrix: Solid	
PWS:	00-0/1		Site ID:		Sample	Type:				
Results r	reported or	n a "dry-weight" ba	sis							
	Parame	ters	Method	Ac	t ± Unc (l	ADC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	226	EPA	901.1	1.888	± 2.288	(2.754)	pCi/g	07/14/16 12:4	0 13982-63-3	
Radium-2	228	EPA	901.1	C:NA 1.553 C:NA	T:NA ± 0.446 T:NA	(0.391)	pCi/g	07/14/16 12:4	0 15262-20-1	
Sample:	1606995-0	005C BD-	Lab ID: 301875	63005	Collecte	ed: 06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	
PWS:	0/10/2010		Site ID:		Sample	Type:				
Results r	reported of	n a "dry-weight" ba	sis		1					
	Parame	ters	Method	Ac	t ± Unc (l	/IDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	226	EPA	901.1	0.721 C:NA	± 2.612 T:NA	(3.200)	pCi/g	07/14/16 12:5	6 13982-63-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Pace Pro	ject No.: 3	1606995 30187563								
Sample:		5C BD-	Lab ID:	30187563005	Collected:	06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	_
PWS:			Site ID:		Sample T	/pe:				
Results r	reported on	a "dry-weight"	basis							
Parameters		rs	Method Act		t ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-2	228		EPA 901.1	2.102 C:NA	± 0.475 (0 T:NA	.295)	pCi/g	07/14/16 12:50	6 15262-20-1	
Sample:	1606995-00 TZ-6/1	6C CentralOCI	D- Lab ID:	30187563006	Collected:	06/16/16 13:40	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:		Sample Ty	/pe:				
Results r	reported on a	a "dry-weight"	basis							
	Paramete	rs	Metho	d Aci	t ± Unc (MD	C) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	26	i	EPA 901.1	1.237 C:NA	± 1.946 (2 T:NA	.382)	pCi/g	07/14/16 12:5	7 13982-63-3	
Radium-2	28	ł	EPA 901.1	1.210 C:NA	± 0.397 (0 T:NA	.240)	pCi/g	07/14/16 12:5	7 15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1606995 Pace Project No.: 30187563 QC Batch: 225883 EPA 901.1 Analysis Method: QC Batch Method: EPA 901.1 Analysis Description: 901.1 Gamma Spec 30187563001, 30187563002, 30187563003, 30187563004, 30187563005, 30187563006 Associated Lab Samples: METHOD BLANK: 1106602 Matrix: Solid Associated Lab Samples: 30187563001, 30187563002, 30187563003, 30187563004, 30187563005, 30187563006 Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers Radium-226 0.249 ± 1.401 (1.846) C:NA T:NA pCi/g 07/11/16 20:46 Radium-228 0.000 ± 0.066 (0.290) C:NA T:NA pCi/g 07/11/16 20:46

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1606995 Pace Project No.: 30187563

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Client: Western Project: OCD C	n Refining So entral Landfa	outhwe arm Sei	st, Gallup miannual Sa	ampling							
Sample ID MB-26092	SampT	ype: ME	BLK	TestCode: EPA Method 300.0: Anions							
Client ID: PBS	Batch	ID: 26	092	R	unNo: 3	5241					
Prep Date: 6/27/2016	Analysis D	ate: 6/	27/2016	S	eqNo: 1	089804	Units: mg/K	g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	ND	0.30									
Chloride	ND	1.5									
Nitrogen, Nitrate (As N)	ND	0.30									
Sulfate	0.48	1.5								J	
Sample ID LCS-26092	SampT	ype: LC	s	Test	tCode: El	PA Method	300.0: Anion	s			
Client ID: LCSS	Batch	ID: 26	092	R	unNo: 3	5241					
Prep Date: 6/27/2016	Analysis D	ate: 6/	27/2016	S	eqNo: 1	089805	Units: mg/K	ģ			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	1.5	0.30	1.500	0	102	90	110				
Chloride	14	1.5	15.00	0	94.7	90	110				
Nitrogen, Nitrate (As N)	7.4	0.30	7.500	0	98.3	90	110				
Sulfate	29	1.5	30.00	0	97.5	90	110				

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 34 of 49

WO#:	1606995
	19-Jul-16

Client:	Western	Refining Sout	hwest, Gallup					
Project:	OCD Ce	ntral Landfarn	n Semiannual	Sampling				
Sample ID	MB-25996		: MBLK	Tes	tCode: EPA Method	418.1: TPH		
Client ID:	DDC	Botoh ID	25006		QueNo: 25151			
	FD3	Balchib	. 25990	г	Curino. 33131			
Prep Date:	6/22/2016	Analysis Date	: 6/23/2016	S	SeqNo: 1087694	Units: mg/Kg		
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Petroleum Hyd	Irocarbons, TR	ND	20					
Sample ID	LCS-25996	SampType	E LCS	Tes	tCode: EPA Method	418.1: TPH		
Client ID:	LCSS	Batch ID	25996	F	RunNo: 35151			
Prep Date:	6/22/2016	Analysis Date	6/23/2016	S	SeqNo: 1087695	Units: mg/Kg		
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Petroleum Hyd	Irocarbons, TR	96	20 100.0	0 0	95.7 83.4	127		
Sample ID	1606995-002AMS	SampType	e: MS	Tes	tCode: EPA Method	418.1: TPH		
Client ID:	CentralOCD-02-6	/16/ Batch ID	25996	F	RunNo: 35151			
Prep Date:	6/22/2016	Analysis Date	6/23/2016	S	SeqNo: 1087698	Units: mg/Kg		
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Petroleum Hyd	Irocarbons, TR	89	19 96.99	0	91.7 80	120		
Sample ID	1606995-002AMS	D SampType	e: MSD	Tes	tCode: EPA Method	418.1: TPH		
Client ID:	CentralOCD-02-6	/16/ Batch ID	25996	F	RunNo: 35151			
Prep Date:	6/22/2016	Analysis Date	6/23/2016	S	SeqNo: 1087699	Units: mg/Kg		
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Petroleum Hyd	frocarbons, TR	93	20 100.3	3 0	93.0 80	120 4.79	20	

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 35 of 49

Client:	Western	Refining S	outhwe	st, Gallup							
Project:	OCD Ce	entral Landf	farm Se	miannual Sa	ampling						
Sample ID MB-2	5944	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS		Batcl	h ID: 25	944	R	unNo: 3	5116				
Prep Date: 6/20	/2016	Analysis E	Date: 6/	23/2016	S	SeqNo: 1	086562	Units: mg/k	ζg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics	s (DRO)	ND	10								
Motor Oil Range Organ	nics (MRO)	ND	50								
Surr: DNOP		8.8		10.00		88.1	70	130			
Sample ID LCS-	25944	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	6	Batcl	n ID: 25	944	R	unNo: 3	5116				
Prep Date: 6/20	/2016	Analysis D	Date: 6/	23/2016	S	SeqNo: 1	086657	Units: mg/k	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics	s (DRO)	38	10	50.00	0	75.2	62.6	124			
Surr: DNOP		4.4		5.000		87.1	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19-Jul-16

Client:	Western I	Refining Sector	outhwe	st, Gallup							
Project:	OCD Cen	tral Landf	arm Sei	miannual Sa	ampling						
Somple ID	1606005 0064MS	SomoT	when MC		Too	Codo: El	PA Mothod	9015D: Coor	line Bong	•	
Sample ID	1000333-000AMIS	Sampi	ype. wic		165			0015D. Gast	Jine Kang	e	
Client ID:	CentralOCD-TZ-6/	16 Batch	n ID: 25	923	F	lunNo: 3	5159				
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	5	SeqNo: 1	088051	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	21	4.6	23.02	0	93.3	59.3	143			
Surr: BFB		840		920.8		90.9	80	120			
Sample ID	1606995-006AMS) SampT	vpe: MS	SD	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	e	
Client ID:	CentralOCD-TZ-6/	16 Batch	D: 25	923	F	unNo: 3	5159		5		
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	S	SeaNo: 1	088052	Units: ma/k	Ka		
									-5		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	27	5.0	24.90	0	107	59.3	143	21.1	20	R
Surr: BFB		950		996.0		95.2	80	120	0	0	
Sample ID	LCS-25923	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	e	
Client ID:	LCSS	Batch	D: 25	923	F	lunNo: 3	5159				
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	S	SeqNo: 1	088059	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	27	5.0	25.00	0	108	80	120			
Surr: BFB		910		1000		90.9	80	120			
Sample ID	MB-25923	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	e	
Client ID:	PBS	Batch	n ID: 25	923	F	unNo: 3	5159		-		
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	S	SeqNo: 1	088060	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rand	ge Organics (GRO)	ND	5.0					ů.			
Surri DED		930		1000		033	80	120			

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 37 of 49

WO#: 1606995 19-Jul-16

Client: Wester	rn Refining S	outhwe	est, Gallup							
Project: OCD (Central Landi	farm Se	emiannual S	ampling						
Sample ID mb-25923	SampT	Гуре: М	BLK	Tes	tCode: E	PA Method	8260B: Vola	tiles		
Client ID: PBS	Batcl	h ID: 25	5923	F						
Prep Date: 6/17/2016	Analysis [)ate: 6	/20/2016	ç	SeaNo: 1	083254	Units: ma/l	۲a		
	Result	POI	SPK value	SPK Ref Val	%REC	Lowl imit	Highl imit	-9 %RPD	RPDI imit	Qual
Benzene	ND	0.025			JUICEO	LOWEIIIII	riigneiniit	/orki D		Quai
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	0.020	0.050								J
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	0.028	0.15								J
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	0.10	0.15								J
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1606995
	19-Jul-16

Client: Western Project: OCD Co	Refining S entral Landf	outhwe	st, Gallup miannual Sa	ampling						
Sample ID mb-25923	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: Volat	iles		
Client ID: PBS	Batcl	h ID: 25	923	F	RunNo: 3					
Prep Date: 6/17/2016	Analysis E	Date: 6/	20/2016	SeqNo: 1083254			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		97.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.9	70	130			
Surr: Toluene-d8	0.47		0.5000		94.5	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		101	70	130			
Sample ID Ics-25923	SampT	ype: LC	s	Tes	tCode: E	PA Method	8260B: Volat	iles		
Client ID: LCSS	Batcl	h ID: 25	923	F	RunNo: 3	5020				
Prep Date: 6/17/2016	Analysis E	Date: 6/	20/2016	S	SeqNo: 1	083256	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	108	70	130			
Toluene	1.0	0.050	1.000	0	101	70	130			
Chlorobenzene	0.96	0.050	1.000	0	96.4	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 39 of 49

WO#:	1606995
	19-Jul-16

Client:WesternProject:OCD Ce	Refining S ntral Land	Southwes farm Sei	st, Gallup miannual Sa	ampling							
Sample ID Ics-25923	SampT	Гуре: LC	S	Tes	tCode: El	PA Method	8260B: Volat	iles			
Client ID: LCSS	Batc	h ID: 25	923	R							
Prep Date: 6/17/2016	Analvsis E	Date: 6/	20/2016	S	SeaNo: 1	083256	Units: ma/k	a			
Anglida	Deput	DOI			V DEO	I and insid				Qual	
1 1-Dichloroethene	Result	PQL 0.050	SPK value	SPK Ref Val	%REC	LOWLIMIT	HighLimit	%RPD	RPDLIMIt	Quai	
	1.1	0.050	1.000	0	110	70	130				
Surr: Dibromofluoromethane	0.50	0.050	0 5000	0	101	70	130				
Surr: 1.2-Dichloroethane-d4	0.00		0.5000		96.4	70	130				
Surr: Toluene-d8	0.40		0.5000		97.5	70	130				
Surr: 4-Bromofluorobenzene	0.40		0.5000		101	70	130				
	0.00		0.0000		101	10	150				
Sample ID 1606995-002ams SampType: MS TestCode: EPA Method 8260B: Volatiles											
Client ID: CentralOCD-02-6/16/ Batch ID: 25923 RunNo: 35020											
Prep Date: 6/17/2016 Analysis Date: 6/20/2016 SeqNo: 1083261 Units: mg/Kg											
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.84	0.023	0.9302	0	90.1	49.2	155				
Toluene	0.75	0.047	0.9302	0	80.3	52	154				
Chlorobenzene	0.78	0.047	0.9302	0	84.0	53.2	150				
1,1-Dichloroethene	0.72	0.047	0.9302	0	77.5	34.2	163				
Trichloroethene (TCE)	0.84	0.047	0.9302	0	90.6	48.2	151				
Surr: Dibromofluoromethane	0.48		0.4651		103	70	130				
Surr: 1,2-Dichloroethane-d4	0.46		0.4651		97.9	70	130				
Surr: Toluene-d8	0.44		0.4651		95.7	70	130				
Surr: 4-Bromofluorobenzene	0.46		0.4651		99.8	70	130				
Sample ID 1606995-002ams	d SampT	Гуре: МS	SD	Tes	tCode: El	PA Method	8260B: Volat	iles			
Client ID: CentralOCD-02-6	/16/ Batc	h ID: 25	923	R	anNo: 3	5020					
Prep Date: 6/17/2016	Analysis I	Date: 6/	20/2016	S	SeqNo: 1	083262	Units: mg/k	g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.96	0.024	0.9506	0	101	49.2	155	13.6	20		
Toluene	0.86	0.048	0.9506	0	90.3	52	154	13.9	20		
Chlorobenzene	0.82	0.048	0.9506	0	86.2	53.2	150	4.81	20		
1,1-Dichloroethene	0.94	0.048	0.9506	0	98.7	34.2	163	26.2	20	R	
Trichloroethene (TCE)	0.98	0.048	0.9506	0	103	48.2	151	15.1	20		
Surr: Dibromofluoromethane	0.50		0.4753		104	70	130	0	0		
Surr: 1,2-Dichloroethane-d4	0.46		0.4753		97.1	70	130	0	0		
Surr: Toluene-d8	0.44		0.4753		93.5	70	130	0	0		
Surr: 4-Bromofluorobenzene	0.48		0.4753		100	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
- R RPD outside accepted recovery limits
- 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
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

- W Sample container temperature is out of limit as specified
- Page 40 of 49

WO#: 1606995 19-Jul-16

Client:Western IProject:OCD Cer	Refining S ntral Landf	Southwes	st, Gallup miannual Sa	ampling							
Sample ID rb	SampT	Гуре: МЕ	BLK	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist		
Client ID: PBW	Batcl	h ID: A3	5246	F	RunNo: 3	5246					
Prep Date:	Analysis E	Date: 6/	27/2016	S	SeqNo: 1	090124	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									
Xylenes, Total	ND	1.5									
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.6	70	130				
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130				
Surr: Dibromofluoromethane	9.6		10.00		95.6	70	130				
Surr: Toluene-d8	10		10.00		102	70	130				
Sample ID 100ng Ics	SampT	SampType: LCS TestCode: EPA Method 8260: Volatiles Short List									
Client ID: LCSW	Batcl	h ID: A3	5246	F	RunNo: 35246						
Prep Date:	Analysis E	Date: 6/	27/2016	5	SeqNo: 1	090133	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	17	1.0	20.00	0	83.2	70	130				
Toluene	19	1.0	20.00	0	95.3	70	130				
Surr: 1,2-Dichloroethane-d4	8.1		10.00		80.9	70	130				
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130				
Surr: Dibromofluoromethane	9.3		10.00		92.8	70	130				
Surr: Toluene-d8	10		10.00		104	70	130				
Sample ID 1606995-008ams	SampT	Гуре: МS	3	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist		
Client ID: FB-6/16/2016	Batcl	h ID: A3	5246	F	RunNo: 3	5246					
Prep Date:	Analysis D	Date: 6/	28/2016	S	SeqNo: 1	090146	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	18	1.0	20.00	0	89.9	70	130				
Toluene	19	1.0	20.00	0	94.1	70	130				
Surr: 1,2-Dichloroethane-d4	8.4		10.00		84.5	70	130				
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130				
Surr: Dibromofluoromethane	9.4		10.00		93.9	70	130				
Surr: Toluene-d8	10		10.00		102	70	130				
Sample ID 1606995-008ams	SampT	Гуре: М	SD	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist		
Client ID: FB-6/16/2016 Batch ID: A35246 RunNo: 35246											
Prep Date:	Analysis D	Date: 6/	28/2016	S	SeqNo: 1	090147	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	17	1.0	20.00	0	83.9	70	130	6.95	20		
Ioluene	19	1.0	20.00	0	94.1	70	130	0.0106	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19-Jul-16

Client: Western Refining Southwest, Gallup Project: OCD Central Landfarm Semiannual Sampling Sample ID 1606995-008amsd SampType: MSD

Sample ID	1606995-008amsd	SampType:	SampType: MSD TestCode: EPA Method 8260: Volatiles Short List							
Client ID:	FB-6/16/2016	Batch ID:	A35246	R	5246					
Prep Date:		Analysis Date:	6/28/2016	S	eqNo: 1	090147	Units: µg/L			
Analyte		Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dic	hloroethane-d4	8.3	10.00		83.3	70	130	0	0	
Surr: 4-Brom	ofluorobenzene	10	10.00		101	70	130	0	0	
Surr: Dibrom	ofluoromethane	8.9	10.00		88.7	70	130	0	0	
Surr: Toluen	e-d8	10	10.00		104	70	130	0	0	

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 42 of 49

WO#: 1606995 19-Jul-16

Client:WesterProject:OCD	ern Refining S Central Landf	outhwe farm Se	est, Gallup miannual S	ampling						
Sample ID mb-26116	SampT	ype: M I	BLK	Te	stCode: E	PA Method	8270C: Sem	ivolatiles		
Client ID: PBS	Batch	h ID: 26	5116		RunNo: 3	35339				
Pren Date: 6/28/2016	Analysis D		/30/2016		SegNo: 1	(a				
			00/2010			1093291	units. Ing/i	vy		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	0.088	0.50								J
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.11	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-hutyl phthalate	0.11	0.40								.1
Di-n-octyl phthalate	ND	0.40								Ū
Dihenz(a h)anthracene	ND	0.10								
Dibenzofuran	ND	0.20								
1 2 Dichlorobenzene		0.20								
1 3 Dichlorobenzene		0.20								
1,3-Dichlorobonzono		0.20								
2.2 Dichlorobenzerie		0.20								
3,3 -DICHIOLODENZIQINE		0.25								
Dieutyi philialale		0.20								
Dimetnyi primalate		0.20								
2,4-Dicnioropnenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	0.086	0.40								J
2,4-Dinitrophenol	ND	0.50								

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19-Jul-16

Client: Project:	Wester OCD (rn Refining S Central Landf	outhwe arm Se	st, Gallup miannual Sa	ampling						
Sample ID mb-26	116	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8270C: Semi	ivolatiles		
Client ID: PBS		Batch	n ID: 26	116	F	RunNo: 3	5339				
Prep Date: 6/28/	2016	Analysis D	ate: 6/	/30/2016	S	SeqNo: 1	093291	Units: mg/k	ίg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qua
2,4-Dinitrotoluene		ND	0.50								
2,6-Dinitrotoluene		ND	0.50								
Fluoranthene		ND	0.20								
Fluorene		ND	0.20								
Hexachlorobenzene		ND	0.20								
Hexachlorobutadiene		ND	0.20								
Hexachlorocyclopentadi	iene	ND	0.20								
Hexachloroethane		ND	0.20								
Indeno(1,2,3-cd)pyrene		ND	0.20								
1-Methylnaphthalene		ND	0.20								
2-Methylnaphthalene		ND	0.20								
2-Methylphenol		ND	0.40								
3+4-Methylphenol		ND	0.20								
N-Nitrosodi-n-propylami	ine	ND	0.20								
N-Nitrosodiphenylamine)	ND	0.20								
Naphthalene		ND	0.20								
2-Nitroaniline		ND	0.20								
3-Nitroaniline		ND	0.20								
4-Nitroaniline		ND	0.40								
Nitrobenzene		ND	0.40								
2-Nitrophenol		ND	0.20								
4-Nitrophenol		ND	0.25								
Pentachlorophenol		ND	0.40								
Phenanthrene		ND	0.20								
Phenol		ND	0.20								
Pyrene		ND	0.20								
Pyridine		ND	0.40								
1,2,4-Trichlorobenzene		ND	0.20								
2,4,5-Trichlorophenol		ND	0.20								
2,4,6-Trichlorophenol		ND	0.20								
Surr: 2-Fluorophenol		2.8		3.330		83.4	28.3	102			
Surr: Phenol-d5		3.0		3.330		89.4	35.7	103			
Surr: 2,4,6-Tribromon	henol	3.0		3.330		89.0	35.2	108			
Surr: Nitrobenzene-d	5	1.4		1.670		83.8	24	118			
Surr: 2-Fluorobipheny	/l	1.6		1.670		95.1	35.4	111			
Surr: 4-Terphenyl-d1	4	1.1		1.670		65.6	15	91.7			

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 44 of 49

WO#:	1606995
	19-Jul-16

Client:	Western Refining Southwest, Gallup
Project:	OCD Central Landfarm Semiannual Sampling

Sample ID Ics-26116	SampT	ype: LC	S	Test	tCode: El	PA Method	8270C: Semi	volatiles			
Client ID: LCSS	Batch	n ID: 26 ′	116	R	RunNo: 3	5339					
Prep Date: 6/28/2016	Analysis D	ate: 6/	30/2016	S	SeqNo: 1	093292	Units: mg/#	(g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Acenaphthene	1.5	0.20	1.670	0	87.1	45.8	99.8				
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	88.2	51.5	103				
2-Chlorophenol	2.8	0.20	3.330	0	82.6	46.5	105				
1,4-Dichlorobenzene	1.3	0.20	1.670	0	79.5	45.5	103				
2,4-Dinitrotoluene	1.3	0.50	1.670	0	80.3	36	87.2				
N-Nitrosodi-n-propylamine	1.1	0.20	1.670	0	63.4	47.3	104				
4-Nitrophenol	2.8	0.25	3.330	0	84.6	47.3	95.3				
Pentachlorophenol	2.6	0.40	3.330	0	79.1	38.7	89.3				
Phenol	2.7	0.20	3.330	0	82.2	47.8	106				
Pyrene	1.4	0.20	1.670	0	83.1	33.4	105				
1,2,4-Trichlorobenzene	1.5	0.20	1.670	0	90.9	50.4	115				
Surr: 2-Fluorophenol	2.5		3.330		75.9	28.3	102				
Surr: Phenol-d5	2.7		3.330		79.7	35.7	103				
Surr: 2,4,6-Tribromophenol	3.0		3.330		89.0	35.2	108				
Surr: Nitrobenzene-d5	1.5		1.670		88.9	24	118				
Surr: 2-Fluorobiphenyl	1.5		1.670		87.5	35.4	111				
Surr: 4-Terphenyl-d14	1.3		1.670		75.7	15	91.7				
Sample ID 1606995-002ams	SamnT	vne MS	1	Test	tCode: F I	PA Method	8270C: Semi	volatiles			
Client ID: CentralOCD-02-6/	16/ Batch	1D: 26	116	RunNo: 35369							
Bron Date: 6/29/2016		nto: 6/	20/2016					` a			
Fiep Date. 0/20/2010	Analysis D		50/2016	2		094095	Units. Ing/r	y			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Acenaphthene	1.2	0.20	1.651	0	70.1	39.3	86.4				
4-Chloro-3-methylphenol	2.4	0.49	3.292	0	71.8	37.5	96.4				
2-Chlorophenol	2.4	0.20	3.292	0	71.6	37.4	90.6				
1,4-Dichlorobenzene	0.91	0.20	1.651	0	55.4	31.7	85				
2,4-Dinitrotoluene	0.98	0.49	1.651	0	59.3	26.4	86				
N-Nitrosodi-n-propylamine	1.0	0.20	1.651	0	61.2	43.5	83				
4-Nitrophenol	2.1	0.25	3.292	0	65.2	32.7	98				
Pentachlorophenol	1.9	0.40	3.292	0	57.5	26.6	87.4				
Phenol	2.3	0.20	3.292	0	69.9	40.5	85.3				
Pyrene	1.0	0.20	1.651	0	61.9	23.2	93.9				
1,2,4-Trichlorobenzene	1.2	0.20	1.651	0	70.6	38.7	99				
Surr: 2-Fluorophenol	2.1		3.292		63.6	28.3	102				
Surr: Phenol-d5	2.3		3.292		69.3	35.7	103				
Surr: 2,4,6-Tribromophenol	2.1		3.292		63.6	35.2	108				
Surr: Nitrobenzene-d5	12		1 651		71 4	24	118				

Qualifiers:

Surr: 2-Fluorobiphenyl

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

1.2

1.651

- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank

E Value above quantitation range

69.9

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

35.4

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WO#: 1606995 19-Jul-16

Client: Wester	rn Refining S	Southwe	st, Gallup							
Project: OCD (Central Land	farm Sei	miannual Sa	ampling						
Sample ID 1606995-002an	ns Sampl	Гуре: МS	6	Tes	tCode: El	PA Method	8270C: Sem	ivolatiles		
Client ID: CentralOCD-02	2-6/16/ Batc	h ID: 26	116	R	RunNo: 3	5369				
Prep Date: 6/28/2016	Analysis E	Date: 6/	30/2016	S	SeqNo: 1	094093	Units: mg/ł	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.91		1.651		55.1	15	91.7			
Sample ID 1606995-002an	nsd Samp	Гуре: МS	SD	Tes	tCode: El	PA Method	8270C: Sem	ivolatiles		
Client ID: CentralOCD-02	2-6/16/ Batc	h ID: 26	116	R	RunNo: 3	5369				
Prep Date: 6/28/2016	Analysis I	Date: 6/	30/2016	S	SeqNo: 1	094094	Units: mg/ł	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.653	0	64.2	39.3	86.4	8.70	30.2	
4-Chloro-3-methylphenol	2.2	0.49	3.296	0	65.3	37.5	96.4	9.36	37.2	
2-Chlorophenol	2.1	0.20	3.296	0	62.3	37.4	90.6	13.7	48	
1,4-Dichlorobenzene	0.80	0.20	1.653	0	48.1	31.7	85	13.9	40.6	
2,4-Dinitrotoluene	0.92	0.49	1.653	0	55.8	26.4	86	5.97	47.7	
N-Nitrosodi-n-propylamine	0.92	0.20	1.653	0	55.6	43.5	83	9.40	52.5	
4-Nitrophenol	2.1	0.25	3.296	0	62.7	32.7	98	3.78	36.6	
Pentachlorophenol	1.9	0.40	3.296	0	57.6	26.6	87.4	0.375	65.5	
Phenol	1.9	0.20	3.296	0	58.8	40.5	85.3	17.2	44	
Pyrene	0.94	0.20	1.653	0	56.9	23.2	93.9	8.27	42.1	
1,2,4-Trichlorobenzene	1.0	0.20	1.653	0	60.9	38.7	99	14.6	31.5	
Surr: 2-Fluorophenol	1.8		3.296		54.8	28.3	102	0	0	
Surr: Phenol-d5	2.0		3.296		61.9	35.7	103	0	0	
Surr: 2,4,6-Tribromophenol	2.1		3.296		64.3	35.2	108	0	0	
Surr: Nitrobenzene-d5	1.0		1.653		61.0	24	118	0	0	
Surr: 2-Fluorobiphenyl	1.1		1.653		66.3	35.4	111	0	0	
Surr: 4-Terphenyl-d14	0.87		1.653		52.6	15	91.7	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19. Jul-16

Client:	Western	Refining S	outhwe	st, Gallup								
Project:	OCD Cer	ntral Landf	arm Se	miannual S	ampling							
Sample ID	MR-26002	SomoT	who: MI		TestCode: EDA Mathed 7471: Margun							
Sample ID	WID-20093	Sampi	ype. wi	JLK	Tes							
Client ID:	PBS	Batch ID: 26093			R	unNo: 3	5255					
Prep Date:	6/27/2016	Analysis D	ate: 6/	28/2016	S	eqNo: 1	090434	Units: mg/K	g			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury		ND	0.033									
Sample ID	LCS-26093	SampT	ype: LC	s	Tes	tCode: E	PA Method	7471: Mercu	ry			
Client ID:	LCSS Batch ID: 26093				R	RunNo: 35255						
Prep Date:	6/27/2016	Analysis D	ate: 6	/28/2016	S	eqNo: 1	090435	Units: mg/K	g			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury		0.17	0.033	0.1667	0	105	80	120				
Sample ID	Sample ID 1606995-002AMS SampType: MS TestCode: EPA Method 7471: Mercury											
Client ID:	CentralOCD-02-6/	/16/ Batch	n ID: 26	093	RunNo: 35255							
Prep Date:	6/27/2016	Analysis D	ate: 6/	28/2016	S	eqNo: 1	090442	Units: mg/K	nits: mg/Kg			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury		0.16	0.031	0.1548	0.003335	99.7	75	125				
Sample ID	1606995-002AMS	D SampT	ype: M	SD	Tes	tCode: E	PA Method	7471: Mercu	ry			
Client ID:	CentralOCD-02-6/	/16/ Batch	n ID: 26	093	R	unNo: 3	5255					
Prep Date:	6/27/2016	Analysis D	ate: 6	/28/2016	S	eqNo: 1	090443	Units: mg/k	ģ			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury		0.18	0.033	0.1683	0.003335	103	75	125	11.4	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 47 of 49

WO#: 1606995 19-Jul-16

Client: Project:	Western OCD Cer	Refining S ntral Landf	outhwe farm Se	st, Gallup miannual Sa	ampling							
Sample ID	MB-26123	SampT	ype: MI	BLK	Tes	TestCode: EPA Method 6010B: Soil Metals						
Client ID:	PBS	Batch	h ID: 26	123	R	RunNo: 35332						
Prep Date:	6/28/2016	Analysis D	Date: 6/	/30/2016	S	SeqNo: 1093114 Units: m			ζg			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		ND	2.5									
Barium		ND	0.10									
Cadmium		ND	0.10									
Chromium		ND	0.30									
Copper		ND	0.30									
Iron		ND	2.5									
Lead		ND	0.25									
Manganese		ND	0.10									
Selenium		ND	2.5									
Silver		ND	0.25									
Uranium		ND	5.0									
Zinc		ND	2.5									
Sample ID	LCS-26123	123 SampType: LCS				tCode: El	PA Method	6010B: Soil	Metals			
Client ID:	LCSS	Batch	h ID: 26	123	R	unNo: 3	5332					
Prep Date:	6/28/2016	Analysis Date: 6/30/2016			S	eqNo: 1	093115	Units: mg/Kg				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic		23	2.5	25.00	0	93.0	80	120				
Barium		24	0.10	25.00	0	94.8	80	120				
Cadmium		24	0.10	25.00	0	94.4	80	120				
Chromium		23	0.30	25.00	0	93.9	80	120				
Copper		25	0.30	25.00	0	98.1	80	120				
Iron		24	2.5	25.00	0	94.8	80	120				
Lead		22	0.25	25.00	0	88.1	80	120				
Manganese		23	0.10	25.00	0	92.3	80	120				
Selenium		23	2.5	25.00	0	92.1	80	120				
Silver		4.7	0.25	5.000	0	93.1	80	120				
Uranium		24	5.0	25.00	0	98.0	80	120				
Zinc		24	2.5	25.00	0	94.2	80	120				
Sample ID	1606995-002AMS	SampT	уре: М	5	Tes	tCode: El	PA Method	6010B: Soil	Metals			
Client ID:	CentralOCD-02-6/	16/ Batch	h ID: 26	123	R	unNo: 3	5362					
	6/28/2016	Analysis D	Date: 6/	/30/2016	S	eqNo: 1	093792	Units: mg/k	(g			
Prep Date:											<u> </u>	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Analyte Arsenic		Result 15	PQL 2.4	SPK value 24.42	SPK Ref Val 0.8789	%REC 57.7	LowLimit 75	HighLimit 125	%RPD	RPDLimit	Qual	
Analyte Analyte Arsenic Barium		Result 15 160	PQL 2.4 0.098	SPK value 24.42 24.42	SPK Ref Val 0.8789 165.2	%REC 57.7 -4.64	LowLimit 75 75	HighLimit 125 125	%RPD	RPDLimit	Qual S S	
Analyte Arsenic Barium Cadmium		Result 15 160 16	PQL 2.4 0.098 0.098	SPK value 24.42 24.42 24.42	SPK Ref Val 0.8789 165.2 0	%REC 57.7 -4.64 64.2	LowLimit 75 75 75	HighLimit 125 125 125	%RPD	RPDLimit	Qual S S S	

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 48 of 49

WO#:	1606995
	19-Jul-16

Client:	Western	Refining S	outhwe	st, Gallup							
Project:	OCD Cer	ntral Landf	farm Se	miannual S	ampling						
Sample ID	1606005 0024MS	Somol	Supo: MG		Too	+Codo: El	PA Mothod	6010P. Soil	Motolo		
	1000995-002AWIS	Sampi	iype. Wit	,	Tes						
Client ID:	CentralOCD-02-6/	16/ Batcl	h ID: 26	123	F	RunNo: 3	5362				
Prep Date:	6/28/2016	Analysis D	Date: 6/	30/2016	S	SeqNo: 1	093792	Units: mg/K	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper		19	0.29	24.42	2.413	67.0	75	125			S
Lead		17	0.24	24.42	3.606	52.9	75	125			S
Selenium		12	2.4	24.42	0	50.2	75	125			S
Silver		3.2	0.24	4.885	0	65.0	75	125			S
Uranium		14	4.9	24.42	0	58.6	75	125			S
Zinc		28	2.4	24.42	12.53	62.3	75	125			S
Sample ID	1606995-002AMS	D Samp1	Гуре: М	SD	Tes	tCode: El	PA Method	6010B: Soil	Vetals		
Client ID:	CentralOCD-02-6/	16/ Batcl	h ID: 26	123	F	RunNo: 3	5362				
Prep Date:	6/28/2016	Analysis E	Date: 6/	30/2016	S	SeqNo: 1	093793	Units: mg/K	ģ		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		17	2.5	25.41	0.8789	63.0	75	125	11.9	20	S
Barium		210	0.10	25.41	165.2	157	75	125	22.2	20	RS
Cadmium		17	0.10	25.41	0	65.5	75	125	6.02	20	S
Chromium		26	0.30	25.41	8.131	70.2	75	125	6.27	20	S
Copper		21	0.30	25.41	2.413	71.9	75	125	9.71	20	S
Lead		18	0.25	25.41	3.606	55.0	75	125	6.18	20	S
Selenium		11	2.5	25.41	0	44.7	75	125	7.71	20	S
Silver		3.4	0.25	5.082	0	67.5	75	125	7.68	20	S
Uranium		15	5.1	25.41	0	60.3	75	125	6.96	20	S
Zinc		30	2.5	25.41	12 53	69.5	75	125	8 40	20	S
		00	2.0	20.11	12.00	00.0	10	120	0.10	20	0
Sample ID	1606995-002APS	SampT	Type: PS	i	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	CentralOCD-02-6/	16/ Batcl	h ID: 26	123	F	RunNo: 3	5362				
Prep Date:		Analysis E	Date: 6/	30/2016	S	SeqNo: 1	093794	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		21	2.4	24.44	0.8789	82.8	80	120			
Barium		200	0.098	24.44	165.2	133	80	120			S
Cadmium		20	0.098	24.44	0	81.9	80	120			
Chromium		28	0.29	24.44	8.131	81.1	80	120			
Copper		24	0.29	24.44	2.413	89.9	80	120			
Lead		22	0.24	24.44	3.606	74.9	80	120			S
Selenium		19	2.4	24.44	0	76.3	80	120			S
Silver		3.9	0.24	4.888	0	80.3	80	120			
Uranium		18	4.9	24.44	0	75.5	80	120			S
Zinc		32	2.4	24.44	12.53	79.8	80	120			S

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
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- R RPD outside accepted recovery limits
- 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
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

- W Sample container temperature is out of limit as specified
- Page 49 of 49

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name:	Western Refining Gallup	Work Order Numbe	er: 1606995		RcptNo:	1
Received by/d	ate: 175 061	17/16				
Logged By:	Anne Thorne	6/17/2016 10:00:00 A	٩M	anne Arm	~	
Completed By:	Anne Thorne	6/17/2016		Dan. M.		
Reviewed By:	as	6117/16		Cana Jun		
Chain of Cu	stody					
1. Custody se	eals intact on sample bottles'	?	Yes 🗹	No 🗌	Not Present	
2. Is Chain of	Custody complete?		Yes 🗹	No 🗌	Not Present 🗌	
3. How was th	ne sample delivered?		<u>Client</u>			
<u>Log In</u>						
4. Was an at	tempt made to cool the sam;	bles?	Yes 🗹	No 🗌	NA 🗌	
5. Were all sa	amples received at a tempera	ature of >0° C to 6.0°C	Yes 🗹	No 🗌		
6. Sample(s)	in proper container(s)?		Yes 🗹	No 🗌		
7. Sufficient s	ample volume for indicated t	est(s)?	Yes 🔽	No 🗌		
8. Are sample	es (except VOA and ONG) pr	operly preserved?	Yes 🔽	No 🗌		
9. Was prese	rvative added to bottles?		Yes 🗌	No 🗹	NA 🗌	
10.VOA vials I	nave zero headspace?		Yes 🗹	No 📋	No VOA Vials 🗌	
11. Were any	sample containers received I	proken?	Yes 🗆	No 🗹	# of preserved	
12.Does pape (Note discr	rwork match bottle labels? epancies on chain of custody	<i>i</i>)	Yes 🗹	No 🗌	for pH: (<2 or	>12 unless noted)
13 Are matrice	es correctly identified on Cha	in of Custody?	Yes 🗸	No 🗆	Adjusted?	
14. Is it clear w	hat analyses were requested	1?	Yes 🗹	No 🗆		
15. Were all ho (If no, notify	olding times able to be met? y customer for authorization.)	Yes 🗹	No 🗌	Checked by:	
Special Han	dling (if applicable)					
16. Was client	notified of all discrepancies	with this order?	Yes	No 🗀	NA 🗹	
Perso	on Notified:	Date		/ A THE		
By W	/hom:	Via:	eMail 🗌 I	Phone 🗌 Fax	In Person	
Rega	rding:					

17. Additional remarks:

Client Instructions:

18. Cooler Information

Cooler No	Temp ºC	Condition	Seal Intact	Seal No	Seal Date	Signed By
	4.4	Good				

Cha	<u>o</u>	5	Istody Kecord						HA		VIRO	NME	LI N	H	
Wes	tern Re	efining		<u>X</u> standard	□ Rush				AN	ALYS	IS LA	SOR	NTO	RY	
			5	Project Name:					www.ha	allenviron	mental.co	E			
ress		_	Route 3 Box 7	OCD Central Land	arm Semiann	ual Sampling		4901	Hawkins	NE - AI	ondnerque	, NM 87	109		
873(11			Project #:				Tel. 5	05-345-(3975	Fax 505-3	345-4107			
	505	5-722-:	3833	697-052-004						Analys	is Reques	st			
;#X	505	5-722-(1210	Project Manager:			(pə	M	-						
kage: rd			I □ Level 4 (Full Validation)	Ed Riege			doette ((bei (bei							
:uo		Other		Sampler: On Ice	Joey U	b (dmann	əəs) is	attach bRO							(N 4
() ()	Please	s provic	te EDD	Sample Temperatu		<u>+</u>	il 9	ee O	((- //	0 X)
Tin	ле М.	latrix	Sample Request ID	Container Type and #	Preservative Type	неаг no. <i>Пол</i> идд S	noZ esobeV) tei-DRO List (BTEX (8260						AIr Bubbles
122	Ø soil	II	CentralOCD-01-6/16/2016	80x - 3, 40z - 1	none	102	×	×							
12.5	so soil	I	CentralOCD-02-6/16/2016	8ox - 3, 4oz - 1	anone	202	×	×							
13		II.	CentralOCD-03-6/16/2016	80x - 3, 40z - 1	none	572	×	×							
114	S soil	ļ	CentralOCD-04-6/16/2016	8ox - 3, 4oz - 1	none	H72-	×	×							
	soil	l	BD-6/16/2016	8ox - 3, 4oz - 1	none	gn2-	×	×							
12.5	o soil	i	CentralOCD- <u>OZ-</u> 6/16/2016-MS	80x - 3, 40z - 1	none	200-	×	×			_				
125	50 soil	ļ	CentralOCD- <u>0.2</u> ,6/16/2016-MSD	8ox - 3, 4oz - 1	none	202	×	×							
131	to soil	li	CentralOCD-TZ-6/16/2016	8oz - 3, 4oz - 1	none	-206	×	x x							
140	0 wat	ıter	EB-6/16/2016	VOA - 3	HCL	Tut-			×						
141	S wat	nter	FB-6/16/2016	VOA - 3	HCL	802			×						
	wat	nter	Trip Blank	VOA - 3	HCL	202			×						
				æ		· ·									
Time. 10:0	Seli		devi Autolun	Received by	"no (late Time	Rem: result Repo	arks: s. Ca i rting	lease ci Il Grant (imits co	s Grant F 20307-74 1000 11 12	rice (gpric 5-7474 w/ th those s	e@trihyc questior hown o	tro.com ns. <u>Ve</u> l) with rify th	at
Time	Reli	linquishe	J	Received by		late / Time	pack pack w/ Se	nea. age w pt. A	<u>Trihyd</u> <u>V way t</u> 14 data	o EDD n <u>o EDD n</u> o preven package	<u>eeded wit</u> <u>t low surr</u> (Rpt 140	<u>Kg. Uat</u> <u>hin 10 c</u> ogate re 9874)?	a repol	rt and res as	
	14 u	necessan	r, samples submitted to Hall Environmental may b	be subcontracted to other a	ccredited laboratori	es. This serves as notice of th	s possibil	lity. Any	sub-contrac	ed data will I	e clearly notat	ed on the ar	nalytical re	port.	1

VADOSE ZONE ANALYTES AND REPORTING LIMITS, CENTRAL OIL CONSERVATION DIVISION LANDFARM WESTERN REFINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Analytical Method	Reporting Units	Requested Reporting Limit
Chloride	E300	mg/kg	30
Benzene	SW8260B	mg/kg	0.050
Ethylbenzene	SW8260B	mg/kg	0.050
Toluene	SW8260B	mg/kg	0.050
Xylenes, Total	SW8260B	mg/kg	0.100
Petroleum Hydrocarbons, TR	E418.1	mg/kg	20

NMAC LIST ANALYTES AND REPORTING LIMITS, CONSTITUENTS LISTED IN SUBSECTIONS A AND B OF 20.6.2.3103 NMAC, CENTRAL OIL CONSERVATION DIVISION LANDFARM WESTERN REFINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO 20.6.2.3103 NMAC (6/9/2016)

Human Health Standards-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

-1	Arsenic (As)	0.1 mg/l
-2	Barium (Ba)	1.0 mg/l
-3	Cadmium (Cd)	0.01 mg/l
-4	Chromium (Cr)	0.05 mg/l
-5	Cyanide (CN)	0.2 mg/l
-6	Fluoride (F)	1.6 mg/l
-7	Lead (Pb)	0.05 mg/l
-8	Total Mercury (Hg)	0.002 mg/i
-9	Nitrate (NO ₃ as N)	10.0 mg/l
-10	Selenium (Se)	0.05 mg/l
-11	Silver (Ag)	0.05 mg/l
-12	Uranium (U)	0.03 mg/l
-13	Radioactivity: Combined Radium-226 & Radium-228	30 pCi/l
-14	Benzene	0.01 mg/l
-15	Polychlorinated biphenyls (PCB's)	1 mg/l
-16	Toluene	0.75 mg/l
-17	Carbon Tetrachloride	0.01 mg/l
-18	1,2-dichloroethane (EDC)	0.01 mg/l
-19	1,1-dichloroethylene (1,1-DCE)	0.005 mg/l
-20	1,1,2,2-tetrachloroethylene (PCE)	0.02 mg/l
-21	1,1,2-trichloroethylene (TCE)	0.1 mg/l
-22	ethylbenzene	0.75 mg/l
-23	total xylenes	0.62 mg/l
-24	methylene chloride	0.1 mg/l
-25	chloroform	0.1 mg/l
-26	1,1-dichloroethane	0.025 mg/l
-27	ethylene dibromide (EDB)	0.0001 mg/l
-28	1,1,1-trichloroethane	0.06 mg/l
-29	1,1,2-trichloroethane	0.01 mg/l
-30	1,1,2,2-tetrachloroethane	0.01 mg/l
-31	Vinyi chioride.	0.001 mg/l
-32	PAHs: total naphthalene plus monomethylnaphthalenes	0.03 mg/l
-JJ	dende for Demostic Weter Survey	0.0007 mg/l
Uther Stan	Chlorida (Cl)	250.0
-1		
-2	Iron (Fe)	1.0 mg/1
-3	Manganese (Mn)	1.0 mg/l
	Phenole	0.2 mg/l
-0-	Sulfate (SO)	600.0 mg/l
-/	Total Dissolved Solids (TDS)	1000 0 mg/l
-0	7 inc (7 p)	
-9 _10	ыну (сл.)	10.0 IIIg/1 hetween 6 and 0
-10	htt	Detween 0 and 9

В.

A.

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com 504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-001 1606995-001B / CENTRA Soil	Samp	ling Date 6/2016	6/16/2016	Date/T Sa	ime Received ampling Time	6/22/2016 12:20 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 15.5	mg/Kg Percent	0.283	6/30/2016 5:55:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-002 1606995-002B / CENTRA Soil	Samp LOCD-02-6/1	ling Date 6/2016	6/16/2016	Date/T Sa	ime Received ampling Time	6/22/2016 12:50 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture	,	ND 17.2	mg/Kg Percent	0.297	6/30/2016 5:51:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-003 1606995-003B / CENTRA Soi!	Samp LOCD-03-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	ime Received ampling Time	6/22/2016 1:20 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 16.8	mg/Kg Percent	0.3	6/30/2016 5:57:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-004 1606995-004B / CENTRA Soil	Samp LOCD-04-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	me Received	6/22/2016 11:45 AM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.4	mg/Kg Percent	0.295	6/30/2016 6:05:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099 Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com 504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-005 1606995-005B / BD-6/16/20 Soil	Samp 16	bling Date	6/16/2016	Date/Ti Sa	me Received Impling Time	6/22/2016	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.6	mg/Kg Percent	0.29	6/30/2016 6:06:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-006 1606995-006B / CENTRALC Soil	Samp DCD-TZ-6/*	ling Date 16/2016	6/16/2016	Date/Ti Sa	me Received	6/22/2016 1:40 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		0.487 8.6	mg/Kg Percent	0.25	6/30/2016 6:08:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Authorized Signature

lohn. Coff

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level

ND Not Detected

PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory. The results reported relate only to the samples indicated. Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; C0:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com 504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Quality Control Data

Lab Control Sample										
Parameter Cyanide	LCS Result 0.501	Units mg/kg	LCS 0	Spike .5	% Re c 100.2	AR 90	% Rec -110	Prep 6/30/	Date 2016	Analysis Date 6/30/2016
Matrix Spike	<u> </u>									
Sample Number Parameter		Sample Result	MS Result	Inite		MS Spike	%Rec	AR %Rec	Pren Data	Analysis Data
160622057-002 Cyanide		ND	14.6	mg/kg	, J	15.1	96.7	70-130	6/30/2016	6/30/2016
Matrix Spike Duplicate										
Parameter	MSD Booult	Unite	MSD Spike	0/ D/		% DDD	AR % PDD	Bro	n Doto	Ártalunia Data
Cyanide	14.7	mg/kg	Зріке 14.9	98.	90 7	0.7	%RPL 0-25	6/3	0/2016	6/30/2016
Method Blank									i	
Parameter		Re	sult	Un	its		PQL	Pr	ep Date	Analysis Date
Cyanide		N	ID	mg/	′Kg		5	6/3	0/2016	6/30/2016

 AR
 Acceptable Range

 ND
 Not Detected

 PQL
 Practical Quantitation Limit

 DBD
 Deleting Researchers Difference

RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:		1606995								
Pace Pr	roject No.:	30187563								
Sample	: 1606995- 01-6/1	001C CentralOCD-	Lab ID: 30187	563001 (Collected	1: 06/16/16 12:20	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:	:	Sample	Туре:				
Results Commer	nts: • Sam	<i>n a "dry-weight" ba</i> ple Acceptance Polic	<i>sis</i> cy Waiver on file fro	om the clier	nt.					
	Parame	eters	Method	Act ±	: Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	-226	EPA	\901.1	1.255 ±	2.582	(3.112)	pCi/g	07/14/16 12:0	6 13982-63-3	
Radium-	-228	EP4	4 901.1	C:NA 1: 2.152 ± C:NA T:	:NA 0.446 :NA	(0.252)	pCi/g	07/14/16 12:0	6 15262-20-1	-
Sample:	: 1606995-	002C CentralOCD-	Lab ID: 30187	563002 (Collected	1: 06/16/16 12:50	Received:	06/23/16 10:50	Matrix: Solid	
PWS:	UZ-0/1		Site ID:	ş	Sample ⁻	Туре:				
Results	reported o	n a "dry-weight" ba	sis		•					
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	4.070 ±	2.123	(2.252)	pCi/g	07/14/16 12:2	2 13982-63-3	
Radium-	228	EPA	901.1	C:NA 1: 1.806 ± C:NA T:	NA 0.441 (NA	(0.138)	pCi/g	07/14/16 12:2	2 1 5262-20 -1	
Sample: PWS:	: 1606995- 03-6/1	003C CentralOCD-	Lab ID: 30187	563003 (Collected	I: 06/16/16 13:20	Received:	06/23/16 10:50	Matrix: Solid	
Results	reported o	n a "dry-weight" ba	sis		oanipio	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	2.237 ±	2.544 ((3.016)	pCi/g	07/14/16 12:3	9 13982-63-3	
Radium-	228	EPA	901.1	C:NA T: 2.290 ± C:NA T:	NA 0.514 (NA	(0.145)	pCi/g	07/14/16 12:3	9 15262-20-1	
Sample:	: 1606995- 06-6/1	004C CentralOCD-	Lab ID: 30187	563004 (Collected	1: 06/16/16 11:45	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:	\$	Sample ⁻	Гуре:				
Results	reported o	n a "dry-weight" ba	sis							
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	1.888 ±	2.288 (2.754)	pCi/g	07/14/16 12:4	0 13982-63-3	
Radium-	228	EPA	901.1	1.553 ± C:NA T:	0.446 (NA	(0.391)	pCi/g	07/14/16 12:4	0 15262-20-1	
Sample:	: 1606995- 6/16/2016	005C BD-	Lab ID: 30187	563005 (Collected	1: 06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:	ę	Sample ⁻	Гуре:				
Results	reported o	n a "dry-weight" ba.	S/S	• .						
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	0.721 ± C:NA T:	2.612(:NA	(3.200)	pCi/g	07/14/16 12:5	6 13982-63-3	

REPORT OF LABORATORY ANALYSIS



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:		1606995								
Pace Pro	ject No.:	30187563								
Sample:	1606995- 6/16/2016	005C BD-	Lab ID:	30187563005	Collected:	06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:		Sample Ty	/pe:				
Results r	reported o	n a "dry-weigl	nt" basis							
	Parame	eters	Metho	od A	ct ± Unc (MD	C) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	228	-	EPA 901.1	2.10 C:N/	2 ± 0.475 (0 A T:NA	.295)	pCi/g	07/14/16 12:5	6 15262-20-1	
Sample:	1606995- TZ-6/1	006C CentralC	CD- Lab ID:	30187563006	Collected:	06/16/16 13:40	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:		Sample Ty	/pe:				
Results r	reported o	n a "dry-weigł	t" basis							
	Parame	ters	Metho	d A	ct ± Unc (MD	C) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	26		EPA 901.1	1.23 C:N/	7 ± 1.946 (2 \ T:NA	.382)	pCi/g	07/14/16 12:5	7 13982-63-3	
Radium-2	28		EPA 901.1	1.21) C:N/	0±0.397 (0 \T:NA	.240)	pCi/g	07/14/16 12:5	7 15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

 Project:
 1606995

 Pace Project No.:
 30187563

QC Batch:	225883	Analysis Method:	EPA 901.1		
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Sp	ec	
Associated Lab Sam	oles: 30187563001, 30187563002	2, 30187563003, 30187563004	, 301 <mark>87</mark> 563005, 30	187563006	
METHOD BLANK:	1106602	Matrix: Solid			
Associated Lab Sam	oles: 30187563001, 30187563002	l, 30187563003, 30187563004	, 3018 7563005, 30	187563006	

Falameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.249 ± 1.401 (1.846) C:NA T:NA	pCi/g	07/11/16 20:46	<u>.</u>
Radium-228	0.000 ± 0.066 (0.290) C:NA T:NA	pCi/g	07/11/16 20:46	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc. 1638 Roseytown Road - Suites 2,3,4 Greensburg, PA 15601 (724)850-5600

QUALIFIERS

Project: 1606995 Pace Project No.: 30187563

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

November 03, 2016

Ed Riege Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-3833 FAX (505) 722-0210

RE: OCD Central Landfarm Semiannual Sampling

OrderNo.: 1610A38

Dear Ed Riege:

Hall Environmental Analysis Laboratory received 4 sample(s) on 10/20/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order: 1610A38 Hall Environmental Analysis Laboratory, Inc. Date Reported: 11/3/2016 **CLIENT:** Western Refining Southwest, Gallup Lab Order: 1610A38 **Project:** OCD Central Landfarm Semiannual Sampling Lab ID: 1610A38-001 Collection Date: 10/20/2016 9:38:00 AM Client Sample ID: CentralOCD-2271-10202016-SW-NW Matrix: SOIL Analyses Result MDL PQL Qual Units DF **Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: LGT 10/29/2016 12:36:19 AM 28324 Chloride 2600 31 75 mg/Kg 50 1610A38-002 Collection Date: 10/20/2016 10:40:00 AM Lab ID: Client Sample ID: CentralOCD-2271-10202016-SW-NE Matrix: SOIL Result MDL PQL Oual Units DF **Date Analyzed Batch ID** Analyses **EPA METHOD 300.0: ANIONS** Analyst: LGT Chloride 2600 31 75 mg/Kg 50 10/29/2016 12:48:43 AM 28324 Lab ID: 1610A38-003 Collection Date: 10/20/2016 11:10:00 AM Client Sample ID: CentralOCD-2271-10202016-SW-E Matrix: SOIL MDL PQL Units DF **Date Analyzed Batch ID** Analyses Result Oual **EPA METHOD 300.0: ANIONS** Analyst: LGT mg/Kg Chloride 640 12 30 10/27/2016 3:14:33 PM 28324 20 1610A38-004 Collection Date: 10/20/2016 Lab ID: CentralOCD-BD-10202016 Matrix: SOIL Client Sample ID: POL **Date Analyzed Batch ID** Analyses Result **MDL** Oual Units DF **EPA METHOD 300.0: ANIONS** Analyst: LGT Chloride 600 12 30 mg/Kg 20 10/27/2016 3:26:57 PM 28324

Analytical Report

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range	
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Pac	relof?
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	;c 1 01 2
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as sp	ecified

Page 2 of 2

Client:	Weste	Western Refining Southwest, Gallup									
Project:	OCD	Central Landfarm	Semiannual S	ampling							
Sample ID	MB-28324	SampType:	MBLK	TestCode: EPA Method 300.0: Anions							
Client ID:	PBS	'BS Batch ID: 28324 RunNo: 38293									
Prep Date:	10/27/2016	Analysis Date:	10/27/2016	5	SeqNo: 1194989	Units: mg/K	g				
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowLimit	t HighLimit	%RPD	RPDLimit	Qual		
Chloride		ND	1.5								
Sample ID	LCS-28324	SampType:	LCS	Tes	tCode: EPA Metho	d 300.0: Anion	s				
Client ID:	LCSS	Batch ID:	28324	F	RunNo: 38293						
Prep Date:	10/27/2016	Analysis Date:	10/27/2016	S	SeqNo: 1194990	Units: mg/K	g				
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowLimit	t HighLimit	%RPD	RPDLimit	Qual		
Chloride		14	1.5 15.00	0	95.4 90	110					

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Western Refining Gallup Work Order Number:	1610A38		RcptNo:	1
Received by/date: LC 10 2016				
Logged By: Lindsay Mangin 10/20/2016 4:40:00 PM	л	Junky Hongo		
Completed By: Lindsay Mangin , 10/21/2016 8:47:40 AM	N	Junebu Hongo		
Reviewed By: P. 10 21/16				
Chain of Custody				
Custody seals intact on sample bottles?	Yes	No	Not Present 🖌	
2 Is Chain of Custody complete?	Yes 🖌	No	Not Present	
2. How was the sample delivered?	Client			
<u>Log In</u>		,		
4. Was an attempt made to cool the samples?	Yes 🗸	No	NA	
	[]]	•• (***)	N.A. [] }	
Were all samples received at a temperature of >0° C to 6.0°C	Yes ⊻	NO []	NA L. i	
6. Sample(s) in proper container(s)?	Yes 🗸	No		
	1.77.21	(""]		
7. Sufficient sample volume for indicated test(s)?	Yes 🗹	No []		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🗹	No L.I	NA [7]	
9. Was preservative added to bottles?	Yes	No 💌	NA L. I	
10.VOA vials have zero headspace?	Yes	No []	No VOA Vials 🗹	
11. Were any sample containers received broken?	Yes	No 🗹		
			# of preserved bottles checked	
12.Does paperwork match bottle labels?	Yes 🗸	No	for pH:	ar >12 unless noted)
(Note discrepancies on chain of custody)	¥	No.	Adjusted?	
13. Are matrices correctly identified on Chain of Custody?	Yes 💌	No []	-	
14, is it clear what analyses were requested?	Yes 🔽	No []]	Checked by:	
(If no, notify customer for authorization.)	100		l	
Special Handling (if applicable)				
16. Was client notified of all discrepancies with this order?	Yes [No		-1
Person Notified: Date:				
By Whom: Via:	[]] eMail []]	Phone [] Fax	In Person	
Regarding:				
Client Instructions:				
17. Additional remarks:				
18 Cooler Information				
Cooler No Temp °C Condition Seal Intact Seal No	Seal Date	Signed By]	
1 2.8 Good Not Present			1	

Page 1 of 1

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HALL ENVIDONMEN	ANALYSTS LABORATOR	www.hallenvironmental.com	lawkins NE - Albuquerque, NM 87109	05-345-3975 Fax 505-345-4107	Analysis Request			×													ease or Grant Price (norice@frihvdro.com	Grant @ 307-745-7474 w/ questions. Date ackage w/ Tribvdro FDD needed within	ept.	
			4901 F	Tel. 5(marks [.] DI	ults. Call	/s of recit	2
			inual Sampling					Struc		HOLOAZS	× 100~	× ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	× 200-	× 1500-							ate Time		ate Time	4 10/20/10 b
	lsù.		Ifarm Semian					240	Marco Jie: 2. B	Preservativ e Type	none	none	none	none) 92		Vorreh
	X Standard	Project Name:	OCD Central Land	Project #:	697-052-004	Project Manager:	Ed Riege	Sampler.	Sample Temperatu	Container Type and #	T - 704	L - 204	t -204	T-zoh							Received by:		Received by:	Xundrey
ousious record		Refining	Route 3 Box 7		-3833	-0210	Level 4 (Full Validation)		e EDD	Sample Request ID	CentralOCD-2271-10202016-SW-NW	CentralOCD-2271-10202016-SW-NE	CentralOCD-2271-10202016-SW-E	CentralOCD-BD-100202016							d by:	R	d by	Prodente of Minister of the Hall Environmented and
	. R efining	stern k			505-722-	505-722-		□ Other	ise provid	Matrix	soil	soit	soil	soil				 			Relinquisher	V	Relinquisher	
ן כ	N F M	WCS	ress:	87301		¢#;	age:	Ę	pe)_Plea	Time	938	1040	1110	NA							Time:	1300	Time:	640
	Client:		Mailing Add	Gailup, NM	Phone #:	email or Fa	QA/QC Pack	Accreditatio		Date	10/20/2016	10/20/2016	10/20/2016	10/20/2016							ate:	91-02-91	ate:	6/16

AP - 111

LANDFARMS

2017

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Thursday, February 2, 2017 10:57 AM
То:	'Ed.Riege@wnr.com'
Cc:	Griswold, Jim, EMNRD; Smith, Cory, EMNRD; VanHorn, Kristen, NMENV
Subject:	Gallup Refinery (AP-111) "September and October 2016 Chloride Exceedance Excavation Report" dated January 25, 2017

Mr. Riege:

Re: OCD Central Landfarm

The New Mexico Oil Conservation Division (OCD) and New Mexico Environment Department (NMED) (Agencies) have completed review of the above subject report (report).

On page 3, "Proposed Path Forward", paragraph 1: The OCD Central Landfarm was built within Evaporation Pond 10 which is part of SWMU 2 (Evaporation Ponds) under Western's RCRA Permit. The updated schedule in the RCRA Permit lists corrective action at SWMU 2 as deferred since the SWMU is still in use. However, since Evaporation Pond 10 is not in use as an evaporation pond, Western can access soils for chloride remediation to address OCD's concerns. Additionally, the landfarm is permitted by OCD under Part 36 (i.e., 19.15.36 NMAC), so the continued operation of the landfarm also falls under OCD Regulations. OCD agrees with Western's proposed hot spot corrective actions in the report. Documentation (i.e., photos of excavation, C-138 manifest, etc. is required within 30-days of completion of corrective actions to verify the remediation was completed.

If Western plans to close the OCD Central Landfarm, NMED recommends in addition to OCD Regulations that NMED RCRA requirements also be addressed at the same time to avoid re-investigation of the area during SWMU 2 corrective action. OCD cannot guarantee that alternate remedial limits would be required based on the proposed source of contamination; however, OCD would consider recommended closure limits with the scientific basis if proposed in a landfarm closure plan by Western to the agencies.

Please contact me if you have questions, to request a telephone conference call, or wish to discuss this matter further. Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490 E-mail: <u>CarlJ.Chavez@state.nm.us</u>

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: <u>http://www.emnrd.state.nm.us/OCD</u> and see "Publications")

Chavez, Carl J, EMNRD

From:	Riege, Ed <ed.riege@wnr.com></ed.riege@wnr.com>
Sent:	Thursday, January 26, 2017 10:19 AM
То:	Chavez, Carl J, EMNRD
Cc:	Griswold, Jim, EMNRD; VanHorn, Kristen, NMENV; Hains, Allen
Subject:	September and October 2016 Chloride Exceedance Excavation Report
Attachments:	201701250903.pdf

Carl,

Please see attached correspondence chloride excavation report. The email does not include attachments due to size. A hard copy is being sent certified mail to you and Kristen.

Thanks, Ed

Ed Riege Remediation Manager

Western Refining Gallup Refinery 92 Giant Crossing Road Gallup, NM 87301 (505) 722-0217 ed.riege@wnr.com





January 25, 2017

Mr. Carl J. Chavez Environmental Engineer New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division 1220 South St. Francis Drive Santa Fe, NM 87505

RE: September and October 2016 Chloride Exceedance Excavation Report Central Oil Conservation Division Landfarm Western Refining Company Southwest, Inc., Gallup Refinery, Gallup, New Mexico

Dear Mr. Chavez:

Western Refining Company Southwest, Inc. (Western) is submitting this correspondence to present the results of chloride-contaminated soil excavation and confirmation sampling conducted in accordance with the "Chloride Exceedance Response Action Plan, Central Oil Conservation Division Landfarm, Western Refining Company Southwest, Inc., Gallup Refinery, Gallup, New Mexico" (Response Action Plan), dated July 26, 2016. This correspondence is also intended to inform the Oil Conservation Division (OCD) of a recently discovered non-landfarm chloride potential alternate source believed to be the cause of the elevated chloride concentrations reported in samples collected from the vadose zone beneath the Central OCD Landfarm.

Background

Semiannual vadose zone monitoring is conducted at random locations in accordance with New Mexico Administrative Code (NMAC) Rule 36 (19.15.36 NMAC). The landfarm had been divided into 6 foot (ft) by 6 ft grids to assist with random sample location selection. As required by the Response Action Plan, Western excavated chloride-contaminated soil associated with two these grids. Chloride contamination was originally identified within these grids during the April 2016 semiannual vadose zone sampling event and the June 2016 confirmation sampling event. Per the Response Action Plan, soils with chloride concentrations in excess of the 500 milligram per kilogram (mg/kg) action level/alternate beneficial reuse screening concentration (ABRSC) were to be excavated. Confirmation samples were to be collected from the floor of the excavations, as well as the from the sidewalls of the excavation at the depths of the original exceedances (6 ft below ground surface (bgs)) in the four cardinal directions. The excavations were to be extended or deepened in the direction of chloride concentrations in excess of 500 mg/kg, as determined via the confirmation sampling.

Excavation Extents and Confirmation Sampling Results

Excavation of chloride-contaminated soils began in September 2016 and continued through October 2016. Western contracted Trihydro Corporation (Trihydro) to oversee excavation completion and collect confirmation samples. The two grids scheduled for excavation were grids 1021 and 2271. The
Mr. Carl J. Chavez January 25, 2017 Page 2

excavations associated with each grid are shown on Figure 1. Confirmation sampling results are summarized in Table 1. Analytical laboratory reports and data validation reports are provided as Attachments A and B, respectively.

As shown in Table 1, the chloride concentrations reported for the September 2016 floor and sidewall samples associated with Grid 1021 are below the 500 mg/kg action level/ARBSC. Accordingly, the excavation of chloride-contaminated soil associated with Grid 1021 was deemed complete. The approximate excavation extents are illustrated on Figure 1, and the total depth of the excavation is 8 ft bgs.

Chloride concentrations reported for two of the September 2016 sidewall samples associated with Grid 2271 exceed the 500 mg/kg action level/ARBSC. In response to these confirmation sample exceedances, the excavation was expanded in the direction of the exceedances and additional confirmation samples were collected. Two such excavation expansion/resampling events were conducted in October 2016, and as shown on Figure 1, sidewall sample exceedances persist on the northern and eastern excavation boundaries. The growing size of the Grid 2271 excavation and the fact that contamination appears to extend to and possibly beyond the berms of the landfarm prompted Gallup and Trihydro to regroup and assess whether the current excavation plans (those outlined in the Response Action Plan) remain appropriate. This resulted in the acknowledgement that the refinery's former Evaporation Pond #10 occupied nearly the exact footprint of the Central OCD Landfarm prior to landfarm operation. Figure 2 illustrates the location of the former Evaporation Pond #10 is believed to be the source of the elevated chloride concentrations present in the vadose zone soils beneath the Central OCD Landfarm.

Former Evaporation Pond # 10

According to the "Inventory of Solid Waste Management Units", dated June 14, 1985, "cell" or Evaporation Pond # 10 received "wastewater from the boiler house and water softener regeneration wastes". The pond was replaced in 1980 with an in-line neutralization tank. Both of these wastes would be expected to contain elevated chloride concentrations. Since these wastes were stored in the unlined evaporation pond whose footprint is similar to the Central OCD Landfarm prior to landfarm operation, it is likely that the pond may have contributed to the chloride contamination in the area and may be the cause of the vadose zone chloride exceedances.

This idea is further supported by soil data collected from the landfarm's treatment zone over the past four years. Western has collected 6 treatment zone samples since 2013 to assist in determining if the landfarm may be eligible for closure or soil reuse. As shown in Table 2, the maximum reported chloride concentration for samples collected from the treatment zone (1 ft bgs) is 310 mg/kg. This is less than the 500 mg/kg action level/ABRSC and far less than some of the more elevated vadose zone samples which are in excess of 2,500 mg/kg (see Table 1). If soils treated in the landfarm were the source of the vadose zone chloride contamination, it would be expected that the treatment zone chloride concentrations would be greater than the vadose zone chloride concentrations, but the data indicate the opposite. This line of evidence suggests a non-landfarm chloride source.

Mr. Carl J. Chavez January 25, 2017 Page 3

Proposed Path Forward

OCD Landfarm operation is governed by NMAC Rule 36. The Response Action Plan and subsequent excavations were intended to satisfy Rule 36 requirements and Central OCD Landfarm-specific agreements reached between Western and OCD. In light of the information presented in this correspondence, Western does not believe that vadose zone chloride concentrations in excess of the 500 mg/kg action level/ABRSC are a result of landfarm operation. Accordingly, Western does not believe vadose zone chloride contamination needs be addressed or remedied in accordance with NMAC Rule 36 or previous Central OCD Landfarm-specific agreements. The elevated chloride concentrations are believed to be associated with former Evaporation Pond # 10. Former Evaporation Pond # 10 is part of Solid Waste Management Unit (SWMU) 2. Therefore, Western believes that it would be appropriate to address the chloride contaminated soil as part of SWMU 2 remedies.

Western does intend to dispose of the already excavated chloride contaminated soil at an off-site disposal facility permitted to receive such wastes and to the fill the excavations with clean fill material. The excavated soil is currently stock piled on plastic sheeting within the landfarm berms. Pending OCD approval of this correspondence, Western will begin soil disposal and excavation backfilling.

Western is also still considering closure of the Central OCD landfarm. When closure is sought, Western believes that closure should still be conducted in general accordance with NMAC Rule 36. However, Central OCD Landfarm-specific agreements reached between Western and OCD, as well as the alternate chloride source identified in this correspondence (i.e., former Evaporation Pond # 10) should be taken into consideration. Pending OCD approval of this correspondence, Western will discuss closure details and expectations with OCD. If you have any questions or comments, please do not hesitate to call me at (505) 722-0217.

Sincerely, Western Refining Company Southwest, Inc.

Ed Riege Remediation Manager

697-052-003

Attachments

cc: G. Price, Trihydro Corporation K. Van Horn, NMED TABLES

1

ample Type	Sample ID	Date Sampled	Chloride (mg/kg)
srid 1021 Confirmation Sample	CentralOCD-1021-09062016-F	09/06/16	270
srid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-E	09/06/16	130
Srid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-E Dup	09/06/16	110
srid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-N	09/06/16	160
srid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-S	09/06/16	280
Srid 1021 Confirmation Sample	CentralOCD-1021-09062016-SW-W	09/06/16	490
Srid 2271 Confirmation Sample	CentralOCD-2271-09062016-F	09/06/16	170
Srid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-E	09/06/16	1500
srid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-N	09/06/16	2200
srid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-S	09/06/16	160
Srid 2271 Confirmation Sample	CentralOCD-2271-09062016-SW-W	09/06/16	300
Srid 2271 Confirmation Sample	CentralOCD-2271-10062016-SW-E	10/06/16	800
Srid 2271 Confirmation Sample	CentralOCD-2271-10062016-SW-E Dup	10/06/16	480
Srid 2271 Confirmation Sample	CentralOCD-2271-10062016-SW-N	10/06/16	190
Srid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-E	10/20/16	640
Srid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-E Dup	10/20/16	600
srid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-NE	10/20/16	2600
Srid 2271 Confirmation Sample	CentralOCD-2271-10202016-SW-NW	10/20/16	2600

Action Level and ABRSC

Notes: Action Level/Alternate Beneficial Reuse Soil Screening Level (ABRSC) exceedances are shown in bold font. ProjectDirect Analytical Chloride Excavation Report Table 1 PK:87 RK:52965

1 of 1

500

Sample Type Sample ID Date Sampled Chloride Treatment Zone Sample CentralOCD-TZ_032713 03/27/13 03/27/13 03/27/13 Treatment Zone Sample CentralOCD-TZ_030614 09/16/14 130 130 Treatment Zone Sample CentralOCD-TZ_04052015 04/06/15 130 130 Treatment Zone Sample CentralOCD-TZ_04072015 04/07/16 260 260 Treatment Zone Sample CentralOCD-TZ-04062015 04/07/16 260 260 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 260 260		TABLE 2. HISTORICAL TREATMENT ZO WESTERN REFINING COMPANY S(ONE CHLORIDE ANALYTICAL DATA S OUTHWEST, INC., GALLUP, NEW ME	SUMMARY EXICO	
Treatment Zone Sample CentralOCD-TZ_032713 03/27/13 310 Treatment Zone Sample CentralOCD-TZ_091614 0.0/6/14 1.30 Treatment Zone Sample CentralOCD-TZ_0402015 0.4/0/716 2.80 Treatment Zone Sample CentralOCD-TZ_04072015 0.4/0/716 2.80 Treatment Zone Sample CentralOCD-TZ_0402016 0.4/0/716 2.80 Treatment Zone Sample CentralOCD-TZ_0612016 0.6/16/16 2.80 Treatment Zone Sample CentralOCD-TZ_0612016 0.6/16/16 2.80	Sample Type	Sample ID	Date Sampled	Chloride (ma/ka)	
Tireatment Zone Sample Central OCD-T-Z_031614 130 Treatment Zone Sample Central OCD-T-Z_04052015 04/6/15 130 Treatment Zone Sample Central OCD-TZ-1242015 04/6/16 280 Treatment Zone Sample Central OCD-TZ-142015 04/07/16 280 Treatment Zone Sample Central OCD-TZ-06162016 04/07/16 280 Treatment Zone Sample Central OCD-TZ-06162016 06/16/16 280	Treatment Zone Sample	CentralOCD-TZ_032713	03/27/13	310	Ĩ
Treatment Zone Sample CentralOCD-TZ-04082015 04/06/15 130 Treatment Zone Sample CentralOCD-TZ-04072015 04/07/15 280 Treatment Zone Sample CentralOCD-TZ-04072015 04/07/16 260 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290	Treatment Zone Sample	CentralOCD-TZ_091614	09/16/14	130	
Treatment Zone Sample Central OCD-TZ-1124015 11/24/15 280 Treatment Zone Sample CentralOCD-TZ-04072016 04/07/16 260 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290	Treatment Zone Sample	CentralOCD-TZ-04062015	04/06/15	130	
Treatment Zone Sample CentralOCD-TZ-04072016 04/07/16 260 Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 280	Treatment Zone Sample	Central OCD-TZ-11242015	11/24/15	280	
Treatment Zone Sample CentralOCD-TZ-06162016 06/16/16 290 290	Treatment Zone Sample	CentralOCD-TZ-04072016	04/07/16	260 J	
	Treatment Zone Sample	CentralOCD-TZ-06162016	06/16/16	290	
Action Level and ABRSC 500	Action Level and ABRSC			500	

Notes: Action Level/Atternate Beneficial Reuse Soll Screening Level (ABRSC) exceedances are shown in bold font. J - Estimated concentration

ProjectDirect: Analytical Chloride Excavation Report Table 2 PK:87 RK:52988

1 of 1

FIGURES







Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

July 19, 2016

Ed Riege Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-3833 FAX (505) 722-0210

RE: OCD Central Landfarm Semiannual Sampling

OrderNo.: 1606995

Dear Ed Riege:

Hall Environmental Analysis Laboratory received 9 sample(s) on 6/17/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 15, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> or the state specific web sites. 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. All samples are reported as received unless otherwise indicated.

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

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-01-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:20:00 PM Lab ID: 1606995-001 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 4.4 0.042 0.30 mg/Kg 1 6/27/2016 10:00:56 PM 26092 Chloride 330 12 30 mg/Kg 20 6/27/2016 10:13:21 PM 26092 Nitrogen, Nitrate (As N) 2.9 0.016 0.30 mg/Kg 6/27/2016 10:00:56 PM 1 26092 20 6/27/2016 10:13:21 PM Sulfate 550 5.4 30 mg/Kg 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD Mercury 0.013 0.00053 0.031 J mg/Kg 1 6/28/2016 9:21:40 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED 0.70 6/30/2016 10:50:31 AM Arsenic 1.1 2.4 J mg/Kg 1 26123 Barium 150 0.046 0.096 6/30/2016 10:50:31 AM 26123 mg/Kg 1 Cadmium ND 0.061 0.096 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Chromium 8.0 0.12 0.29 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Copper 0.15 0.29 mg/Kg 1 6/30/2016 10:50:31 AM 3.4 26123 Iron 13000 93 240 100 mg/Kg 6/30/2016 10:31:34 AM 26123 0.17 Lead 3.2 0.24 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Manganese 280 0.085 0.19 mg/Kg 2 6/30/2016 11:28:12 AM 26123 Selenium ND 1.0 2.4 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Silver ND 0.030 0.24 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Uranium ND 0.95 4.8 6/30/2016 10:50:31 AM 26123 mg/Kg 1 Zinc 14 0.54 2.4 mg/Kg 1 6/30/2016 10:50:31 AM 26123 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 0.17 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.16 D 6/30/2016 2:11:19 PM Acenaphthylene 0.40 mg/Kg 1 26116 Aniline ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Anthracene ND 0.13 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.24 D 6/30/2016 2:11:19 PM Azobenzene 0.40 mg/Kg 1 26116 Benz(a)anthracene ND 0.17 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.15 0.40 D 6/30/2016 2:11:19 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.18 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D Benzo(g,h,i)perylene 0.17 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Benzo(k)fluoranthene ND 0.17 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Benzoic acid ND 0.16 0.99 6/30/2016 2:11:19 PM mg/Kg 1 26116 Benzvl alcohol ND 0.16 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Bis(2-chloroethoxy)methane ND 0.22 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Bis(2-chloroethyl)ether ND 0.15 0.40 D mg/Kg 6/30/2016 2:11:19 PM 26116 1 D Bis(2-chloroisopropyl)ether ND 0.18 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Bis(2-ethylhexyl)phthalate 0.99 JD 6/30/2016 2:11:19 PM 0.19 0.16 mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 Butyl benzyl phthalate ND 0.18 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 1 of 49

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-01-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:20:00 PM Lab ID: 1606995-001 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Carbazole ND 0.13 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 4-Chloro-3-methylphenol ND 0.24 0.99 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.22 0.99 D 6/30/2016 2:11:19 PM 4-Chloroaniline mg/Kg 1 26116 2-Chloronaphthalene ND D 6/30/2016 2:11:19 PM 0.16 0.50 mg/Kg 1 26116 ND D 2-Chlorophenol 0.16 0.40 mg/Kg 6/30/2016 2:11:19 PM 1 26116 4-Chlorophenyl phenyl ether ND 0.23 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Chrysene ND 0.17 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Di-n-butyl phthalate 0.17 0.15 0.79 JD mg/Kg 1 6/30/2016 2:11:19 PM 26116 D Di-n-octyl phthalate ND 0.17 0.79 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Dibenz(a,h)anthracene ND 0.16 0.40 D 6/30/2016 2:11:19 PM mg/Kg 1 26116 Dibenzofuran ND 0.20 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 1,2-Dichlorobenzene ND 0.15 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.15 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 1,3-Dichlorobenzene D ND 0.17 0.40 6/30/2016 2:11:19 PM 1,4-Dichlorobenzene mg/Kg 1 26116 ND D 3,3'-Dichlorobenzidine 0.15 0.50 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D Diethyl phthalate 0.20 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Dimethyl phthalate ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2,4-Dichlorophenol ND 0.18 0.79 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2,4-Dimethylphenol ND 0.22 0.60 D 6/30/2016 2:11:19 PM 26116 mg/Kg 1 D 4,6-Dinitro-2-methylphenol ND 0.12 0.79 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D 6/30/2016 2:11:19 PM 2,4-Dinitrophenol 0.13 0.99 mg/Kg 1 26116 2,4-Dinitrotoluene ND 0.18 0.99 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2,6-Dinitrotoluene ND 0.21 0.99 D 6/30/2016 2:11:19 PM 26116 mg/Kg 1 Fluoranthene ND 0.40 D 6/30/2016 2:11:19 PM 26116 0.11 mg/Kg 1 ND 0.18 D Fluorene 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND D Hexachlorobenzene 0.16 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.22 0.40 D 6/30/2016 2:11:19 PM Hexachlorobutadiene mg/Kg 1 26116 Hexachlorocyclopentadiene ND 0.23 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.17 D Hexachloroethane 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 ND 0.15 0.40 D mg/Kg 6/30/2016 2:11:19 PM 26116 Indeno(1,2,3-cd)pyrene 1 D 1-Methylnaphthalene ND 0.20 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 2-Methylnaphthalene ND 0.24 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 2-Methylphenol ND 0.17 0.79 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 3+4-Methylphenol ND 0.14 0.40 D 6/30/2016 2:11:19 PM 26116 mg/Kg 1 N-Nitrosodi-n-propylamine ND 0.19 0.40 D 6/30/2016 2:11:19 PM mg/Kg 1 26116 N-Nitrosodiphenylamine ND 0.19 D 0.40 mg/Kg 1 6/30/2016 2:11:19 PM 26116 Naphthalene ND 0.19 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116 D 2-Nitroaniline ND 0.40 6/30/2016 2:11:19 PM 0.21 mg/Kg 1 26116 3-Nitroaniline ND 0.17 0.40 D mg/Kg 1 6/30/2016 2:11:19 PM 26116

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Oualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga	allup		Clier	nt Sampl	e ID: Cen	tralOC	D-01-6/16/2016	
Project: OCD Central Landfarm Semian	1 Semiannual Sam Collection Date: 6/16/2016 12:20:00 PM							
Lab ID: 1606995-001	Matrix:	SOIL	R	eceived l	Date: 6/17	7/2016	10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	0.14	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Nitrobenzene	ND	0.20	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
2-Nitrophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
4-Nitrophenol	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Pentachlorophenol	ND	0.13	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Phenanthrene	ND	0.13	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Phenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Pyrene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Pyridine	ND	0.16	0.79	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
1,2,4-Trichlorobenzene	ND	0.21	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
2,4,5-Trichlorophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
2,4,6-Trichlorophenol	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 2:11:19 PM	26116
Surr: 2-Fluorophenol	63.8	0	28.3-102	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: Phenol-d5	69.5	0	35.7-103	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: 2,4,6-Tribromophenol	80.0	0	35.2-108	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: Nitrobenzene-d5	75.2		24-118	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: 2-Fluorobiphenyl	86.6		35.4-111	D	%Rec	1	6/30/2016 2:11:19 PM	26116
Surr: 4-Terphenyl-d14	65.6		15-91.7	D	%Rec	1	6/30/2016 2:11:19 PM	26116
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.018	0.023		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Toluene	ND	0.0027	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Ethylbenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Methyl tert-butyl ether (MTBE)	ND	0.014	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2,4-Trimethylbenzene	ND	0.0034	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,3,5-Trimethylbenzene	ND	0.0033	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dichloroethane (EDC)	ND	0.012	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dibromoethane (EDB)	ND	0.0032	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Naphthalene	ND	0.0071	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1-Methylnaphthalene	ND	0.010	0.18		mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Methylnaphthalene	ND	0.0098	0.18		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Acetone	ND	0.059	0.68		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromobenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromodichloromethane	ND	0.0027	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromoform	ND	0.0056	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Bromomethane	0.019	0.017	0.14	J	mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Butanone	ND	0.026	0.46		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Carbon disulfide	ND	0.015	0.46		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Carbon tetrachloride	ND	0.0030	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Chlorobenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 3 of 49

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: OCD Central Landfarm Semian	T: Western Refining Southwest, Gallup: OCD Central Landfarm Semiannual Sam: 1606995-001Matrix: SOIL					tralOC 5/2016	D-01-6/16/2016 12:20:00 PM 10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Chloroethane	ND	0.0091	0.091		ma/Ka	1	6/20/2016 8:01:30 PM	25923
Chloroform	ND	0.0034	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Chloromethane	0.081	0.0041	0.14	J	mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Chlorotoluene	ND	0.0034	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
4-Chlorotoluene	ND	0.0040	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
cis-1,2-DCE	ND	0.0027	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
cis-1,3-Dichloropropene	ND	0.0042	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dibromo-3-chloropropane	ND	0.014	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Dibromochloromethane	ND	0.0041	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Dibromomethane	ND	0.0040	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dichlorobenzene	ND	0.0040	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,3-Dichlorobenzene	ND	0.0037	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,4-Dichlorobenzene	ND	0.0057	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Dichlorodifluoromethane	ND	0.014	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1-Dichloroethane	ND	0.0025	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1-Dichloroethene	ND	0.015	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2-Dichloropropane	ND	0.0038	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,3-Dichloropropane	ND	0.0052	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
2,2-Dichloropropane	ND	0.0026	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1-Dichloropropene	ND	0.0036	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
Hexachlorobutadiene	ND	0.0056	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
2-Hexanone	ND	0.025	0.46		mg/Kg	1	6/20/2016 8:01:30 PM	25923
		0.0039	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
4-Isopropyitoluene		0.0041	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
4-Methylene obleride		0.013	0.40		mg/Kg	1	6/20/2016 8:01:30 PM	20923
n-Butylenzene		0.013	0.14		mg/Kg	1	6/20/2016 8:01:30 PM	25925
n-Pronylbenzene		0.0040	0.14		mg/Kg	1	6/20/2016 8:01:30 PM	25925
sec-Butylbenzene	ND	0.0000	0.046		ma/Ka	1	6/20/2016 8:01:30 PM	25923
Styrene	ND	0.0000	0.046		ma/Ka	1	6/20/2016 8:01:30 PM	25923
tert-Butylbenzene	ND	0.0038	0.046		ma/Ka	1	6/20/2016 8:01:30 PM	25923
1.1.1.2-Tetrachloroethane	ND	0.0044	0.046		ma/Ka	1	6/20/2016 8:01:30 PM	25923
1,1.2,2-Tetrachloroethane	ND	0.0074	0.046		mg/Ka	1	6/20/2016 8:01:30 PM	25923
Tetrachloroethene (PCE)	ND	0.0038	0.046		mg/Ka	1	6/20/2016 8:01:30 PM	25923
trans-1,2-DCE	ND	0.013	0.046		mg/Ka	1	6/20/2016 8:01:30 PM	25923
trans-1,3-Dichloropropene	ND	0.0067	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2,3-Trichlorobenzene	ND	0.0068	0.091		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,2,4-Trichlorobenzene	ND	0.0049	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923
1,1,1-Trichloroethane	ND	0.0028	0.046		mg/Kg	1	6/20/2016 8:01:30 PM	25923

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

 * Value exceeds Max 	kimum Contaminant Level.
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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-01-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:20:00 PM Lab ID: 1606995-001 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Analyses MDL Qual Units DF **Date Analyzed Batch ID EPA METHOD 8260B: VOLATILES** Analyst: DJF 6/20/2016 8:01:30 PM 1,1,2-Trichloroethane ND 0.0054 0.046 mg/Kg 1 25923 Trichloroethene (TCE) ND 0.0049 0.046 mg/Kg 1 6/20/2016 8:01:30 PM 25923 Trichlorofluoromethane ND 0.0034 0.046 mg/Kg 6/20/2016 8:01:30 PM 25923 1 1,2,3-Trichloropropane ND 0.0079 0.091 mg/Kg 6/20/2016 8:01:30 PM 25923 1 Vinyl chloride ND 0.0037 0.046 mg/Kg 1 6/20/2016 8:01:30 PM 25923 Xylenes, Total ND 0.0086 0.091 mg/Kg 1 6/20/2016 8:01:30 PM 25923 Surr: Dibromofluoromethane 108 70-130 %Rec 1 6/20/2016 8:01:30 PM 25923 Surr: 1,2-Dichloroethane-d4 106 70-130 %Rec 1 6/20/2016 8:01:30 PM 25923 6/20/2016 8:01:30 PM Surr: Toluene-d8 95.3 70-130 %Rec 1 25923 Surr: 4-Bromofluorobenzene 98.7 70-130 %Rec 1 6/20/2016 8:01:30 PM 25923 EPA METHOD 418.1: TPH Analyst: TOM Petroleum Hydrocarbons, TR 8.5 6/23/2016 25996 33 20 mg/Kg 1

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-02-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:50:00 PM Lab ID: 1606995-002 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT 6/27/2016 10:25:45 PM Fluoride 3.4 0.042 0.30 mg/Kg 1 26092 Chloride 350 12 30 mg/Kg 20 6/27/2016 10:38:10 PM 26092 Nitrogen, Nitrate (As N) 8.8 0.016 0.30 mg/Kg 1 6/27/2016 10:25:45 PM 26092 mg/Kg 20 6/27/2016 10:38:10 PM Sulfate 400 5.4 30 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD Mercury 0.0033 0.00057 0.033 J mg/Kg 1 6/28/2016 9:25:13 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED 6/30/2016 3:45:33 PM Arsenic 0.88 0.71 2.4 J mg/Kg 1 26123 Barium 170 0.047 0.098 6/30/2016 3:45:33 PM 26123 mg/Kg 1 Cadmium ND 0.062 0.098 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Chromium 8.1 0.12 0.29 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Copper 0.15 0.29 mg/Kg 1 6/30/2016 3:45:33 PM 26123 2.4 Iron 13000 95 240 100 mg/Kg 6/30/2016 10:33:05 AM 26123 0.17 Lead 3.6 0.24 mg/Kg 1 6/30/2016 3:45:33 PM 26123 0.098 Manganese 230 0.043 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Selenium ND 1.1 2.4 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Silver ND 0.031 0.24 mg/Kg 1 6/30/2016 3:45:33 PM 26123 Uranium ND 0.97 4.9 1 6/30/2016 3:45:33 PM 26123 mg/Kg Zinc 13 0.56 2.4 mg/Kg 1 6/30/2016 3:45:33 PM 26123 **EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Acenaphthene ND 0.085 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 0.081 0.20 6/30/2016 2:39:19 PM Acenaphthylene ND mg/Kg 1 26116 Aniline ND 0.094 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Anthracene ND 0.066 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.20 Azobenzene 0.12 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Benz(a)anthracene ND 0.086 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.075 0.20 6/30/2016 2:39:19 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.090 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.088 Benzo(g,h,i)perylene 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Benzo(k)fluoranthene ND 0.088 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Benzoic acid ND 0.082 0.50 1 6/30/2016 2:39:19 PM mg/Kg 26116 Benzvl alcohol ND 0.078 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Bis(2-chloroethoxy)methane ND 0.11 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Bis(2-chloroethyl)ether ND 0.073 0.20 6/30/2016 2:39:19 PM 26116 mg/Kg 1 Bis(2-chloroisopropyl)ether ND 0.089 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Bis(2-ethylhexyl)phthalate 0.081 0.50 J 6/30/2016 2:39:19 PM 0.10 mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.095 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Butyl benzyl phthalate ND 0.088 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order **1606995** Date Reported: **7/19/2016**

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-02-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 12:50:00 PM Lab ID: 1606995-002 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 6/30/2016 2:39:19 PM Carbazole ND 0.067 0.20 mg/Kg 1 26116 4-Chloro-3-methylphenol ND 0.12 0.50 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.50 4-Chloroaniline 0.11 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2-Chloronaphthalene ND 0.078 0.25 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 2-Chlorophenol 0.078 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 4-Chlorophenyl phenyl ether ND 0.11 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Chrysene ND 0.085 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Di-n-butyl phthalate 0.092 0.074 0.40 J mg/Kg 1 6/30/2016 2:39:19 PM 26116 Di-n-octyl phthalate ND 0.085 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Dibenz(a,h)anthracene ND 0.080 0.20 6/30/2016 2:39:19 PM mg/Kg 1 26116 Dibenzofuran ND 0.10 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 1,2-Dichlorobenzene ND 0.076 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.077 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 1,3-Dichlorobenzene ND 0.084 0.20 1 1,4-Dichlorobenzene mg/Kg 6/30/2016 2:39:19 PM 26116 ND 3,3'-Dichlorobenzidine 0.073 0.25 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND Diethyl phthalate 0.10 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Dimethyl phthalate ND 0.097 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,4-Dichlorophenol ND 0.093 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,4-Dimethylphenol ND 0.11 0.30 6/30/2016 2:39:19 PM 26116 mg/Kg 1 4,6-Dinitro-2-methylphenol ND 0.060 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.066 2,4-Dinitrophenol 0.50 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,4-Dinitrotoluene ND 0.089 0.50 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2,6-Dinitrotoluene ND 0.11 0.50 1 6/30/2016 2:39:19 PM 26116 mg/Kg Fluoranthene ND 0.057 0.20 6/30/2016 2:39:19 PM 26116 mg/Kg 1 ND Fluorene 0.091 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Hexachlorobenzene ND 0.078 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Hexachlorobutadiene ND 0.11 0.20 6/30/2016 2:39:19 PM mg/Kg 1 26116 Hexachlorocyclopentadiene ND 0.11 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.085 Hexachloroethane 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 ND 0.078 0.20 1 6/30/2016 2:39:19 PM 26116 Indeno(1,2,3-cd)pyrene mg/Kg 1-Methylnaphthalene ND 0.10 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 0.12 2-Methylnaphthalene ND 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2-Methylphenol ND 0.083 0.40 mg/Kg 1 6/30/2016 2:39:19 PM 26116 3+4-Methylphenol ND 0.072 0.20 6/30/2016 2:39:19 PM 26116 mg/Kg 1 N-Nitrosodi-n-propylamine ND 0.096 0.20 6/30/2016 2:39:19 PM mg/Kg 1 26116 N-Nitrosodiphenylamine ND 0.097 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 Naphthalene ND 0.095 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116 2-Nitroaniline ND 0.20 1 0.11 mg/Kg 6/30/2016 2:39:19 PM 26116 3-Nitroaniline ND 0.088 0.20 mg/Kg 1 6/30/2016 2:39:19 PM 26116

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Oualifiers:

- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semiann Lab ID: 1606995-002	llup wal Sam Matrix:	Client Sample ID: CentralOCD-02-6/16/2016 Collection Date: 6/16/2016 12:50:00 PM x: SOIL Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC		
4-Nitroaniline	ND	0.070	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
Nitrobenzene	ND	0.10	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
2-Nitrophenol	ND	0.099	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
4-Nitrophenol	ND	0.076	0.25		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
Pentachlorophenol	ND	0.064	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
Phenanthrene	ND	0.068	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
Phenol	ND	0.075	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
Pyrene	ND	0.075	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
Pyridine	ND	0.079	0.40		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
2,4,5-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
2,4,6-Trichlorophenol	ND	0.083	0.20		mg/Kg	1	6/30/2016 2:39:19 PM	26116	
Surr: 2-Fluorophenol	59.5	0	28.3-102		%Rec	1	6/30/2016 2:39:19 PM	26116	
Surr: Phenol-d5	69.6	0	35.7-103		%Rec	1	6/30/2016 2:39:19 PM	26116	
Surr: 2,4,6-Tribromophenol	80.2	0	35.2-108		%Rec	1	6/30/2016 2:39:19 PM	26116	
Surr: Nitrobenzene-d5	68.1		24-118		%Rec	1	6/30/2016 2:39:19 PM	26116	
Surr: 2-Fluorobiphenyl	75.7		35.4-111		%Rec	1	6/30/2016 2:39:19 PM	26116	
Surr: 4-Terphenyl-d14	58.0		15-91.7		%Rec	1	6/30/2016 2:39:19 PM	26116	
EPA METHOD 8260B: VOLATILES							Analyst: DJF		
Benzene	ND	0.020	0.025		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Toluene	ND	0.0030	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Ethylbenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Methyl tert-butyl ether (MTBE)	ND	0.016	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2,4-Trimethylbenzene	ND	0.0037	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,3,5-Trimethylbenzene	ND	0.0036	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2-Dichloroethane (EDC)	ND	0.013	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1,2-Dibromoethane (EDB)	ND	0.0035	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Naphthalene	ND	0.0078	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
1-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
2-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Acetone	ND	0.064	0.75		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Bromobenzene	ND	0.0040	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Bromodichloromethane	ND	0.0029	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Bromoform	ND	0.0061	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Bromomethane	ND	0.018	0.15		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
2-Butanone	ND	0.028	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Carbon disulfide	ND	0.016	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Carbon tetrachloride	ND	0.0033	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
Chlorobenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923	
					-				

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

R RPD outside accepted recovery limits

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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semiann Lab ID: 1606995-002	IENT: Western Refining Southwest, Gallupoject: OCD Central Landfarm Semiannual Samb ID: 1606995-002Matrix: SOIL				Client Sample ID: CentralOCD-02-6/16/2016 Collection Date: 6/16/2016 12:50:00 PM OIL Received Date: 6/17/2016 10:00:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA METHOD 8260B: VOLATILES							Analyst: DJF					
Chloroethane	ND	0.0099	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Chloroform	ND	0.0038	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Chloromethane	0.080	0.0044	0.15	J	mg/Kg	1	6/20/2016 8:29:59 PM	25923				
2-Chlorotoluene	ND	0.0037	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
4-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
cis-1,2-DCE	ND	0.0029	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
cis-1,3-Dichloropropene	ND	0.0046	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,2-Dibromo-3-chloropropane	ND	0.015	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Dibromochloromethane	ND	0.0045	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Dibromomethane	ND	0.0043	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,2-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,3-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,4-Dichlorobenzene	ND	0.0062	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Dichlorodifluoromethane	ND	0.015	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,1-Dichloroethane	ND	0.0027	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,1-Dichloroethene	ND	0.016	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,2-Dichloropropane	ND	0.0042	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,3-Dichloropropane	ND	0.0057	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
2,2-Dichloropropane	ND	0.0029	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,1-Dichloropropene	ND	0.0040	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Hexachlorobutadiene	ND	0.0061	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
2-Hexanone	ND	0.027	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Isopropylbenzene	ND	0.0043	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
4-Isopropyltoluene	ND	0.0045	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
4-Methyl-2-pentanone	ND	0.015	0.50		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Methylene chloride	ND	0.014	0.15		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
n-Propylbenzene	ND	0.0038	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
sec-Butylbenzene	ND	0.0069	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Styrene	ND	0.0045	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
tert-Butylbenzene	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,1,1,2-Tetrachloroethane	ND	0.0048	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,1,2,2-Tetrachloroethane	ND	0.0081	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
Tetrachloroethene (PCE)	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
trans-1,2-DCE	ND	0.014	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
trans-1,3-Dichloropropene	ND	0.0073	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,2,3-Trichlorobenzene	ND	0.0075	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,2,4-Trichlorobenzene	ND	0.0053	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				
1,1,1-Trichloroethane	ND	0.0030	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923				

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

*	Value exceeds Maximum Contaminant Level.
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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwe Project: OCD Central Landfarm Se	est, Gallup emiannual Sam	GallupClient Sample ID: CentralOCD-02-6/16/2016annual SamCollection Date: 6/16/2016 12:50:00 PM									
Lab ID: 1606995-002	Matrix:	SOIL	R								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8260B: VOLATILES							Analyst: DJF				
1,1,2-Trichloroethane	ND	0.0059	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923			
Trichloroethene (TCE)	ND	0.0053	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923			
Trichlorofluoromethane	ND	0.0037	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923			
1,2,3-Trichloropropane	ND	0.0086	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923			
Vinyl chloride	ND	0.0041	0.050		mg/Kg	1	6/20/2016 8:29:59 PM	25923			
Xylenes, Total	ND	0.0094	0.10		mg/Kg	1	6/20/2016 8:29:59 PM	25923			
Surr: Dibromofluoromethane	105		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923			
Surr: 1,2-Dichloroethane-d4	97.2		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923			
Surr: Toluene-d8	95.7		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923			
Surr: 4-Bromofluorobenzene	101		70-130		%Rec	1	6/20/2016 8:29:59 PM	25923			
EPA METHOD 418.1: TPH							Analyst: TOM				
Petroleum Hydrocarbons, TR	ND	8.0	19		mg/Kg	1	6/23/2016	25996			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-03-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 1:20:00 PM Lab ID: 1606995-003 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 2.6 0.042 0.30 mg/Kg 1 6/27/2016 10:50:35 PM 26092 Chloride 570 12 30 mg/Kg 20 6/27/2016 11:02:59 PM 26092 Nitrogen, Nitrate (As N) 21 0.32 6.0 mg/Kg 20 6/27/2016 11:02:59 PM 26092 mg/Kg 540 20 6/27/2016 11:02:59 PM Sulfate 5.4 30 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD mg/Kg Mercury 0.0048 0.00058 0.034 J 1 6/28/2016 9:34:18 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED ND 2 6/30/2016 11:41:01 AM Arsenic 1.5 5.1 mg/Kg 26123 Barium 220 0.099 0.20 2 6/30/2016 11:41:01 AM 26123 mg/Kg Cadmium ND 0.13 0.20 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Chromium 11 0.26 0.61 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Copper 3.4 0.32 0.61 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Iron 17000 100 260 100 mg/Kg 6/30/2016 10:34:35 AM 26123 0.36 2 Lead 4.7 0.51 mg/Kg 6/30/2016 11:41:01 AM 26123 2 6/30/2016 11:41:01 AM Manganese 290 0.091 0.20 mg/Kg 26123 Selenium ND 2.2 5.1 mg/Kg 2 6/30/2016 11:41:01 AM 26123 Silver ND 0.065 0.51 2 6/30/2016 11:41:01 AM mg/Kg 26123 Uranium ND 2.0 10 2 6/30/2016 11:41:01 AM 26123 mg/Kg 2 Zinc 18 1.2 5.1 mg/Kg 6/30/2016 11:41:01 AM 26123 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 0.086 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 0.081 6/30/2016 4:03:22 PM Acenaphthylene ND 0.20 mg/Kg 1 26116 Aniline ND 0.095 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Anthracene ND 0.066 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 ND 0.20 Azobenzene 0.12 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Benz(a)anthracene ND 0.086 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 ND 0.076 0.20 6/30/2016 4:03:22 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.090 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 ND 0.088 Benzo(g,h,i)perylene 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Benzo(k)fluoranthene ND 0.088 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Benzoic acid ND 0.083 0.50 1 6/30/2016 4:03:22 PM mg/Kg 26116 Benzvl alcohol ND 0.078 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Bis(2-chloroethoxy)methane ND 0.11 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Bis(2-chloroethyl)ether ND 0.074 0.20 6/30/2016 4:03:22 PM 26116 mg/Kg 1 Bis(2-chloroisopropyl)ether ND 0.089 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Bis(2-ethylhexyl)phthalate 0.082 0.50 J 6/30/2016 4:03:22 PM 0.11 mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.096 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116 Butyl benzyl phthalate ND 0.089 0.20 mg/Kg 1 6/30/2016 4:03:22 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr	llup wal Sam	SOIL	Clien Col	nt Sample llection I	e ID: Cen Date: 6/16	tralOC	D-03-6/16/2016 1:20:00 PM	
Lab ID: 1000995-005	Matrix:	SOIL	K	eceivea 1	10:00:00 AM			
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Carbazole	ND	0.068	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4-Chloro-3-methylphenol	ND	0.12	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4-Chloroaniline	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Chloronaphthalene	ND	0.079	0.25		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Chlorophenol	ND	0.079	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Chrysene	ND	0.085	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Di-n-butyl phthalate	ND	0.075	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Di-n-octyl phthalate	ND	0.085	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Dibenz(a,h)anthracene	ND	0.081	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1,2-Dichlorobenzene	ND	0.077	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1,3-Dichlorobenzene	ND	0.077	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1,4-Dichlorobenzene	ND	0.085	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
3,3´-Dichlorobenzidine	ND	0.074	0.25		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Diethyl phthalate	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Dimethyl phthalate	ND	0.098	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dichlorophenol	ND	0.093	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4,6-Dinitro-2-methylphenol	ND	0.060	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dinitrophenol	ND	0.066	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4-Dinitrotoluene	ND	0.089	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,6-Dinitrotoluene	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Fluoranthene	ND	0.058	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Fluorene	ND	0.092	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachlorobenzene	ND	0.079	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Indeno(1,2,3-cd)pyrene	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1-Methylnaphthalene	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Methylnaphthalene	ND	0.12	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Methylphenol	ND	0.084	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
3+4-Methylphenol	ND	0.072	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
N-Nitrosodi-n-propylamine	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
N-Nitrosodiphenylamine	ND	0.098	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Naphthalene	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Nitroaniline	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
3-Nitroaniline	ND	0.088	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
					-			

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semian	allup nual Sam		Clier	nt Sampl llection 1	e ID: Cen Date: 6/16	tralOC 5/2016	D-03-6/16/2016 1:20:00 PM	
Lab ID: 1606995-003	Matrix:	SOIL	R	eceived l	Date: 6/17	/2016	10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	0.071	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Nitrobenzene	ND	0.10	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2-Nitrophenol	ND	0.099	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
4-Nitrophenol	ND	0.076	0.25		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Pentachlorophenol	ND	0.064	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Phenanthrene	ND	0.068	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Phenol	ND	0.075	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Pyrene	ND	0.076	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Pyridine	ND	0.079	0.40		mg/Kg	1	6/30/2016 4:03:22 PM	26116
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4,5-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
2,4,6-Trichlorophenol	ND	0.083	0.20		mg/Kg	1	6/30/2016 4:03:22 PM	26116
Surr: 2-Fluorophenol	50.9	0	28.3-102		%Rec	1	6/30/2016 4:03:22 PM	26116
Surr: Phenol-d5	59.5	0	35.7-103		%Rec	1	6/30/2016 4:03:22 PM	26116
Surr: 2,4,6-Tribromophenol	73.1	0	35.2-108		%Rec	1	6/30/2016 4:03:22 PM	26116
Surr: Nitrobenzene-d5	59.0		24-118		%Rec	1	6/30/2016 4:03:22 PM	26116
Surr: 2-Fluorobiphenyl	72.0		35.4-111		%Rec	1	6/30/2016 4:03:22 PM	26116
Surr: 4-Terphenyl-d14	59.7		15-91.7		%Rec	1	6/30/2016 4:03:22 PM	26116
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.019	0.024		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Toluene	ND	0.0029	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Ethylbenzene	ND	0.0040	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Methyl tert-butyl ether (MTBE)	ND	0.015	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
1.2.4-Trimethylbenzene	ND	0.0036	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
1.3.5-Trimethylbenzene	ND	0.0035	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
1.2-Dichloroethane (EDC)	ND	0.013	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
1.2-Dibromoethane (EDB)	ND	0.0034	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Naphthalene	ND	0.0076	0.097		ma/Ka	1	6/20/2016 9:55:03 PM	25923
1-Methylnaphthalene	ND	0.011	0.19		ma/Ka	1	6/20/2016 9:55:03 PM	25923
2-Methylnaphthalene	ND	0.010	0.19		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Acetone	ND	0.063	0.73		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Bromobenzene	ND	0.0039	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Bromodichloromethane	ND	0.0028	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Bromoform	ND	0.0059	0.048		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Bromomethane	0.018	0.018	0 15	.1	ma/Ka	1	6/20/2016 9:55:03 PM	25923
2-Butanone	ND	0.078	0.48	0	ma/Ka	1	6/20/2016 9:55:03 PM	25923
Carbon disulfide	ND	0.020	0.48		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Carbon tetrachloride	ND	0.010	0.48		ma/Ka	1	6/20/2016 9:55:03 PM	25923
Chlorobenzene		0.0032	0.040		ma/Ka	1	6/20/2016 0.55.03 PM	25923
		0.0039	0.040		iiig/itg	I	0/20/2010 9.00.00 FIVI	20020

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

R RPD outside accepted recovery limits

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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semiant	LIENT: Western Refining Southwest, Gallup roject: OCD Central Landfarm Semiannual Sam					tralOC 5/2016	Client Sample ID: CentralOCD-03-6/16/2016 Collection Date: 6/16/2016 1:20:00 PM						
Lab ID: 1606995-003	Matrix:	SOIL	R	Received Date: 6/17/2016 10:00:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID					
EPA METHOD 8260B: VOLATILES							Analyst: DJF						
Chloroethane	ND	0.0096	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Chloroform	ND	0.0036	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Chloromethane	0.070	0.0043	0.15	J	mg/Kg	1	6/20/2016 9:55:03 PM	25923					
2-Chlorotoluene	ND	0.0036	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
4-Chlorotoluene	ND	0.0043	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
cis-1,2-DCE	ND	0.0028	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
cis-1,3-Dichloropropene	ND	0.0045	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,2-Dibromo-3-chloropropane	ND	0.015	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Dibromochloromethane	ND	0.0044	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Dibromomethane	ND	0.0042	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,2-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,3-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,4-Dichlorobenzene	ND	0.0060	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Dichlorodifluoromethane	ND	0.015	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,1-Dichloroethane	ND	0.0026	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,1-Dichloroethene	ND	0.016	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,2-Dichloropropane	ND	0.0041	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,3-Dichloropropane	ND	0.0055	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
2,2-Dichloropropane	ND	0.0028	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,1-Dichloropropene	ND	0.0038	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Hexachlorobutadiene	ND	0.0059	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
2-Hexanone	ND	0.026	0.48		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Isopropylbenzene	ND	0.0042	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
4-Isopropyltoluene	ND	0.0043	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
4-Methyl-2-pentanone	ND	0.014	0.48		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Methylene chloride	ND	0.014	0.15		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
n-Butylbenzene	ND	0.0043	0.15		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
n-Propylbenzene	ND	0.0037	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
sec-Butylbenzene	ND	0.0067	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Styrene	ND	0.0043	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
tert-Butylbenzene	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,1,1,2-Tetrachloroethane	ND	0.0046	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,1,2,2-Tetrachloroethane	ND	0.0078	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
Tetrachloroethene (PCE)	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
trans-1,2-DCE	ND	0.014	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
trans-1,3-Dichloropropene	ND	0.0071	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,2,3-Trichlorobenzene	ND	0.0072	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,2,4-Trichlorobenzene	ND	0.0052	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					
1,1,1-Trichloroethane	ND	0.0030	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923					

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

*	Value exceeds Maximum Contaminant Level.	
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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest, OCD Central Landfarm Semi	, Gallup Client Sample ID: CentralOCD-03-6/16/2016 iannual Sam Collection Date: 6/16/2016 1:20:00 PM									
Lab ID:	1606995-003	Matrix:	R	Received Date: 6/17/2016 10:00:00 AM							
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METH	IOD 8260B: VOLATILES							Analyst: DJF			
1,1,2-Trich	loroethane	ND	0.0057	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Trichloroet	thene (TCE)	ND	0.0052	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Trichloroflu	uoromethane	ND	0.0036	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
1,2,3-Trich	loropropane	ND	0.0084	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Vinyl chlor	ide	ND	0.0040	0.048		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Xylenes, T	otal	ND	0.0092	0.097		mg/Kg	1	6/20/2016 9:55:03 PM	25923		
Surr: Di	bromofluoromethane	105		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
Surr: 1,2	2-Dichloroethane-d4	99.5		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
Surr: To	oluene-d8	97.5		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
Surr: 4-	Bromofluorobenzene	103		70-130		%Rec	1	6/20/2016 9:55:03 PM	25923		
	IOD 418.1: TPH							Analyst: TOM			
Petroleum	Hydrocarbons, TR	ND	8.6	20		mg/Kg	1	6/23/2016	25996		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-04-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 11:45:00 AM Lab ID: 1606995-004 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 2.9 0.042 0.30 mg/Kg 1 6/27/2016 11:40:14 PM 26092 Chloride 170 12 30 mg/Kg 20 6/27/2016 11:52:38 PM 26092 Nitrogen, Nitrate (As N) 7.1 0.016 0.30 mg/Kg 6/27/2016 11:40:14 PM 1 26092 mg/Kg 20 6/27/2016 11:52:38 PM Sulfate 630 5.4 30 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD mg/Kg Mercury 0.0042 0.00054 0.031 J 1 6/28/2016 9:36:06 AM 26093 EPA METHOD 6010B: SOIL METALS Analyst: MED ND 2 6/30/2016 11:42:53 AM Arsenic 1.4 4.8 mg/Kg 26123 Barium 200 0.093 0.19 2 6/30/2016 11:42:53 AM 26123 mg/Kg Cadmium ND 0.12 0.19 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Chromium 9.5 0.24 0.57 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Copper 3.0 0.30 0.57 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Iron 15000 93 240 100 mg/Kg 6/30/2016 10:36:09 AM 26123 0.33 2 Lead 5.2 0.48 mg/Kg 6/30/2016 11:42:53 AM 26123 Manganese 310 0.085 0.19 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Selenium ND 2.1 4.8 mg/Kg 2 6/30/2016 11:42:53 AM 26123 Silver ND 0.061 2 0.48 mg/Kg 6/30/2016 11:42:53 AM 26123 Uranium ND 1.9 9.6 2 6/30/2016 11:42:53 AM 26123 mg/Kg 2 Zinc 15 1.1 4.8 mg/Kg 6/30/2016 11:42:53 AM 26123 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 0.085 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 0.081 0.20 6/30/2016 4:31:23 PM Acenaphthylene ND mg/Kg 1 26116 Aniline ND 0.094 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Anthracene ND 0.066 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 ND 0.20 Azobenzene 0.12 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Benz(a)anthracene ND 0.086 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 ND 0.075 0.20 6/30/2016 4:31:23 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.090 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 ND 0.088 Benzo(g,h,i)perylene 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Benzo(k)fluoranthene ND 0.088 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Benzoic acid ND 0.083 0.50 1 6/30/2016 4:31:23 PM mg/Kg 26116 Benzvl alcohol ND 0.078 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Bis(2-chloroethoxy)methane ND 0.11 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Bis(2-chloroethyl)ether ND 0.073 0.20 6/30/2016 4:31:23 PM 26116 mg/Kg 1 Bis(2-chloroisopropyl)ether ND 0.089 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Bis(2-ethylhexyl)phthalate 0.099 0.081 0.50 J 6/30/2016 4:31:23 PM mg/Kg 1 26116 4-Bromophenyl phenyl ether ND 0.095 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116 Butyl benzyl phthalate ND 0.088 0.20 mg/Kg 1 6/30/2016 4:31:23 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory, Inc.

OCD Central Landfarm Semiannual Sam

CLIENT: Western Refining Southwest, Gallup

Project:

 Laboratory, Inc.
 Date Reported: 7/19/2016

 up
 Client Sample ID: CentralOCD-04-6/16/2016

 al Sam
 Collection Date: 6/16/2016 11:45:00 AM

 Matrix: SOIL
 Received Date: 6/17/2016 10:00:00 AM

Lab ID: 1606995-004	Matrix:	SOIL	R	eceived 1	Date: 6/17	7/2016	10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Carbazole	ND	0.067	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
4-Chloro-3-methylphenol	ND	0.12	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116
4-Chloroaniline	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2-Chloronaphthalene	ND	0.078	0.25		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2-Chlorophenol	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Chrysene	ND	0.085	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Di-n-butyl phthalate	ND	0.074	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Di-n-octyl phthalate	ND	0.085	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Dibenz(a,h)anthracene	ND	0.080	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Dibenzofuran	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
1,2-Dichlorobenzene	ND	0.076	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
1,3-Dichlorobenzene	ND	0.077	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
1,4-Dichlorobenzene	ND	0.084	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
3,3´-Dichlorobenzidine	ND	0.073	0.25		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Diethyl phthalate	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Dimethyl phthalate	ND	0.097	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2,4-Dichlorophenol	ND	0.093	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2,4-Dimethylphenol	ND	0.11	0.30		mg/Kg	1	6/30/2016 4:31:23 PM	26116
4,6-Dinitro-2-methylphenol	ND	0.060	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2,4-Dinitrophenol	ND	0.066	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2,4-Dinitrotoluene	ND	0.089	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2,6-Dinitrotoluene	ND	0.11	0.50		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Fluoranthene	ND	0.057	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Fluorene	ND	0.091	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Hexachlorobenzene	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Hexachlorocyclopentadiene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Hexachloroethane	ND	0.086	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Indeno(1,2,3-cd)pyrene	ND	0.078	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
1-Methylnaphthalene	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2-Methylnaphthalene	ND	0.12	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2-Methylphenol	ND	0.083	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
3+4-Methylphenol	ND	0.072	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
N-Nitrosodi-n-propylamine	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
N-Nitrosodiphenylamine	ND	0.097	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Naphthalene	ND	0.096	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2-Nitroaniline	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
3-Nitroaniline	ND	0.088	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr Lab ID: 1606995-004	llup wal Sam Matrix:	SOIL	Clier Col Re	nt Sampl llection I eceived I	e ID: Cen Date: 6/16 Date: 6/17	tralOC 5/2016 7/2016	D-04-6/16/2016 11:45:00 AM 10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	0.070	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Nitrobenzene	ND	0.10	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2-Nitrophenol	ND	0.099	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
4-Nitrophenol	ND	0.076	0.25		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Pentachlorophenol	ND	0.064	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Phenanthrene	ND	0.068	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Phenol	ND	0.075	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Pyrene	ND	0.075	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Pyridine	ND	0.079	0.40		mg/Kg	1	6/30/2016 4:31:23 PM	26116
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2,4,5-Trichlorophenol	ND	0.10	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
2,4,6-Trichlorophenol	ND	0.083	0.20		mg/Kg	1	6/30/2016 4:31:23 PM	26116
Surr: 2-Fluorophenol	69.7	0	28.3-102		%Rec	1	6/30/2016 4:31:23 PM	26116
Surr: Phenol-d5	76.7	0	35.7-103		%Rec	1	6/30/2016 4:31:23 PM	26116
Surr: 2,4,6-Tribromophenol	84.1	0	35.2-108		%Rec	1	6/30/2016 4:31:23 PM	26116
Surr: Nitrobenzene-d5	81.5		24-118		%Rec	1	6/30/2016 4:31:23 PM	26116
Surr: 2-Fluorobiphenyl	84.2		35.4-111		%Rec	1	6/30/2016 4:31:23 PM	26116
Surr: 4-Terphenyl-d14	71.3		15-91.7		%Rec	1	6/30/2016 4:31:23 PM	26116
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.020	0.025		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Toluene	ND	0.0029	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Ethylbenzene	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Methyl tert-butyl ether (MTBE)	ND	0.016	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2,4-Trimethylbenzene	ND	0.0037	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,3,5-Trimethylbenzene	ND	0.0036	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2-Dichloroethane (EDC)	ND	0.013	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2-Dibromoethane (EDB)	ND	0.0035	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Naphthalene	ND	0.0078	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/23/2016 12:50:04 PM	25923
2-Methylnaphthalene	ND	0.011	0.20		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Acetone	ND	0.064	0.75		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Bromobenzene	ND	0.0040	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Bromodichloromethane	ND	0.0029	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Bromoform	ND	0.0061	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Bromomethane	0.023	0.018	0.15	J	mg/Kg	1	6/23/2016 12:50:04 PM	25923
2-Butanone	ND	0.028	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Carbon disulfide	ND	0.016	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Carbon tetrachloride	ND	0.0033	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Chlorobenzene	ND	0.0040	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 18 of 49

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: OCD Central Landfarm Semian Lab ID: 1606995-004	allup nual Sam Matrix:	SOIL	Clien Col Ro	nt Sampl llection 1 eceived 1	e ID: Cen Date: 6/16 Date: 6/17	tralOC 5/2016 7/2016	D-04-6/16/2016 11:45:00 AM 10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Chloroethane	ND	0.0099	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Chloroform	ND	0.0038	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Chloromethane	0.065	0.0044	0.15	J	mg/Kg	1	6/23/2016 12:50:04 PM	25923
2-Chlorotoluene	ND	0.0037	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
4-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
cis-1,2-DCE	ND	0.0029	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
cis-1,3-Dichloropropene	ND	0.0046	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2-Dibromo-3-chloropropane	ND	0.015	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Dibromochloromethane	ND	0.0045	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Dibromomethane	ND	0.0043	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,3-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,4-Dichlorobenzene	ND	0.0062	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Dichlorodifluoromethane	ND	0.015	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,1-Dichloroethane	ND	0.0027	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,1-Dichloroethene	ND	0.016	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2-Dichloropropane	ND	0.0042	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,3-Dichloropropane	ND	0.0056	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
2,2-Dichloropropane	ND	0.0028	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,1-Dichloropropene	ND	0.0039	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Hexachlorobutadiene	ND	0.0061	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923
2-Hexanone	ND	0.027	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Isopropylbenzene	ND	0.0043	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
4-Isopropyltoluene	ND	0.0045	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
4-Methyl-2-pentanone	ND	0.014	0.50		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Methylene chloride	ND	0.014	0.15		mg/Kg	1	6/23/2016 12:50:04 PM	25923
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	6/23/2016 12:50:04 PM	25923
n-Propylbenzene	ND	0.0038	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
sec-Butylbenzene	ND	0.0069	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Styrene	ND	0.0044	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
tert-Butylbenzene	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,1,1,2-Tetrachloroethane	ND	0.0048	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,1,2,2-Tetrachloroethane	ND	0.0081	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
Tetrachloroethene (PCE)	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
trans-1,2-DCE	ND	0.014	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
trans-1,3-Dichloropropene	ND	0.0073	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2,3-Trichlorobenzene	ND	0.0074	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,2,4-Trichlorobenzene	ND	0.0053	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923
1,1,1-Trichloroethane	ND	0.0030	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Analytical Report Lab Order 1606995 Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest,	Gallup		Clier	nt Sampl	e ID: Cen	tralOC	D-04-6/16/2016		
Lah ID:	1606995-004	Matrix:	SOIL	Received Date: 6/17/2016 10:00:00 AM						
	1000775 001	iviuu ix.	JOIL			Dute: 0/11	2010	10.00.00710		
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
	OD 8260B: VOLATILES							Analyst: DJF		
1,1,2-Trich	nloroethane	ND	0.0059	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Trichloroe	thene (TCE)	ND	0.0053	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Trichlorofl	uoromethane	ND	0.0037	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
1,2,3-Trich	nloropropane	ND	0.0086	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Vinyl chlor	ride	ND	0.0041	0.050		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Xylenes, T	Total	ND	0.0094	0.10		mg/Kg	1	6/23/2016 12:50:04 PM	25923	
Surr: Di	bromofluoromethane	99.8		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
Surr: 1,	2-Dichloroethane-d4	102		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
Surr: To	bluene-d8	92.8		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
Surr: 4-	Bromofluorobenzene	103		70-130		%Rec	1	6/23/2016 12:50:04 PM	25923	
EPA METH	10D 418.1: TPH							Analyst: TOM		
Petroleum	Hydrocarbons, TR	ND	8.0	19		mg/Kg	1	6/23/2016	25996	

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Lab Order **1606995**

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BD-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 Lab ID: 1606995-005 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 300.0: ANIONS** Analyst: LGT Fluoride 2.7 0.042 0.30 mg/Kg 1 6/28/2016 12:05:03 AM 26092 Chloride 360 12 30 mg/Kg 20 6/28/2016 12:17:27 AM 26092 Nitrogen, Nitrate (As N) 3.0 0.016 0.30 mg/Kg 6/28/2016 12:05:03 AM 1 26092 20 6/28/2016 12:17:27 AM Sulfate 770 5.4 30 mg/Kg 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD mg/Kg 0.0054 0.00053 0.031 J 1 6/28/2016 9:37:56 AM 26093 Mercurv EPA METHOD 6010B: SOIL METALS Analyst: MED 2 6/30/2016 11:45:00 AM Arsenic ND 1.4 4.8 mg/Kg 26123 Barium 190 0.094 0.19 2 6/30/2016 11:45:00 AM 26123 mg/Kg Cadmium ND 0.12 0.19 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Chromium 11 0.24 0.58 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Copper 3.8 0.30 0.58 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Iron 15000 94 240 100 mg/Kg 6/30/2016 10:45:16 AM 26123 0.34 2 Lead 3.6 0.48 mg/Kg 6/30/2016 11:45:00 AM 26123 6/30/2016 11:45:00 AM Manganese 240 0.086 0.19 mg/Kg 2 26123 Selenium ND 2.1 4.8 mg/Kg 2 6/30/2016 11:45:00 AM 26123 Silver ND 0.061 2 0.48 mg/Kg 6/30/2016 11:45:00 AM 26123 Uranium ND 1.9 9.7 2 6/30/2016 11:45:00 AM 26123 mg/Kg 2 Zinc 17 1.1 4.8 mg/Kg 6/30/2016 11:45:00 AM 26123 **EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Acenaphthene ND 0.17 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 0.16 D 6/30/2016 4:59:04 PM Acenaphthylene ND 0.40 mg/Kg 1 26116 Aniline ND 0.19 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Anthracene ND 0.13 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 ND 0.24 D Azobenzene 0.40 mg/Kg 1 6/30/2016 4:59:04 PM 26116 Benz(a)anthracene ND 0.17 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 ND 0.15 0.40 D 6/30/2016 4:59:04 PM 26116 Benzo(a)pyrene mg/Kg 1 Benzo(b)fluoranthene ND 0.18 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 ND D Benzo(g,h,i)perylene 0.18 0.40 mg/Kg 6/30/2016 4:59:04 PM 26116 1 D Benzo(k)fluoranthene ND 0.18 0.40 mg/Kg 1 6/30/2016 4:59:04 PM 26116 D Benzoic acid ND 0.17 1.0 mg/Kg 1 6/30/2016 4:59:04 PM 26116 Benzvl alcohol ND 0.16 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Bis(2-chloroethoxy)methane ND 0.22 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Bis(2-chloroethyl)ether ND 0.15 0.40 D mg/Kg 6/30/2016 4:59:04 PM 26116 1 D Bis(2-chloroisopropyl)ether ND 0.18 0.40 mg/Kg 1 6/30/2016 4:59:04 PM 26116 Bis(2-ethylhexyl)phthalate ND D 0.16 1.0 mg/Kg 1 6/30/2016 4:59:04 PM 26116 4-Bromophenyl phenyl ether ND 0.19 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116 Butyl benzyl phthalate ND 0.18 0.40 D mg/Kg 1 6/30/2016 4:59:04 PM 26116

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr	allup nual Sam		Clier Col	nt Sampl llection 1	e ID: BD- Date: 6/16	-6/16/2 5/2016	016		
Lab ID: 1606995-005	Matrix:	SOIL	R	eceived l	Date: 6/17	7/2016	10:00:00 AM		
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC		
Carbazole	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4-Chloro-3-methylphenol	ND	0.24	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4-Chloroaniline	ND	0.22	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Chloronaphthalene	ND	0.16	0.50	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Chlorophenol	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4-Chlorophenyl phenyl ether	ND	0.23	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Chrysene	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Di-n-butyl phthalate	0.16	0.15	0.80	JD	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Di-n-octyl phthalate	ND	0.17	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Dibenz(a,h)anthracene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Dibenzofuran	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1,2-Dichlorobenzene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1,3-Dichlorobenzene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1,4-Dichlorobenzene	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
3,3'-Dichlorobenzidine	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Diethyl phthalate	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Dimethyl phthalate	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dichlorophenol	ND	0.19	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dimethylphenol	ND	0.22	0.60	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
4,6-Dinitro-2-methylphenol	ND	0.12	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dinitrophenol	ND	0.13	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,4-Dinitrotoluene	ND	0.18	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2,6-Dinitrotoluene	ND	0.21	1.0	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Fluoranthene	ND	0.12	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Fluorene	ND	0.18	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachlorobenzene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachlorobutadiene	ND	0.23	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachlorocyclopentadiene	ND	0.23	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Hexachloroethane	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Indeno(1,2,3-cd)pyrene	ND	0.16	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
1-Methylnaphthalene	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Methylnaphthalene	ND	0.24	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Methylphenol	ND	0.17	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
3+4-Methylphenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
N-Nitrosodi-n-propylamine	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
N-Nitrosodiphenylamine	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
Naphthalene	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
2-Nitroaniline	ND	0.22	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	
3-Nitroaniline	ND	0.18	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116	

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semian Lab ID: 1606995-005	allup nual Sam Matrix:	SOIL	Clier Co R	nt Sampl llection l eceived l	e ID: BD Date: 6/10 Date: 6/17	-6/16/2 5/2016 7/2016	016 10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	0.14	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
Nitrobenzene	ND	0.21	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
2-Nitrophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
4-Nitrophenol	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
Pentachlorophenol	ND	0.13	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
Phenanthrene	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
Phenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
Pyrene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
Pyridine	ND	0.16	0.80	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
1,2,4-Trichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
2,4,5-Trichlorophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
2,4,6-Trichlorophenol	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 4:59:04 PM	26116
Surr: 2-Fluorophenol	63.7	0	28.3-102	D	%Rec	1	6/30/2016 4:59:04 PM	26116
Surr: Phenol-d5	66.9	0	35.7-103	D	%Rec	1	6/30/2016 4:59:04 PM	26116
Surr: 2,4,6-Tribromophenol	79.4	0	35.2-108	D	%Rec	1	6/30/2016 4:59:04 PM	26116
Surr: Nitrobenzene-d5	68.2		24-118	D	%Rec	1	6/30/2016 4:59:04 PM	26116
Surr: 2-Fluorobiphenyl	73.5		35.4-111	D	%Rec	1	6/30/2016 4:59:04 PM	26116
Surr: 4-Terphenyl-d14	102		15-91.7	SD	%Rec	1	6/30/2016 4:59:04 PM	26116
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.019	0.023		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Toluene	ND	0.0028	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Ethylbenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Methyl tert-butyl ether (MTBE)	ND	0.015	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2,4-Trimethylbenzene	ND	0.0034	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,3,5-Trimethylbenzene	ND	0.0034	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2-Dichloroethane (EDC)	ND	0.012	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2-Dibromoethane (EDB)	ND	0.0033	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Naphthalene	ND	0.0073	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1-Methylnaphthalene	ND	0.010	0.19		mg/Kg	1	6/23/2016 1:18:39 PM	25923
2-Methylnaphthalene	ND	0.010	0.19		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Acetone	ND	0.060	0.70		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Bromobenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Bromodichloromethane	ND	0.0027	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Bromoform	ND	0.0057	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Bromomethane	0.021	0.017	0.14	J	mg/Kg	1	6/23/2016 1:18:39 PM	25923
2-Butanone	ND	0.027	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Carbon disulfide	ND	0.015	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Carbon tetrachloride	ND	0.0031	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Chlorobenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923

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

R RPD outside accepted recovery limits

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: OCD Central Landfarm Semian Lab ID: 1606995-005	allup nual Sam Matrix:	Client Sample ID: BD-6/16/2016 Collection Date: 6/16/2016 Received Date: 6/17/2016 10:00:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Chloroethane	ND	0.0093	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Chloroform	ND	0.0035	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Chloromethane	0.058	0.0041	0.14	J	mg/Kg	1	6/23/2016 1:18:39 PM	25923
2-Chlorotoluene	ND	0.0034	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
4-Chlorotoluene	ND	0.0041	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
cis-1,2-DCE	ND	0.0027	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
cis-1,3-Dichloropropene	ND	0.0043	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2-Dibromo-3-chloropropane	ND	0.014	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Dibromochloromethane	ND	0.0042	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Dibromomethane	ND	0.0040	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2-Dichlorobenzene	ND	0.0041	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,3-Dichlorobenzene	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,4-Dichlorobenzene	ND	0.0058	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Dichlorodifluoromethane	ND	0.014	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,1-Dichloroethane	ND	0.0025	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,1-Dichloroethene	ND	0.015	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2-Dichloropropane	ND	0.0039	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,3-Dichloropropane	ND	0.0053	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
2,2-Dichloropropane	ND	0.0027	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,1-Dichloropropene	ND	0.0037	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Hexachlorobutadiene	ND	0.0057	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
2-Hexanone	ND	0.025	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Isopropylbenzene	ND	0.0040	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
4-Isopropyltoluene	ND	0.0042	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
4-Methyl-2-pentanone	ND	0.014	0.47		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Methylene chloride	ND	0.013	0.14		mg/Kg	1	6/23/2016 1:18:39 PM	25923
n-Butylbenzene	ND	0.0041	0.14		mg/Kg	1	6/23/2016 1:18:39 PM	25923
n-Propylbenzene	ND	0.0036	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
sec-Butylbenzene	ND	0.0065	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Styrene	ND	0.0042	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
tert-Butylbenzene	ND	0.0039	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,1,1,2-Tetrachloroethane	ND	0.0045	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,1,2,2-Tetrachloroethane	ND	0.0076	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Tetrachloroethene (PCE)	ND	0.0039	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
trans-1,2-DCE	ND	0.013	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
trans-1,3-Dichloropropene	ND	0.0068	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2,3-Trichlorobenzene	ND	0.0070	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2,4-Trichlorobenzene	ND	0.0050	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,1,1-Trichloroethane	ND	0.0028	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923

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

*	Value exceeds Maximum Contaminant Level.	
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D Sample Diluted Due to Matrix

Qualifiers:

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1606995

Date Reported: 7/19/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest, OCD Central Landfarm Semi		Client Sample ID: BD-6/16/2016 Collection Date: 6/16/2016						
Lab ID: 1606995-005 Matrix: SOIL Received Date: 6/17/2016 10:00				10:00:00 AM					
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	OD 8260B: VOLATILES							Analyst: DJF	
1,1,2-Trich	loroethane	ND	0.0055	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Trichloroethene (TCE)		ND	0.0050	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Trichlorofluoromethane		ND	0.0035	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
1,2,3-Trichloropropane		ND	0.0081	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Vinyl chlori	de	ND	0.0038	0.047		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Xylenes, To	otal	ND	0.0088	0.093		mg/Kg	1	6/23/2016 1:18:39 PM	25923
Surr: Dibromofluoromethane		102		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
Surr: 1,2-Dichloroethane-d4		100		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
Surr: Toluene-d8		91.6		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
Surr: 4-Bromofluorobenzene		103		70-130		%Rec	1	6/23/2016 1:18:39 PM	25923
EPA METH	IOD 418.1: TPH							Analyst: TOM	
Petroleum	Hydrocarbons, TR	ND	8.7	21		mg/Kg	1	6/23/2016	25996

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-TZ-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 1:40:00 PM Lab ID: 1606995-006 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE ORGANICS Analyst: JME Diesel Range Organics (DRO) 180 1.8 9.6 mg/Kg 1 6/23/2016 6:14:17 PM 25944 Motor Oil Range Organics (MRO) 200 48 48 mg/Kg 1 6/23/2016 6:14:17 PM 25944 Surr: DNOP 115 0 70-130 %Rec 6/23/2016 6:14:17 PM 25944 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: RAA Gasoline Range Organics (GRO) 0.96 6/24/2016 7:46:24 PM ND 4.6 mg/Kg 1 25923 Surr: BFB 86.5 0 80-120 %Rec 1 6/24/2016 7:46:24 PM 25923 **EPA METHOD 300.0: ANIONS** Analyst: LGT 0.84 6/28/2016 12:42:17 AM Fluoride 9.4 6.0 mg/Kg 20 26092 mg/Kg Chloride 290 12 30 20 6/28/2016 12:42:17 AM 26092 Nitrogen, Nitrate (As N) 5.2 0.016 0.30 mg/Kg 1 6/28/2016 12:29:52 AM 26092 Sulfate 860 5.4 30 mg/Kg 20 6/28/2016 12:42:17 AM 26092 **EPA METHOD 7471: MERCURY** Analyst: DBD Mercury 0.35 0.0011 0.064 mg/Kg 2 6/28/2016 9:45:27 AM 26093 **EPA METHOD 6010B: SOIL METALS** Analyst: MED Arsenic 1.4 0.71 2.4 J mg/Kg 1 6/30/2016 11:12:22 AM 26123 Barium 0.047 6/30/2016 11:12:22 AM 26123 170 0.097 mg/Kg 1 Cadmium ND 0.062 0.097 mg/Kg 6/30/2016 11:12:22 AM 26123 1 Chromium 10 0.12 0.29 mg/Kg 1 6/30/2016 11:12:22 AM 26123 0.15 6/30/2016 11:12:22 AM Copper 8.9 0.29 mg/Kg 1 26123 Iron 15000 95 240 mg/Kg 100 6/30/2016 10:46:51 AM 26123 Lead 9.0 0.17 0.24 6/30/2016 11:12:22 AM 26123 mg/Kg 1 280 0.086 0.19 6/30/2016 11:46:55 AM 26123 Manganese mg/Kg 2 2.4 ND 1.1 Selenium mg/Kg 6/30/2016 11:12:22 AM 26123 1 0.031 Silver ND 0.24 mg/Kg 1 6/30/2016 11:12:22 AM 26123 Uranium ND 0.96 6/30/2016 11:12:22 AM 26123 4.9 mg/Kg 1 Zinc 38 0.55 2.4 mg/Kg 1 6/30/2016 11:12:22 AM 26123 EPA METHOD 8270C: SEMIVOLATILES Analyst: JDC ND 0.17 0.40 D 6/30/2016 5:26:58 PM Acenaphthene mg/Kg 1 26116 0.16 D Acenaphthylene ND 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Aniline ND 0.19 0.40 D mg/Kg 6/30/2016 5:26:58 PM 1 26116 Anthracene ND 0.13 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Azobenzene ND 0.24 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benz(a)anthracene ND 0.17 0.40 D mg/Kg 6/30/2016 5:26:58 PM 26116 1 Benzo(a)pyrene ND 0.15 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benzo(b)fluoranthene ND D 0.18 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benzo(g,h,i)perylene ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Benzo(k)fluoranthene ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116

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

Qualifiers: * Value exceed

- 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: CentralOCD-TZ-6/16/2016 **Project:** OCD Central Landfarm Semiannual Sam Collection Date: 6/16/2016 1:40:00 PM Lab ID: 1606995-006 Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 6/30/2016 5:26:58 PM Benzoic acid ND 0.17 1.0 D mg/Kg 1 26116 Benzyl alcohol ND 0.16 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Bis(2-chloroethoxy)methane ND 0.22 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Bis(2-chloroethyl)ether ND D 0.15 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D Bis(2-chloroisopropyl)ether 0.18 0.40 mg/Kg 6/30/2016 5:26:58 PM 1 26116 Bis(2-ethylhexyl)phthalate 0.18 0.16 1.0 JD mg/Kg 1 6/30/2016 5:26:58 PM 26116 D 4-Bromophenyl phenyl ether ND 0.19 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Butyl benzyl phthalate ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 0.40 D Carbazole ND 0.13 mg/Kg 1 6/30/2016 5:26:58 PM 26116 4-Chloro-3-methylphenol ND 0.24 1.0 D 6/30/2016 5:26:58 PM mg/Kg 1 26116 4-Chloroaniline ND 0.22 1.0 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 2-Chloronaphthalene ND 0.16 0.50 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 2-Chlorophenol ND 0.16 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 D 4-Chlorophenyl phenyl ether ND 0.23 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D Chrysene 0.17 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 JD Di-n-butyl phthalate 0.15 0.15 0.80 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Di-n-octyl phthalate ND 0.17 0.80 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND 0.40 D Dibenz(a,h)anthracene 0.16 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Dibenzofuran ND 0.20 0.40 D 6/30/2016 5:26:58 PM 26116 mg/Kg 1 D 1,2-Dichlorobenzene ND 0.15 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D 1,3-Dichlorobenzene 0.15 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 1,4-Dichlorobenzene ND 0.17 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 3,3'-Dichlorobenzidine ND 0.15 0.50 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND 0.20 0.40 D 6/30/2016 5:26:58 PM Diethyl phthalate mg/Kg 1 26116 ND 0.20 D Dimethyl phthalate 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D 2.4-Dichlorophenol 0.19 0.80 mg/Kg 1 6/30/2016 5:26:58 PM 26116 2,4-Dimethylphenol ND 0.22 0.60 D 6/30/2016 5:26:58 PM mg/Kg 1 26116 4,6-Dinitro-2-methylphenol ND 0.12 0.80 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 ND D 2,4-Dinitrophenol 0.13 1.0 mg/Kg 1 6/30/2016 5:26:58 PM 26116 2,4-Dinitrotoluene ND 0.18 1.0 D mg/Kg 6/30/2016 5:26:58 PM 26116 1 D 2,6-Dinitrotoluene ND 0.21 1.0 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Fluoranthene ND 0.11 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Fluorene ND 0.18 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 Hexachlorobenzene ND 0.16 0.40 D 6/30/2016 5:26:58 PM 26116 mg/Kg 1 ND 0.22 0.40 D 6/30/2016 5:26:58 PM Hexachlorobutadiene mg/Kg 1 26116 ND 0.23 D Hexachlorocyclopentadiene 0.40 mg/Kg 1 6/30/2016 5:26:58 PM 26116 Hexachloroethane ND 0.17 0.40 D mg/Kg 1 6/30/2016 5:26:58 PM 26116 D ND 0.16 0.40

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

0.40

0.20

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Indeno(1,2,3-cd)pyrene

1-Methylnaphthalene

Oualifiers:

Н Holding times for preparation or analysis exceeded

ND

- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В

1

1

6/30/2016 5:26:58 PM

6/30/2016 5:26:58 PM

26116

26116

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Е Value above quantitation range

mg/Kg

mg/Kg

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

D

- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Date Reported: 7/19/2016
Analytical Report
Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GaProject:OCD Central Landfarm SemiannLab ID:1606995-006	SOIL	Client Sample ID: CentralOCD-TZ-6/16/2016 Collection Date: 6/16/2016 1:40:00 PM SOIL Received Date: 6/17/2016 10:00:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
2-Methylnaphthalene	ND	0.24	0.40	D	ma/Ka	1	6/30/2016 5:26:58 PM	26116
2-Methylphenol	ND	0.17	0.80	D	ma/Ka	1	6/30/2016 5:26:58 PM	26116
3+4-Methylphenol	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
N-Nitrosodi-n-propylamine	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
N-Nitrosodiphenylamine	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Naphthalene	ND	0.19	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
2-Nitroaniline	ND	0.21	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
3-Nitroaniline	ND	0.18	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
4-Nitroaniline	ND	0.14	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Nitrobenzene	ND	0.21	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
2-Nitrophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
4-Nitrophenol	ND	0.15	0.50	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Pentachlorophenol	ND	0.13	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Phenanthrene	ND	0.14	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Phenol	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Pyrene	ND	0.15	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Pyridine	ND	0.16	0.80	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
1,2,4-Trichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
2,4,5-Trichlorophenol	ND	0.20	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
2,4,6-Trichlorophenol	ND	0.17	0.40	D	mg/Kg	1	6/30/2016 5:26:58 PM	26116
Surr: 2-Fluorophenol	67.1	0	28.3-102	D	%Rec	1	6/30/2016 5:26:58 PM	26116
Surr: Phenol-d5	71.9	0	35.7-103	D	%Rec	1	6/30/2016 5:26:58 PM	26116
Surr: 2,4,6-Tribromophenol	80.0	0	35.2-108	D	%Rec	1	6/30/2016 5:26:58 PM	26116
Surr: Nitrobenzene-d5	75.6		24-118	D	%Rec	1	6/30/2016 5:26:58 PM	26116
Surr: 2-Fluorobiphenyl	86.3		35.4-111	D	%Rec	1	6/30/2016 5:26:58 PM	26116
Surr: 4-Terphenyl-d14	73.4		15-91.7	D	%Rec	1	6/30/2016 5:26:58 PM	26116
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.019	0.023		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Toluene	0.0090	0.0027	0.046	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
Ethylbenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Methyl tert-butyl ether (MTBE)	ND	0.015	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2,4-Trimethylbenzene	ND	0.0034	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,3,5-Trimethylbenzene	ND	0.0034	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dichloroethane (EDC)	ND	0.012	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dibromoethane (EDB)	ND	0.0033	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Naphthalene	ND	0.0073	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1-Methylnaphthalene	ND	0.010	0.19		mg/Ka	1	6/23/2016 1:47:16 PM	25923
2-Methylnaphthalene	ND	0.0099	0.19		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Acetone	ND	0.060	0.70		mg/Kg	1	6/23/2016 1:47:16 PM	25923

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 28 of 49

Analytical Report
Lab Order 1606995

Date Reported: 7/19/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: OCD Central Landfarm Semianr Lab ID: 1606995-006	llup wal Sam Matrix:	SOIL	Client Sample ID: CentralOCD-TZ-6/16/2016 Collection Date: 6/16/2016 1:40:00 PM Received Date: 6/17/2016 10:00:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromobenzene	ND	0.0037	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Bromodichloromethane	ND	0.0027	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Bromoform	ND	0.0057	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Bromomethane	0.024	0.017	0.14	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
2-Butanone	0.070	0.027	0.46	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
Carbon disulfide	ND	0.015	0.46		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Carbon tetrachloride	ND	0.0030	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chlorobenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chloroethane	ND	0.0093	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chloroform	ND	0.0035	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Chloromethane	0.056	0.0041	0.14	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
2-Chlorotoluene	ND	0.0034	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
4-Chlorotoluene	ND	0.0041	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
cis-1,2-DCE	ND	0.0027	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
cis-1,3-Dichloropropene	ND	0.0043	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dibromo-3-chloropropane	ND	0.014	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Dibromochloromethane	ND	0.0042	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Dibromomethane	ND	0.0040	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dichlorobenzene	ND	0.0041	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,3-Dichlorobenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,4-Dichlorobenzene	ND	0.0058	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Dichlorodifluoromethane	ND	0.014	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1-Dichloroethane	ND	0.0025	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1-Dichloroethene	ND	0.015	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2-Dichloropropane	ND	0.0039	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,3-Dichloropropane	ND	0.0053	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
2,2-Dichloropropane	ND	0.0027	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1-Dichloropropene	ND	0.0037	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Hexachlorobutadiene	ND	0.0057	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
2-Hexanone	ND	0.025	0.46		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Isopropylbenzene	ND	0.0040	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
4-Isopropyltoluene	ND	0.0042	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
4-Methyl-2-pentanone	ND	0.014	0.46		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Methylene chloride	ND	0.013	0.14		mg/Kg	1	6/23/2016 1:47:16 PM	25923
n-Butylbenzene	ND	0.0041	0.14		mg/Kg	1	6/23/2016 1:47:16 PM	25923
n-Propylbenzene	ND	0.0036	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
sec-Butylbenzene	ND	0.0064	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Styrene	ND	0.0041	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
tert-Butylbenzene	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923

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

* 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 29 of 49

Analytical Report Lab Order 1606995

Date Reported: 7/19/2016

CLIENT: Western Refining Southwest, G		Client Sample ID: CentralOCD-TZ-6/16/2016						
Project: OCD Central Landfarm Semian	nual Sam		Collection Date: 6/16/2016 1:40:00 PM					
Lab ID: 1606995-006	Matrix: SOIL Received Date: 6/17/2016 10:00:00 AM						10:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
1,1,1,2-Tetrachloroethane	ND	0.0044	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1,2,2-Tetrachloroethane	ND	0.0075	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Tetrachloroethene (PCE)	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
trans-1,2-DCE	ND	0.013	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
trans-1,3-Dichloropropene	ND	0.0068	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2,3-Trichlorobenzene	ND	0.0069	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2,4-Trichlorobenzene	ND	0.0050	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1,1-Trichloroethane	ND	0.0028	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,1,2-Trichloroethane	ND	0.0055	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Trichloroethene (TCE)	ND	0.0050	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Trichlorofluoromethane	ND	0.0035	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
1,2,3-Trichloropropane	ND	0.0080	0.093		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Vinyl chloride	ND	0.0038	0.046		mg/Kg	1	6/23/2016 1:47:16 PM	25923
Xylenes, Total	0.010	0.0088	0.093	J	mg/Kg	1	6/23/2016 1:47:16 PM	25923
Surr: Dibromofluoromethane	103		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
Surr: 1,2-Dichloroethane-d4	105		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
Surr: Toluene-d8	93.7		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
Surr: 4-Bromofluorobenzene	100		70-130		%Rec	1	6/23/2016 1:47:16 PM	25923
EPA METHOD 418.1: TPH							Analyst: TOM	
Petroleum Hydrocarbons, TR	610	83	200		mg/Kg	10	6/23/2016	25996

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

Q	ualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank	
		D	Sample Diluted Due to Matrix	Е	Value above quantitation range	
		Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 30 of 49
		ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	1 460 50 01 15
		R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
		S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1606995

Date Reported: 7/19/2016

CLIENT:	Western Refining Southw		Clier	nt Samn	e ID: EB-	6/16/2	016		
Project:	OCD Central Landfarm S	emiannual Sam		Co	llection 1	Date: 6/16	5/2016	2:00:00 PM	
Lab ID:	1606995-007	Matrix:	AQUEOUS	R	eceived	Date: 6/17	7/2016	10:00:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
	IOD 8260: VOLATILES SI	HORT LIST						Analyst: BCN	
Benzene		ND	0.096	1.0		µg/L	1	6/28/2016 2:06:00 AM	A35246
Toluene		ND	0.12	1.0		µg/L	1	6/28/2016 2:06:00 AM	A35246
Ethylbenze	ene	ND	0.11	1.0		µg/L	1	6/28/2016 2:06:00 AM	A35246
Xylenes, T	otal	ND	0.37	1.5		µg/L	1	6/28/2016 2:06:00 AM	A35246
Surr: 1,	2-Dichloroethane-d4	86.2	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246
Surr: 4-	Bromofluorobenzene	101	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246
Surr: Di	bromofluoromethane	95.3	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246
Surr: To	bluene-d8	101	0	70-130		%Rec	1	6/28/2016 2:06:00 AM	A35246

Hall Environmental Analysis Laboratory, Inc.

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

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mits
f limit as specified

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Analytical Report

Lab Order 1606995

Date Reported: 7/19/2016

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CLIENT:	Western Refining Southw		Clier	nt Sampl	le ID: FB-	6/16/20)16		
Project:	OCD Central Landfarm S	emiannual Sam		Со	llection 1	Date: 6/10	5/2016	2:15:00 PM	
Lab ID:	1606995-008	Matrix:	AQUEOUS Received Date: 6/17/2016 10:00:00 AM						
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	IOD 8260: VOLATILES SI	HORT LIST						Analyst: BCN	
Benzene		ND	0.096	1.0		µg/L	1	6/28/2016 2:29:00 AM	A35246
Toluene		ND	0.12	1.0		µg/L	1	6/28/2016 2:29:00 AM	A35246
Ethylbenze	ene	ND	0.11	1.0		µg/L	1	6/28/2016 2:29:00 AM	A35246
Xylenes, T	otal	ND	0.37	1.5		µg/L	1	6/28/2016 2:29:00 AM	A35246
Surr: 1,2	2-Dichloroethane-d4	88.0	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246
Surr: 4-E	Bromofluorobenzene	103	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246
Surr: Dil	bromofluoromethane	92.7	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246
Surr: To	luene-d8	98.7	0	70-130		%Rec	1	6/28/2016 2:29:00 AM	A35246

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order 1606995

Date Reported: 7/19/2016

CLIENT: Western Refining Southwest, Gallup Client Sample ID: Trip Blank **Project:** OCD Central Landfarm Semiannual Sam **Collection Date:** Lab ID: 1606995-009 Matrix: AQUEOUS Received Date: 6/17/2016 10:00:00 AM Result PQL Units Analyses MDL Qual DF **Date Analyzed Batch ID EPA METHOD 8260: VOLATILES SHORT LIST** Analyst: BCN 6/28/2016 3:40:00 AM A35246 Benzene ND 0.096 1.0 µg/L 1 Toluene ND 0.12 1.0 µg/L 1 6/28/2016 3:40:00 AM A35246 Ethylbenzene ND 0.11 1.0 1 6/28/2016 3:40:00 AM A35246 µg/L Xylenes, Total ND 0.37 1.5 µg/L 1 6/28/2016 3:40:00 AM A35246 Surr: 1,2-Dichloroethane-d4 0 86.1 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246 Surr: 4-Bromofluorobenzene 99.5 0 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246 Surr: Dibromofluoromethane 0 91.7 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246 Surr: Toluene-d8 99.0 0 70-130 %Rec 1 6/28/2016 3:40:00 AM A35246

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-001 1606995-001B / CENTRA Soil	Samp	ling Date 6/2016	6/16/2016	Date/T Sa	ime Received ampling Time	6/22/2016 12:20 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 15.5	mg/Kg Percent	0.283	6/30/2016 5:55:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-002 1606995-002B / CENTRA Soil	Samp LOCD-02-6/1	ling Date 6/2016	6/16/2016	Date/T Sa	ime Received ampling Time	6/22/2016 12:50 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture	,	ND 17.2	mg/Kg Percent	0.297	6/30/2016 5:51:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-003 1606995-003B / CENTRA Soi!	Samp LOCD-03-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	ime Received ampling Time	6/22/2016 1:20 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 16.8	mg/Kg Percent	0.3	6/30/2016 5:57:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-004 1606995-004B / CENTRA Soil	Samp LOCD-04-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	me Received	6/22/2016 11:45 AM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.4	mg/Kg Percent	0.295	6/30/2016 6:05:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-005 1606995-005B / BD-6/16/20 Soil	Samp 16	bling Date	6/16/2016	Date/Ti Sa	me Received Impling Time	6/22/2016	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.6	mg/Kg Percent	0.29	6/30/2016 6:06:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-006 1606995-006B / CENTRALC Soil	Samp DCD-TZ-6/*	ling Date 16/2016	6/16/2016	Date/Time Received Sampling Time		6/22/2016 1:40 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		0.487 8.6	mg/Kg Percent	0.25	6/30/2016 6:08:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Authorized Signature

lohn. Coff

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level

ND Not Detected

PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory. The results reported relate only to the samples indicated. Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; C0:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Quality Control Data

Lab Control Sample										
Parameter Cyanide	LCS Result 0.501	Units mg/kg	LCS 0	Spike .5	%Rec AR 100.2 90		% Rec -110	Prep Date 6/30/2016		Analysis Date 6/30/2016
Matrix Spike										
Sample Number Parameter		Sample Result	MS Result	Inite		MS Spike	%Rec	AR %Rec	Pren Data	Analysis Data
160622057-002 Cyanide		ND	14.6	mg/kg	, J	15.1	96.7	70-130	6/30/2016	6/30/2016
Matrix Spike Duplicate										
Parameter	MSD Booult	Unite	MSD Spike	0/ D/		% DDD	AR % PDD	Bro	n Doto	Ártalunia Data
Cyanide	14.7	mg/kg	Зріке 14.9	98.	90 7	0.7	%RPL 0-25	6/3	0/2016	6/30/2016
Method Blank									i	
Parameter		Re	sult	Un	its		PQL	Pr	ep Date	Analysis Date
Cyanide		N	ID	mg/	′Kg		5	6/3	0/2016	6/30/2016

 AR
 Acceptable Range

 ND
 Not Detected

 PQL
 Practical Quantitation Limit

 DBD
 Deleting Researchers Difference

RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Pace Analytical www.pacelabs.com

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:	160699	5						
Pace Pro	ject No.: 301875	63						
Sample:	1606995-001C Ce 01-6/1	ntralOCD- Lab ID: 3	30187563001	Collected: 06/16/16 12:20	Received:	06/23/16 10:50	Matrix: Solid	
PWS:		Site ID:		Sample Type:				
Comment	eported on a "dry- s: • Sample Acce	<i>weight" basis</i> otance Policy Waiver on	i file from the cli	ient.				
	Parameters	Method	I Ac	t ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	26	EPA 901.1	1.255	± 2.582 (3.112)	pCi/g	07/14/16 12:00	6 13982-63-3	
Radium-2	28	EPA 901.1	2:152 C:NA	1:NA ± 0.446 (0.252) T:NA	pCi/g	07/14/16 12:0	6 15262-20-1	
Sample:	1606995-002C Cer	ntralOCD- Lab ID: 3	30187563002	Collected: 06/16/16 12:50	Received:	06/23/16 10:50	Matrix: Solid	<u> </u>
PWS:	¢ ∠- ¢/1	Site ID:		Sample Type:				
Results re	eported on a "dry-	weight" basis						
	Parameters	Method	l Ac	t ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	26	EPA 901.1	4.070	± 2.123 (2.252)	pCi/g	07/14/16 12:2:	2 13982-63-3	
Radium-2	28	EPA 901.1	0:NA 1.806 C:NA	± 0.441 (0.138) T:NA	pCi/g	07/14/16 12:2:	2 1 5262-20 -1	
Sample: PWS:	1606995-003C Cer 03-6/1	ntralOCD- Lab ID: 3	30187563003	Collected: 06/16/16 13:20 Sample Type:	Received:	06/23/16 10:50	Matrix: Solid	
Results re	eported on a "dry-	weight" basis						
	Parameters	Method	Ac	t ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-22	26	EPA 901.1	2.237	± 2.544 (3.016)	pCi/g	07/14/16 12:3	9 13982-63-3	
Radium-22	28	EPA 901.1	C:NA 2.290 C:NA	T:NA ± 0.514 (0.145) T:NA	pCi/g	07/14/16 12:3	9 15262-20-1	
Sample:	1606995-004C Cer	ntralOCD- Lab ID: 3	30187563004	Collected: 06/16/16 11:45	Received:	06/23/16 10:50	Matrix: Solid	
PWS:	00-0/1	Site ID:		Sample Type:				
Results re	eported on a "dry-	weight" basis						
	Parameters	Method	Ac	t ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-22	26	EPA 901.1	1.888	± 2.288 (2.754)	pCi/g	07/14/16 12:4	0 13982-63-3	
Radium-22	28	EPA 901.1	C:NA 1.553 C:NA	T:NA ± 0.446 (0.391) T:NA	pCi/g	07/14/16 12:4	0 15262-20-1	
Sample:	1606995-005C BD	Lab ID: 3	30187563005	Collected: 06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	
PWS:	0/10/2010	Site ID:		Sample Type:				
Results re	eported on a "dry-	weight" basis						
	Parameters	Method	Ac	t ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	26	EPA 901.1	0.721 C:NA	± 2.612 (3.200) T:NA	pCi/g	07/14/16 12:5	6 13982-63-3	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical "

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Pace Pro	1 bject No.: 3	606995 0187563								
Sample:	1606995-00 6/16/2016	5C BD-	Lab ID:	30187563005	Collected:	06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	_
PWS:			Site ID:		Sample Ty	/pe:				
Results r	reported on a	a "dry-weight"	basis							
	Paramete	rs	Metho	d Ac	t ± Unc (MD	C) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	228	E	EPA 901.1	2.102 C:NA	± 0.475 (0 T:NA	.295)	pCi/g	07/14/16 12:5	6 15262-20-1	
Sample:	1606995-00 TZ-6/1	6C CentralOCI)- Lab ID:	30187563006	Collected:	06/16/16 13:40	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:		Sample Ty	/pe:				
Results r	reported on a	a "dry-weight"	basis							
	Parameter	rs	Metho	d Ac	t ± Unc (MD	C) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	26	Ē	EPA 901.1	1.237 C:NA	± 1.946 (2 T:NA	.382)	pCi/g	07/14/16 12:5	7 13982-63-3	
Radium-2	28	E	PA 901.1	1.210 C:NA	± 0.397 (0 T:NA	.240)	pCi/g	07/14/16 12:5	7 15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1606995 Pace Project No.: 30187563 QC Batch: 225883 EPA 901.1 Analysis Method: QC Batch Method: EPA 901.1 Analysis Description: 901.1 Gamma Spec 30187563001, 30187563002, 30187563003, 30187563004, 30187563005, 30187563006 Associated Lab Samples: METHOD BLANK: 1106602 Matrix: Solid Associated Lab Samples: 30187563001, 30187563002, 30187563003, 30187563004, 30187563005, 30187563006 Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers Radium-226 0.249 ± 1.401 (1.846) C:NA T:NA pCi/g 07/11/16 20:46 Radium-228 0.000 ± 0.066 (0.290) C:NA T:NA pCi/g 07/11/16 20:46

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1606995 Pace Project No.: 30187563

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Client: Western Project: OCD C	n Refining So entral Landfa	outhwe arm Sei	st, Gallup miannual Sa	ampling						
Sample ID MB-26092	SampT	ype: ME	BLK	Test	tCode: El	PA Method	300.0: Anion	s		
Client ID: PBS	Batch	ID: 26	092	R	unNo: 3	5241				
Prep Date: 6/27/2016	Analysis D	ate: 6/	27/2016	S	eqNo: 1	089804	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	0.48	1.5								J
Sample ID LCS-26092	SampT	ype: LC	s	Test	tCode: El	PA Method	300.0: Anion	s		
Client ID: LCSS	Batch	ID: 26	092	R	unNo: 3	5241				
Prep Date: 6/27/2016	Analysis Da	ate: 6/	27/2016	S	eqNo: 1	089805	Units: mg/K	ģ		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.30	1.500	0	102	90	110			
Chloride	14	1.5	15.00	0	94.7	90	110			
Nitrogen, Nitrate (As N)	7.4	0.30	7.500	0	98.3	90	110			
Sulfate	29	1.5	30.00	0	97.5	90	110			

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 34 of 49

WO#:	1606995
	19-Jul-16

Client:	Western	Refining Sout	hwest, Gallup								
Project:	OCD Ce	ntral Landfarn	n Semiannual	Sampling							
Sample ID	MB-25996		: MBLK	Tes	tCode: EPA Method	418.1: TPH					
Client ID:	DDC	Botoh ID	25006		QueNo: 25151						
	FD3	Balchib	. 25990	г	Curino. 33131						
Prep Date:	6/22/2016	Analysis Date	: 6/23/2016	S	SeqNo: 1087694	Units: mg/Kg					
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual			
Petroleum Hyd	Irocarbons, TR	ND	20								
Sample ID	Sample ID LCS-25996 SampType: LCS TestCode: EPA Method 418.1: TPH										
Client ID: LCSS Batch ID: 25996 RunNo: 35151											
Prep Date:	Prep Date: 6/22/2016 Analysis Date: 6/23/2016 SeqNo: 1087695 Units: mg/Kg										
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual			
Petroleum Hyd	Irocarbons, TR	96	20 100.0	0 0	95.7 83.4	127					
Sample ID	1606995-002AMS	SampType	e: MS	Tes	tCode: EPA Method	418.1: TPH					
Client ID:	CentralOCD-02-6	/16/ Batch ID	25996	F	RunNo: 35151						
Prep Date:	6/22/2016	Analysis Date	6/23/2016	S	SeqNo: 1087698	Units: mg/Kg					
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual			
Petroleum Hyd	Irocarbons, TR	89	19 96.99	0	91.7 80	120					
Sample ID	1606995-002AMS	D SampType	e: MSD	Tes	tCode: EPA Method	418.1: TPH					
Client ID:	CentralOCD-02-6	/16/ Batch ID	25996	F	RunNo: 35151						
Prep Date:	6/22/2016	Analysis Date	6/23/2016	S	SeqNo: 1087699	Units: mg/Kg					
Analyte		Result P	QL SPK value	e SPK Ref Val	%REC LowLimit	HighLimit %RPD	RPDLimit	Qual			
Petroleum Hyd	frocarbons, TR	93	20 100.3	3 0	93.0 80	120 4.79	20				

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 35 of 49

Client:	Western	Refining S	outhwe	st, Gallup							
Project:	OCD Ce	entral Landf	farm Se	miannual Sa	ampling						
Sample ID MB-2	5944	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS		Batcl	h ID: 25	944	R	unNo: 3	5116				
Prep Date: 6/20	/2016	Analysis E	Date: 6/	23/2016	S	SeqNo: 1	086562	Units: mg/k	ζg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics	s (DRO)	ND	10								
Motor Oil Range Organ	nics (MRO)	ND	50								
Surr: DNOP		8.8		10.00		88.1	70	130			
Sample ID LCS-	25944	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	6	Batcl	n ID: 25	944	R	unNo: 3	5116				
Prep Date: 6/20	/2016	Analysis D	Date: 6/	23/2016	S	SeqNo: 1	086657	Units: mg/k	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics	s (DRO)	38	10	50.00	0	75.2	62.6	124			
Surr: DNOP		4.4		5.000		87.1	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19-Jul-16

Client:	Western I	Refining Sector	outhwe	st, Gallup							
Project:	OCD Cen	tral Landf	arm Sei	miannual Sa	ampling						
Somple ID	1606005 0064MS	SomoT	when MC		Too	Codo: El	PA Mothod	9015D: Coor	line Bong	•	
Sample ID	1000333-000AWIS	Sampi	ype. wic		165			0015D. Gast	Jine Kang	e	
Client ID:	CentralOCD-TZ-6/	16 Batch	n ID: 25	923	F	lunNo: 3	5159				
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	5	SeqNo: 1	088051	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	21	4.6	23.02	0	93.3	59.3	143			
Surr: BFB		840		920.8		90.9	80	120			
Sample ID	1606995-006AMS) SampT	vpe: MS	SD	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	e	
Client ID:	CentralOCD-TZ-6/	16 Batch	D: 25	923	F	unNo: 3	5159		5		
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	S	SeaNo: 1	088052	Units: ma/k	Ka		
									-5		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	27	5.0	24.90	0	107	59.3	143	21.1	20	R
Surr: BFB		950		996.0		95.2	80	120	0	0	
Sample ID	LCS-25923	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	e	
Client ID:	LCSS	Batch	D: 25	923	F	lunNo: 3	5159				
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	S	SeqNo: 1	088059	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	27	5.0	25.00	0	108	80	120			
Surr: BFB		910		1000		90.9	80	120			
Sample ID	MB-25923	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	e	
Client ID:	PBS	Batch	n ID: 25	923	F	unNo: 3	5159		-		
Prep Date:	6/17/2016	Analysis D	ate: 6/	24/2016	S	SeqNo: 1	088060	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rand	ge Organics (GRO)	ND	5.0					ů.			
Surri DED		930		1000		033	80	120			

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 37 of 49

WO#: 1606995 19-Jul-16

Client: Wester	rn Refining S	outhwe	est, Gallup								
Project: OCD (Central Landi	farm Se	emiannual S	ampling							
Sample ID mb-25923	SampT	Гуре: М	BLK	Tes	tCode: E	PA Method	8260B: Vola	tiles			
Client ID: PBS	Batcl	h ID: 25	5923	F	RunNo: 3	5020					
Prep Date: 6/17/2016	Analysis [)ate: 6	/20/2016	ç	SeaNo: 1	083254	Units: ma/Ka				
	Result	POI	SPK value	SPK Ref Val	%REC	Lowl imit	Highl imit	~ 3 %RPD	RPDI imit	Qual	
Benzene	ND	0.025			JUICEO	LOWEIIIII	riigneiniit	/orki D		Quai	
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Methyl tert-butyl ether (MTBE)	ND	0.050									
1,2,4-Trimethylbenzene	ND	0.050									
1,3,5-Trimethylbenzene	ND	0.050									
1,2-Dichloroethane (EDC)	0.020	0.050								J	
1,2-Dibromoethane (EDB)	ND	0.050									
Naphthalene	ND	0.10									
1-Methylnaphthalene	ND	0.20									
2-Methylnaphthalene	ND	0.20									
Acetone	ND	0.75									
Bromobenzene	ND	0.050									
Bromodichloromethane	ND	0.050									
Bromoform	ND	0.050									
Bromomethane	0.028	0.15								J	
2-Butanone	ND	0.50									
Carbon disulfide	ND	0.50									
Carbon tetrachloride	ND	0.050									
Chlorobenzene	ND	0.050									
Chloroethane	ND	0.10									
Chloroform	ND	0.050									
Chloromethane	0.10	0.15								J	
2-Chlorotoluene	ND	0.050									
4-Chlorotoluene	ND	0.050									
cis-1,2-DCE	ND	0.050									
cis-1,3-Dichloropropene	ND	0.050									
1,2-Dibromo-3-chloropropane	ND	0.10									
Dibromochloromethane	ND	0.050									
Dibromomethane	ND	0.050									
1,2-Dichlorobenzene	ND	0.050									
1,3-Dichlorobenzene	ND	0.050									
1,4-Dichlorobenzene	ND	0.050									
Dichlorodifluoromethane	ND	0.050									
1,1-Dichloroethane	ND	0.050									
1,1-Dichloroethene	ND	0.050									
1,2-Dichloropropane	ND	0.050									
1,3-Dichloropropane	ND	0.050									
2,2-Dichloropropane	ND	0.10									

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 38 of 49

WO#:	1606995
	19-Jul-16

Client: Western Project: OCD Co	Refining S entral Landf	outhwe	st, Gallup miannual Sa	ampling						
Sample ID mb-25923	SampT	SampType: MBLK TestCode: EPA Method 8260B: Volat								
Client ID: PBS	Batcl	Batch ID: 25923 RunNo: 35020								
Prep Date: 6/17/2016	Analysis E	Date: 6/	20/2016	S	SeqNo: 1	083254	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.49		0.5000		97.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.9	70	130			
Surr: Toluene-d8	0.47		0.5000		94.5	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		101	70	130			
Sample ID Ics-25923	SampT	ype: LC	s	Tes	tCode: E	PA Method	8260B: Volat	iles		
Client ID: LCSS	Batcl	h ID: 25	923	F	RunNo: 3	5020				
Prep Date: 6/17/2016	Analysis E	Date: 6/	20/2016	S	SeqNo: 1	083256	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	108	70	130			
Toluene	1.0	0.050	1.000	0	101	70	130			
Chlorobenzene	0.96	0.050	1.000	0	96.4	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 39 of 49

WO#:	1606995
	19-Jul-16

Client:WesternProject:OCD Ce	Refining S ntral Land	Southwes farm Sei	st, Gallup miannual Sa	ampling						
Sample ID Ics-25923	SampType: LCS TestCode: EPA Method 8260B: Volatiles									
Client ID: LCSS	Batc	h ID: 25	923	R	unNo: 3	5020				
Prep Date: 6/17/2016	Analvsis E	Date: 6/	20/2016	S	SeaNo: 1	083256	Units: ma/k	a		
Anglida	Deput	DOI			V DEO	I and insid				Qual
1 1-Dichloroethene	Result	PQL 0.050	SPK value	SPK Ref Val	%REC	LOWLIMIT	HighLimit	%RPD	RPDLIMIt	Quai
	1.1	0.050	1.000	0	110	70	130			
Surr: Dibromofluoromethane	0.50	0.050	0 5000	0	101	70	130			
Surr: 1.2-Dichloroethane-d4	0.00		0.5000		96.4	70	130			
Surr: Toluene-d8	0.40		0.5000		97.5	70	130			
Surr: 4-Bromofluorobenzene	0.40		0.5000		101	70	130			
	0.00		0.0000		101	10	150			
Sample ID 1606995-002ams	SampT	Гуре: МS	3	Tes	tCode: El	PA Method	8260B: Volat	iles		
Client ID: CentralOCD-02-6	/16/ Batc	h ID: 25	923	R	RunNo: 3	5020				
Prep Date: 6/17/2016	Analysis E	Date: 6/	20/2016	S	SeqNo: 1	083261	Units: mg/k	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.023	0.9302	0	90.1	49.2	155			
Toluene	0.75	0.047	0.9302	0	80.3	52	154			
Chlorobenzene	0.78	0.047	0.9302	0	84.0	53.2	150			
1,1-Dichloroethene	0.72	0.047	0.9302	0	77.5	34.2	163			
Trichloroethene (TCE)	0.84	0.047	0.9302	0	90.6	48.2	151			
Surr: Dibromofluoromethane	0.48		0.4651		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.4651		97.9	70	130			
Surr: Toluene-d8	0.44		0.4651		95.7	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.4651		99.8	70	130			
Sample ID 1606995-002ams	d SampT	Гуре: МS	SD	Tes	tCode: El	PA Method	8260B: Volat	iles		
Client ID: CentralOCD-02-6	/16/ Batc	h ID: 25	923	R	anNo: 3	5020				
Prep Date: 6/17/2016	Analysis I	Date: 6/	20/2016	S	SeqNo: 1	083262	Units: mg/k	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.024	0.9506	0	101	49.2	155	13.6	20	
Toluene	0.86	0.048	0.9506	0	90.3	52	154	13.9	20	
Chlorobenzene	0.82	0.048	0.9506	0	86.2	53.2	150	4.81	20	
1,1-Dichloroethene	0.94	0.048	0.9506	0	98.7	34.2	163	26.2	20	R
Trichloroethene (TCE)	0.98	0.048	0.9506	0	103	48.2	151	15.1	20	
Surr: Dibromofluoromethane	0.50		0.4753		104	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.46		0.4753		97.1	70	130	0	0	
Surr: Toluene-d8	0.44		0.4753		93.5	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.48		0.4753		100	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
- R RPD outside accepted recovery limits
- 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
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

- W Sample container temperature is out of limit as specified
- Page 40 of 49

WO#: 1606995 19-Jul-16

Client:Western IProject:OCD Cer	Refining S ntral Landf	Southwes	st, Gallup miannual Sa	ampling						
Sample ID rb	SampT	Гуре: МЕ	BLK	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist	
Client ID: PBW	Batcl	h ID: A3	5246	F	RunNo: 35246					
Prep Date:	Analysis E	Date: 6/	27/2016	SeqNo: 1090124			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								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.6	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		105	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.6	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			
Sample ID 100ng Ics	SampT	SampType: LCS TestCode: EPA Method 8260: Volatiles Short List								
Client ID: LCSW	Batcl	h ID: A3	5246	F	RunNo: 3	5246				
Prep Date:	Analysis E	Date: 6/	27/2016	5	SeqNo: 1	090133	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	83.2	70	130			
Toluene	19	1.0	20.00	0	95.3	70	130			
Surr: 1,2-Dichloroethane-d4	8.1		10.00		80.9	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.8	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			
Sample ID 1606995-008ams	SampT	Гуре: МS	3	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist	
Client ID: FB-6/16/2016	Batcl	h ID: A3	5246	F	RunNo: 3	5246				
Prep Date:	Analysis D	Date: 6/	28/2016	S	SeqNo: 1	090146	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	89.9	70	130			
Toluene	19	1.0	20.00	0	94.1	70	130			
Surr: 1,2-Dichloroethane-d4	8.4		10.00		84.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.4		10.00		93.9	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			
Sample ID 1606995-008ams	SampT	Гуре: М	SD	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist	
Client ID: FB-6/16/2016	Batcl	h ID: A3	5246	F	RunNo: 3	5246				
Prep Date:	Analysis D	Date: 6/	28/2016	S	SeqNo: 1	090147	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	83.9	70	130	6.95	20	
Ioluene	19	1.0	20.00	0	94.1	70	130	0.0106	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19-Jul-16

Client: Western Refining Southwest, Gallup Project: OCD Central Landfarm Semiannual Sampling Sample ID 1606995-008amsd SampType: MSD

Sample ID	1606995-008amsd	SampType:	MSD	ISD TestCode: EPA Method 8260: Volatiles Short List						
Client ID:	FB-6/16/2016	Batch ID:	A35246	246 RunNo: 35246						
Prep Date:		Analysis Date:	6/28/2016	S	eqNo: 1	090147	Units: µg/L			
Analyte		Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dic	hloroethane-d4	8.3	10.00		83.3	70	130	0	0	
Surr: 4-Brom	ofluorobenzene	10	10.00		101	70	130	0	0	
Surr: Dibrom	ofluoromethane	8.9	10.00		88.7	70	130	0	0	
Surr: Toluen	e-d8	10	10.00		104	70	130	0	0	

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 42 of 49

WO#: 1606995 19-Jul-16

Client:WesterProject:OCD	ern Refining S Central Landf	outhwe farm Se	est, Gallup miannual S	ampling						
Sample ID mb-26116	SampT	ype: M I	BLK	Te	stCode: E	PA Method	8270C: Sem	ivolatiles		
Client ID: PBS	Batch	h ID: 26	5116	RunNo: 35339						
Pren Date: 6/28/2016	Analysis D		/30/2016		SegNo: 1	1003201	Linite: ma/l	(a		
			00/2010			1093291	units. Ing/i	vy		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	0.088	0.50								J
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.11	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-hutyl phthalate	0.11	0.40								.1
Di-n-octyl phthalate	ND	0.40								Ū
Dihenz(a h)anthracene	ND	0.10								
Dibenzofuran	ND	0.20								
1 2 Dichlorobenzene		0.20								
1 3 Dichlorobenzene		0.20								
1,3-Dichlorobonzono		0.20								
2.2 Dichlorobenzerie		0.20								
3,3 -DICHIOLODENZIQINE		0.25								
Dieutyi philialale		0.20								
Dimetnyi primalate		0.20								
2,4-Dicnioropnenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	0.086	0.40								J
2,4-Dinitrophenol	ND	0.50								

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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19-Jul-16

Client: Project:	Wester OCD (rn Refining S Central Landf	outhwe arm Se	st, Gallup miannual Sa	ampling						
Sample ID mb-26	116	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8270C: Semi	ivolatiles		
Client ID: PBS		Batch	n ID: 26	116	F	RunNo: 3	5339				
Prep Date: 6/28/	2016	Analysis D	ate: 6/	/30/2016	S	SeqNo: 1	093291	Units: mg/k	ίg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qua
2,4-Dinitrotoluene		ND	0.50								
2,6-Dinitrotoluene		ND	0.50								
Fluoranthene		ND	0.20								
Fluorene		ND	0.20								
Hexachlorobenzene		ND	0.20								
Hexachlorobutadiene		ND	0.20								
Hexachlorocyclopentadi	iene	ND	0.20								
Hexachloroethane		ND	0.20								
Indeno(1,2,3-cd)pyrene		ND	0.20								
1-Methylnaphthalene		ND	0.20								
2-Methylnaphthalene		ND	0.20								
2-Methylphenol		ND	0.40								
3+4-Methylphenol		ND	0.20								
N-Nitrosodi-n-propylami	ine	ND	0.20								
N-Nitrosodiphenylamine)	ND	0.20								
Naphthalene		ND	0.20								
2-Nitroaniline		ND	0.20								
3-Nitroaniline		ND	0.20								
4-Nitroaniline		ND	0.40								
Nitrobenzene		ND	0.40								
2-Nitrophenol		ND	0.20								
4-Nitrophenol		ND	0.25								
Pentachlorophenol		ND	0.40								
Phenanthrene		ND	0.20								
Phenol		ND	0.20								
Pyrene		ND	0.20								
Pyridine		ND	0.40								
1,2,4-Trichlorobenzene		ND	0.20								
2,4,5-Trichlorophenol		ND	0.20								
2,4,6-Trichlorophenol		ND	0.20								
Surr: 2-Fluorophenol		2.8		3.330		83.4	28.3	102			
Surr: Phenol-d5		3.0		3.330		89.4	35.7	103			
Surr: 2,4,6-Tribromon	henol	3.0		3.330		89.0	35.2	108			
Surr: Nitrobenzene-d	5	1.4		1.670		83.8	24	118			
Surr: 2-Fluorobipheny	/l	1.6		1.670		95.1	35.4	111			
Surr: 4-Terphenyl-d14	4	1.1		1.670		65.6	15	91.7			

- * 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1606995
	19-Jul-16

Client:	Western Refining Southwest, Gallup
Project:	OCD Central Landfarm Semiannual Sampling

Sample ID Ics-26116	SampT	ype: LC	S	Test	tCode: El	PA Method	8270C: Semi	volatiles		
Client ID: LCSS	Batch	n ID: 26 ′	116	R	RunNo: 3	5339				
Prep Date: 6/28/2016	Analysis D	ate: 6/	30/2016	S	SeqNo: 1	093292	Units: mg/#	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.5	0.20	1.670	0	87.1	45.8	99.8			
4-Chloro-3-methylphenol	2.9	0.50	3.330	0	88.2	51.5	103			
2-Chlorophenol	2.8	0.20	3.330	0	82.6	46.5	105			
1,4-Dichlorobenzene	1.3	0.20	1.670	0	79.5	45.5	103			
2,4-Dinitrotoluene	1.3	0.50	1.670	0	80.3	36	87.2			
N-Nitrosodi-n-propylamine	1.1	0.20	1.670	0	63.4	47.3	104			
4-Nitrophenol	2.8	0.25	3.330	0	84.6	47.3	95.3			
Pentachlorophenol	2.6	0.40	3.330	0	79.1	38.7	89.3			
Phenol	2.7	0.20	3.330	0	82.2	47.8	106			
Pyrene	1.4	0.20	1.670	0	83.1	33.4	105			
1,2,4-Trichlorobenzene	1.5	0.20	1.670	0	90.9	50.4	115			
Surr: 2-Fluorophenol	2.5		3.330		75.9	28.3	102			
Surr: Phenol-d5	2.7		3.330		79.7	35.7	103			
Surr: 2,4,6-Tribromophenol	3.0		3.330		89.0	35.2	108			
Surr: Nitrobenzene-d5	1.5		1.670		88.9	24	118			
Surr: 2-Fluorobiphenyl	1.5		1.670		87.5	35.4	111			
Surr: 4-Terphenyl-d14	1.3		1.670		75.7	15	91.7			
Sample ID 1606995-002ams	SamnT	vne MS	1	Test	tCode: F I	PA Method	8270C: Semi	volatiles		
Client ID: CentralOCD-02-6/	16/ Batch	1D: 26	116	R	unNo: 3	5369				
Bron Date: 6/29/2016		nto: 6/	20/2016			004002	Inito: ma/k	` a		
Fiep Date. 0/20/2010	Analysis D		50/2016	2	eqivo. I	094095	Units. Ing/r	y		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.20	1.651	0	70.1	39.3	86.4			
4-Chloro-3-methylphenol	2.4	0.49	3.292	0	71.8	37.5	96.4			
2-Chlorophenol	2.4	0.20	3.292	0	71.6	37.4	90.6			
1,4-Dichlorobenzene	0.91	0.20	1.651	0	55.4	31.7	85			
2,4-Dinitrotoluene	0.98	0.49	1.651	0	59.3	26.4	86			
N-Nitrosodi-n-propylamine	1.0	0.20	1.651	0	61.2	43.5	83			
4-Nitrophenol	2.1	0.25	3.292	0	65.2	32.7	98			
Pentachlorophenol	1.9	0.40	3.292	0	57.5	26.6	87.4			
Phenol	2.3	0.20	3.292	0	69.9	40.5	85.3			
Pyrene	1.0	0.20	1.651	0	61.9	23.2	93.9			
1,2,4-Trichlorobenzene	1.2	0.20	1.651	0	70.6	38.7	99			
Surr: 2-Fluorophenol	2.1		3.292		63.6	28.3	102			
Surr: Phenol-d5	2.3		3.292		69.3	35.7	103			
Surr: 2,4,6-Tribromophenol	2.1		3.292		63.6	35.2	108			
Surr: Nitrobenzene-d5	12		1 651		71 4	24	118			

Qualifiers:

Surr: 2-Fluorobiphenyl

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

1.2

1.651

- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank

E Value above quantitation range

69.9

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

35.4

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WO#: 1606995 19-Jul-16

Client: Wester	rn Refining S	Southwe	st, Gallup							
Project: OCD (Central Land	farm Sei	miannual Sa	ampling						
Sample ID 1606995-002an	ns Sampl	Гуре: МS	6	Tes	tCode: El	PA Method	8270C: Sem	ivolatiles		
Client ID: CentralOCD-02	2-6/16/ Batc	h ID: 26	116	R	RunNo: 3	5369				
Prep Date: 6/28/2016	Analysis E	Date: 6/	30/2016	S	SeqNo: 1	094093	Units: mg/ł	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.91		1.651		55.1	15	91.7			
Sample ID 1606995-002an	nsd Samp	Гуре: МS	SD	Tes	tCode: El	PA Method	8270C: Sem	ivolatiles		
Client ID: CentralOCD-02	2-6/16/ Batc	h ID: 26	116	R	RunNo: 3	5369				
Prep Date: 6/28/2016	Analysis I	Date: 6/	30/2016	S	SeqNo: 1	094094	Units: mg/ł	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.653	0	64.2	39.3	86.4	8.70	30.2	
4-Chloro-3-methylphenol	2.2	0.49	3.296	0	65.3	37.5	96.4	9.36	37.2	
2-Chlorophenol	2.1	0.20	3.296	0	62.3	37.4	90.6	13.7	48	
1,4-Dichlorobenzene	0.80	0.20	1.653	0	48.1	31.7	85	13.9	40.6	
2,4-Dinitrotoluene	0.92	0.49	1.653	0	55.8	26.4	86	5.97	47.7	
N-Nitrosodi-n-propylamine	0.92	0.20	1.653	0	55.6	43.5	83	9.40	52.5	
4-Nitrophenol	2.1	0.25	3.296	0	62.7	32.7	98	3.78	36.6	
Pentachlorophenol	1.9	0.40	3.296	0	57.6	26.6	87.4	0.375	65.5	
Phenol	1.9	0.20	3.296	0	58.8	40.5	85.3	17.2	44	
Pyrene	0.94	0.20	1.653	0	56.9	23.2	93.9	8.27	42.1	
1,2,4-Trichlorobenzene	1.0	0.20	1.653	0	60.9	38.7	99	14.6	31.5	
Surr: 2-Fluorophenol	1.8		3.296		54.8	28.3	102	0	0	
Surr: Phenol-d5	2.0		3.296		61.9	35.7	103	0	0	
Surr: 2,4,6-Tribromophenol	2.1		3.296		64.3	35.2	108	0	0	
Surr: Nitrobenzene-d5	1.0		1.653		61.0	24	118	0	0	
Surr: 2-Fluorobiphenyl	1.1		1.653		66.3	35.4	111	0	0	
Surr: 4-Terphenyl-d14	0.87		1.653		52.6	15	91.7	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1606995
	19. Jul-16

Client:	Western	Refining S	outhwe	st, Gallup							
Project:	OCD Cer	ntral Landf	arm Se	miannual S	ampling						
Sample ID	MR-26002	SomoT	who: MI		Tos		PA Mothod	7471: Moreu	n/		
Sample ID	WID-20093	Sampi	ype. wi	JLK	Tes		FAIMethou	7471. Wiercu	' y		
Client ID:	PBS	Batch	n ID: 26	093	R	unNo: 3	5255				
Prep Date:	6/27/2016	Analysis D	ate: 6/	28/2016	S	eqNo: 1	090434	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.033								
Sample ID	LCS-26093	SampT	ype: LC	s	Tes	tCode: E	PA Method	7471: Mercu	ry		
Client ID:	LCSS	Batch	n ID: 26	093	R	unNo: 3	5255				
Prep Date:	6/27/2016	Analysis D	ate: 6	/28/2016	S	eqNo: 1	090435	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.17	0.033	0.1667	0	105	80	120			
Sample ID	1606995-002AMS	SampT	ype: M	S	Tes	tCode: E	PA Method	7471: Mercu	ry		
Client ID:	CentralOCD-02-6/	/16/ Batch	n ID: 26	093	R	unNo: 3	5255				
Prep Date:	6/27/2016	Analysis D	ate: 6	28/2016	S	eqNo: 1	090442	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.16	0.031	0.1548	0.003335	99.7	75	125			
Sample ID	1606995-002AMS	D SampT	ype: M	SD	Tes	tCode: E	PA Method	7471: Mercu	ry		
Client ID:	CentralOCD-02-6/	/16/ Batch	n ID: 26	093	R	unNo: 3	5255				
Prep Date:	6/27/2016	Analysis D	ate: 6	/28/2016	S	eqNo: 1	090443	Units: mg/k	ģ		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.18	0.033	0.1683	0.003335	103	75	125	11.4	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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1606995 19-Jul-16

Client: Project:	Western OCD Cer	Refining S ntral Landf	outhwe farm Se	st, Gallup miannual Sa	ampling						
Sample ID	MB-26123	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	PBS	Batch	h ID: 26	123	R	unNo: 3	5332				
Prep Date:	6/28/2016	Analysis D	Date: 6/	/30/2016	S	eqNo: 1	093114	Units: mg/k	ζg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	2.5								
Barium		ND	0.10								
Cadmium		ND	0.10								
Chromium		ND	0.30								
Copper		ND	0.30								
Iron		ND	2.5								
Lead		ND	0.25								
Manganese		ND	0.10								
Selenium		ND	2.5								
Silver		ND	0.25								
Uranium		ND	5.0								
Zinc		ND	2.5								
Sample ID	LCS-26123	SampT	ype: LC	s	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	LCSS	Batch	h ID: 26	123	R	unNo: 3	5332				
Prep Date:	6/28/2016	Analysis D	Date: 6/	/30/2016	S	eqNo: 1	093115	Units: mg/k	íg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		23	2.5	25.00	0	93.0	80	120			
Barium		24	0.10	25.00	0	94.8	80	120			
Cadmium		24	0.10	25.00	0	94.4	80	120			
Chromium		23	0.30	25.00	0	93.9	80	120			
Copper		25	0.30	25.00	0	98.1	80	120			
Iron		24	2.5	25.00	0	94.8	80	120			
Lead		22	0.25	25.00	0	88.1	80	120			
Manganese		23	0.10	25.00	0	92.3	80	120			
Selenium		23	2.5	25.00	0	92.1	80	120			
Silver		4.7	0.25	5.000	0	93.1	80	120			
Uranium		24	5.0	25.00	0	98.0	80	120			
Zinc		24	2.5	25.00	0	94.2	80	120			
Sample ID	1606995-002AMS	SampT	уре: М	5	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	CentralOCD-02-6/	16/ Batch	h ID: 26	123	R	unNo: 3	5362				
David Dates	6/28/2016	Analysis D	Date: 6/	/30/2016	S	eqNo: 1	093792	Units: mg/k	(g		
Prep Date:											<u> </u>
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Analyte Arsenic		Result 15	PQL 2.4	SPK value 24.42	SPK Ref Val 0.8789	%REC 57.7	LowLimit 75	HighLimit 125	%RPD	RPDLimit	Qual
Analyte Analyte Arsenic Barium		Result 15 160	PQL 2.4 0.098	SPK value 24.42 24.42	SPK Ref Val 0.8789 165.2	%REC 57.7 -4.64	LowLimit 75 75	HighLimit 125 125	%RPD	RPDLimit	Qual S S
Analyte Arsenic Barium Cadmium		Result 15 160 16	PQL 2.4 0.098 0.098	SPK value 24.42 24.42 24.42	SPK Ref Val 0.8789 165.2 0	%REC 57.7 -4.64 64.2	LowLimit 75 75 75	HighLimit 125 125 125	%RPD	RPDLimit	Qual S S S

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 48 of 49

WO#:	1606995
	19-Jul-16

Client:	Western	Refining S	outhwe	st, Gallup							
Project:	OCD Cer	ntral Landf	farm Se	miannual S	ampling						
Sample ID	1606005 0024MS	Somol	Supo: MG		Trationale: EDA Mathed 2040D: Cail Matela						
	1000995-002AWIS	Sampi	iype. Wit	,	Tes	restCode: EPA Method 6010B: Soil Métais					
Client ID:	CentralOCD-02-6/	16/ Batcl	h ID: 26	123	F	RunNo: 3	5362				
Prep Date:	6/28/2016	Analysis D	Date: 6/	30/2016	S	SeqNo: 1	093792	Units: mg/K	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper		19	0.29	24.42	2.413	67.0	75	125			S
Lead		17	0.24	24.42	3.606	52.9	75	125			S
Selenium		12	2.4	24.42	0	50.2	75	125			S
Silver		3.2	0.24	4.885	0	65.0	75	125			S
Uranium		14	4.9	24.42	0	58.6	75	125			S
Zinc		28	2.4	24.42	12.53	62.3	75	125			S
Sample ID	1606995-002AMS	D Samp1	Гуре: М	SD	Tes	tCode: El	PA Method	6010B: Soil	Vetals		
Client ID:	CentralOCD-02-6/	16/ Batcl	h ID: 26	123	F	RunNo: 3	5362				
Prep Date:	6/28/2016	Analysis E	Date: 6/	30/2016	S	SeqNo: 1	093793	Units: mg/K	ģ		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		17	2.5	25.41	0.8789	63.0	75	125	11.9	20	S
Barium		210	0.10	25.41	165.2	157	75	125	22.2	20	RS
Cadmium		17	0.10	25.41	0	65.5	75	125	6.02	20	S
Chromium		26	0.30	25.41	8.131	70.2	75	125	6.27	20	S
Copper		21	0.30	25.41	2.413	71.9	75	125	9.71	20	S
Lead		18	0.25	25.41	3.606	55.0	75	125	6.18	20	S
Selenium		11	2.5	25.41	0	44.7	75	125	7.71	20	S
Silver		3.4	0.25	5.082	0	67.5	75	125	7.68	20	S
Uranium		15	5.1	25.41	0	60.3	75	125	6.96	20	S
Zinc		30	2.5	25.41	12 53	69.5	75	125	8 40	20	S
		00	2.0	20.11	12.00	00.0	10	120	0.10	20	0
Sample ID	1606995-002APS	SampT	Type: PS	i	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	CentralOCD-02-6/	16/ Batcl	h ID: 26	123	F	RunNo: 3	5362				
Prep Date:		Analysis E	Date: 6/	30/2016	S	SeqNo: 1	093794	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		21	2.4	24.44	0.8789	82.8	80	120			
Barium		200	0.098	24.44	165.2	133	80	120			S
Cadmium		20	0.098	24.44	0	81.9	80	120			
Chromium		28	0.29	24.44	8.131	81.1	80	120			
Copper		24	0.29	24.44	2.413	89.9	80	120			
Lead		22	0.24	24.44	3.606	74.9	80	120			S
Selenium		19	2.4	24.44	0	76.3	80	120			S
Silver		3.9	0.24	4.888	0	80.3	80	120			
Uranium		18	4.9	24.44	0	75.5	80	120			S
Zinc		32	2.4	24.44	12.53	79.8	80	120			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
- R RPD outside accepted recovery limits
- 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
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

- W Sample container temperature is out of limit as specified
- Page 49 of 49

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name:	Western Refining Gallup	Work Order Numbe	er: 1606995		RcptNo:	1
Received by/d	ate: 175 061	17/16				
Logged By:	Anne Thorne	6/17/2016 10:00:00 A	٩M	anne Arm	~	
Completed By:	Anne Thorne	6/17/2016		Dan. M.		
Reviewed By:	as	6117/16		Cana Jun		
Chain of Cu	stody					
1. Custody se	eals intact on sample bottles'	?	Yes 🗹	No 🗌	Not Present	
2. Is Chain of	Custody complete?		Yes 🗹	No 🗌	Not Present 🗌	
3. How was th	ne sample delivered?		<u>Client</u>			
<u>Log In</u>						
4. Was an at	tempt made to cool the sam;	bles?	Yes 🗹	No 🗌	NA 🗌	
5. Were all sa	amples received at a tempera	ature of >0° C to 6.0°C	Yes 🗹	No 🗌		
6. Sample(s)	in proper container(s)?		Yes 🗹	No 🗌		
7. Sufficient s	ample volume for indicated t	est(s)?	Yes 🔽	No 🗌		
8. Are sample	es (except VOA and ONG) pr	operly preserved?	Yes 🔽	No 🗌		
9. Was prese	rvative added to bottles?		Yes 🗌	No 🗹	NA 🗌	
10.VOA vials I	nave zero headspace?		Yes 🗹	No 📋	No VOA Vials 🗌	
11. Were any	sample containers received I	proken?	Yes 🗆	No 🗹	# of preserved	
12.Does pape (Note discr	rwork match bottle labels? epancies on chain of custody	<i>i</i>)	Yes 🗹	No 🗌	for pH: (<2 or	>12 unless noted)
13 Are matrice	es correctly identified on Cha	in of Custody?	Yes 🗸	No 🗆	Adjusted?	
14. Is it clear w	hat analyses were requested	1?	Yes 🗹	No 🗆		
15. Were all ho (If no, notify	olding times able to be met? y customer for authorization.)	Yes 🗹	No 🗌	Checked by:	
Special Han	dling (if applicable)					
16. Was client	notified of all discrepancies	with this order?	Yes	No 🗀	NA 🗹	
Perso	on Notified:	Date		/ A THE		
By W	/hom:	Via:	eMail 🗌 I	Phone 🗌 Fax	In Person	
Rega	rding:					

17. Additional remarks:

Client Instructions:

18. Cooler Information

Cooler No	Temp ºC	Condition	Seal Intact	Seal No	Seal Date	Signed By
	4.4	Good				

Cha	<u>o</u>	5	stody kecord						HA		VIRO	NME	LI N	H	
Wes	tern Re	efining		<u>X</u> standard	□ Rush				AN	ALYS	IS LA	SOR	NTO	RY	
			5	Project Name:					www.ha	allenviron	mental.co	E			
ress		_	Route 3 Box 7	OCD Central Land	arm Semiann	ual Sampling		4901	Hawkins	NE - AI	ondnerque	, NM 87	109		
873(11			Project #:				Tel. 5	05-345-(3975	Fax 505-3	345-4107			
	505	5-722-:	3833	697-052-004						Analys	is Reques	st			
;#X	505	5-722-(1210	Project Manager:			(pə	M	-						
kage: rd			I □ Level 4 (Full Validation)	Ed Riege			doette ((bei (bei							
:uo		Other		Sampler: On Ice	Joey U	b (dmann	əəs) is	attach bRO							(N 4
() ()	Please	s provic	te EDD	Sample Temperatu		<u>+</u>	il 9	ee O	((- //	0 X)
Tin	ле М.	latrix	Sample Request ID	Container Type and #	Preservative Type	неаг no. <i>Пол</i> идд S	noZ esobeV) tei-DRO List (BTEX (8260						AIr Bubbles
122	Ø soil	II	CentralOCD-01-6/16/2016	80x - 3, 40z - 1	none	102	×	×							
12.5	so soil	I	CentralOCD-02-6/16/2016	8ox - 3, 4oz - 1	anone	202	×	×							
13		II.	CentralOCD-03-6/16/2016	80x - 3, 40z - 1	none	572	×	×							
114	S soil	ļ	CentralOCD-04-6/16/2016	8ox - 3, 4oz - 1	none	H72-	×	×							
	soil	l	BD-6/16/2016	8ox - 3, 4oz - 1	none	gn2-	×	×							
12.5	o soil	i	CentralOCD- <u>OZ-</u> 6/16/2016-MS	80x - 3, 40z - 1	none	200-	×	×			_				
125	50 soil	ļ	CentralOCD- <u>0.2</u> ,6/16/2016-MSD	8ox - 3, 4oz - 1	none	202	×	×							
131	to soil	li	CentralOCD-TZ-6/16/2016	8oz - 3, 4oz - 1	none	-206	×	хX							
140	0 wat	ıter	EB-6/16/2016	VOA - 3	HCL	102			×						
141	S wat	nter	FB-6/16/2016	VOA - 3	HCL	802			×						
	wat	nter	Trip Blank	VOA - 3	HCL	202			×						
				÷		· ·									
Time. 10:0	Seli		devi Autolun	Received by	"no (late Time	Rem: result Repo	arks: s. Ca i rting	lease ci Il Grant (imits co	s Grant F 20307-74 1000 11 12	rice (gpric 5-7474 w/ th those s	e@trihyc questior hown o	tro.com ns. <u>Ve</u> l) with rify th	at
Time	Reli	linquishe	J	Received by		late / Time	pack pack w/ Se	nea. age w pt. A	<u>Trihyd</u> <u>V way t</u> 14 data	o EDD n <u>o EDD n</u> o preven package	<u>u.uz mg/ eeded wit</u> t low surr (Rpt 140	<u>Kg. Uat</u> <u>hin 10 c</u> ogate re 9874)?	a repol	rt and res as	
	14 u	necessan	r, samples submitted to Hall Environmental may b	be subcontracted to other a	ccredited laboratori	es. This serves as notice of th	s possibil	lity. Any	sub-contrac	ed data will I	e clearly notat	ed on the ar	nalytical re	port.	1

VADOSE ZONE ANALYTES AND REPORTING LIMITS, CENTRAL OIL CONSERVATION DIVISION LANDFARM WESTERN REFINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Analytical Method	Reporting Units	Requested Reporting Limit
Chloride	E300	mg/kg	30
Benzene	SW8260B	mg/kg	0.050
Ethylbenzene	SW8260B	mg/kg	0.050
Toluene	SW8260B	mg/kg	0.050
Xylenes, Total	SW8260B	mg/kg	0.100
Petroleum Hydrocarbons, TR	E418.1	mg/kg	20

NMAC LIST ANALYTES AND REPORTING LIMITS, CONSTITUENTS LISTED IN SUBSECTIONS A AND B OF 20.6.2.3103 NMAC, CENTRAL OIL CONSERVATION DIVISION LANDFARM WESTERN REFINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO 20.6.2.3103 NMAC (6/9/2016)

Human Health Standards-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

-1	Arsenic (As)	0.1 mg/l
-2	Barium (Ba)	1.0 mg/l
-3	Cadmium (Cd)	0.01 mg/l
-4	Chromium (Cr)	0.05 mg/l
-5	Cyanide (CN)	0.2 mg/l
-6	Fluoride (F)	1.6 mg/l
-7	Lead (Pb)	0.05 mg/l
-8	Total Mercury (Hg)	0.002 mg/i
-9	Nitrate (NO ₃ as N)	10.0 mg/l
-10	Selenium (Se)	0.05 mg/l
-11	Silver (Ag)	0.05 mg/l
-12	Uranium (U)	0.03 mg/l
-13	Radioactivity: Combined Radium-226 & Radium-228	30 pCi/l
-14	Benzene	0.01 mg/l
-15	Polychlorinated biphenyls (PCB's)	1 mg/l
-16	Toluene	0.75 mg/l
-17	Carbon Tetrachloride	0.01 mg/l
-18	1,2-dichloroethane (EDC)	0.01 mg/l
-19	1,1-dichloroethylene (1,1-DCE)	0.005 mg/l
-20	1,1,2,2-tetrachloroethylene (PCE)	0.02 mg/l
-21	1,1,2-trichloroethylene (TCE)	0.1 mg/l
-22	ethylbenzene	0.75 mg/l
-23	total xylenes	0.62 mg/l
-24	methylene chloride	0.1 mg/l
-25	chloroform	0.1 mg/l
-26	1,1-dichloroethane	0.025 mg/l
-27	ethylene dibromide (EDB)	0.0001 mg/l
-28	1,1,1-trichloroethane	0.06 mg/l
-29	1,1,2-trichloroethane	0.01 mg/l
-30	1,1,2,2-tetrachloroethane	0.01 mg/l
-31	Vinyi chioride.	0.001 mg/l
-32	PAHs: total naphthalene plus monomethylnaphthalenes	0.03 mg/l
-JJ	dende for Demostie Weiter Summer	$\dots 0.0007 \text{ mg/l}$
Uther Stan	Chlorida (Cl)	250.0
-1		
-2	Iron (Fe)	1.0 mg/1
-3	Manganese (Mn)	1.0 mg/l
	Phenole	0.2 mg/l
-0-	Sulfate (SO)	600.0 mg/l
-/	Total Dissolved Solids (TDS)	1000 0 mg/l
-0	7 inc (7 p)	
-9 _10	ыну (сл.)	10.0 IIIg/1 hetween 6 and 0
-10	htt	Detween 0 and 9

В.

A.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com 504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-001 1606995-001B / CENTRA Soil	Samp	ling Date 6/2016	6/16/2016	Date/T Sa	6/22/2016 12:20 PM	10:45 AM	
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 15.5	mg/Kg Percent	0.283	6/30/2016 5:55:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-002 1606995-002B / CENTRA Soil	Samp LOCD-02-6/1	ling Date 6/2016	6/16/2016	Date/T Sa	ime Received ampling Time	6/22/2016 12:50 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture	,	ND 17.2	mg/Kg Percent	0.297	6/30/2016 5:51:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-003 1606995-003B / CENTRA Soi!	Samp LOCD-03-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	ime Received ampling Time	6/22/2016 1:20 PM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 16.8	mg/Kg Percent	0.3	6/30/2016 5:57:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-004 1606995-004B / CENTRA Soil	Samp LOCD-04-6/1	ling Date 6/2016	6/16/2016	Date/Ti Sa	me Received	6/22/2016 11:45 AM	10:45 AM
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.4	mg/Kg Percent	0.295	6/30/2016 6:05:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com 504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Sample Number Client Sample ID Matrix Comments	160622057-005 1606995-005B / BD-6/16/20 Soil	Samp 16	bling Date	6/16/2016	Date/Ti Sa	6/22/2016	10:45 AM	
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		ND 17.6	mg/Kg Percent	0.29	6/30/2016 6:06:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	
Sample Number Client Sample ID Matrix Comments	160622057-006 1606995-006B / CENTRALC Soil	Samp DCD-TZ-6/*	ling Date 16/2016	6/16/2016	Date/Ti Sa	6/22/2016 1:40 PM	10:45 AM	
Parameter		Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide %moisture		0.487 8.6	mg/Kg Percent	0.25	6/30/2016 6:08:00 PM 6/29/2016	MER ETL	EPA 335.4 %moisture	

Authorized Signature

lohn. Coff

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level

ND Not Detected

PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory. The results reported relate only to the samples indicated. Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; C0:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com 504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client:	HALL ENVIRONMENTAL ANALYSIS LAB	Batch #:	160622057
Address:	4901 HAWKINS NE SUITE D	Project Name:	1606995
	ALBUQUERQUE, NM 87109		
Attn:	ANDY FREEMAN		

Analytical Results Report

Quality Control Data

Lab Control Sample										
Parameter Cyanide	LCS Result 0.501	Units mg/kg	LCS 0	Spike .5	% Re c 100.2	AR 90	% Rec -110	Prep 6/30/	Date 2016	Analysis Date 6/30/2016
Matrix Spike	<u> </u>									
Sample Number Parameter		Sample Result	MS Result	Inite		MS Spike	%Rec	AR %Rec	Pren Data	Analysis Data
160622057-002 Cyanide		ND	14.6	mg/kg	, J	15.1	96.7	70-130	6/30/2016	6/30/2016
Matrix Spike Duplicate										
Parameter	MSD Booult	Unite	MSD Spike	0/ D/		% DDD	AR % PDD	Bro	n Data	Ártalunia Data
Cyanide	14.7	mg/kg	Зріке 14.9	98.	90 7	0.7	%RPL 0-25	6/3	0/2016	6/30/2016
Method Blank									i	
Parameter		Re	sult	Un	its		PQL	Pr	ep Date	Analysis Date
Cyanide		N	ID	mg/	′Kg		5	6/3	0/2016	6/30/2016

 AR
 Acceptable Range

 ND
 Not Detected

 PQL
 Practical Quantitation Limit

 DBD
 Deleting Researchers Difference

RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099


ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:		1606995								
Pace Pr	roject No.:	30187563								
Sample	: 1606995- 01-6/1	001C CentralOCD-	Lab ID: 30187	563001 (Collected	1: 06/16/16 12:20	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:	:	Sample	Туре:				
Results Commer	nts: • Sam	<i>n a "dry-weight" ba</i> ple Acceptance Polic	<i>sis</i> cy Waiver on file fro	om the clier	nt.					
	Parame	eters	Method	Act ±	: Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	-226	EPA	\901.1	1.255 ±	2.582	(3.112)	pCi/g	07/14/16 12:0	6 13982-63-3	
Radium-	-228	EP4	4 901.1	C:NA 1: 2.152 ± C:NA T:	:NA 0.446 :NA	(0.252)	pCi/g	07/14/16 12:0	6 15262-20-1	-
Sample:	: 1606995-	002C CentralOCD-	Lab ID: 30187	563002 (Collected	1: 06/16/16 12:50	Received:	06/23/16 10:50	Matrix: Solid	
PWS:	UZ-0/1		Site ID:	Ş	Sample ⁻	Туре:				
Results	reported o	n a "dry-weight" ba	sis		•					
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	4.070 ±	2.123	(2.252)	pCi/g	07/14/16 12:2	2 13982-63-3	
Radium-	228	EPA	901.1	C:NA 1: 1.806 ± C:NA T:	NA 0.441 (NA	(0.138)	pCi/g	07/14/16 12:2	2 1 5262-20 -1	
Sample: PWS:	: 1606995- 03-6/1	003C CentralOCD-	Lab ID: 30187	563003 (Collected	I: 06/16/16 13:20	Received:	06/23/16 10:50	Matrix: Solid	
Results	reported o	n a "dry-weight" ba	sis		oanipio	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	2.237 ±	2.544 ((3.016)	pCi/g	07/14/16 12:3	9 13982-63-3	
Radium-	228	EPA	901.1	C:NA T: 2.290 ± C:NA T:	NA 0.514 (NA	(0.145)	pCi/g	07/14/16 12:3	9 15262-20-1	
Sample:	: 1606995- 06-6/1	004C CentralOCD-	Lab ID: 30187	563004 (Collected	1: 06/16/16 11:45	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:	\$	Sample ⁻	Гуре:				
Results	reported o	n a "dry-weight" ba	sis							
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	1.888 ±	2.288 (2.754)	pCi/g	07/14/16 12:4	0 13982-63-3	
Radium-	228	EPA	901.1	1.553 ± C:NA T:	0.446 (NA	(0.391)	pCi/g	07/14/16 12:4	0 15262-20-1	
Sample:	: 1606995- 6/16/2016	005C BD-	Lab ID: 30187	563005 (Collected	1: 06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:	ę	Sample ⁻	Гуре:				
Results	reported o	n a "dry-weight" ba.	S/S	• .						
	Parame	ters	Method	Act ±	Unc (M	DC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-	226	EPA	901.1	0.721 ± C:NA T:	2.612(:NA	(3.200)	pCi/g	07/14/16 12:5	6 13982-63-3	

REPORT OF LABORATORY ANALYSIS



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project:		1606995								
Pace Pro	ject No.:	30187563								
Sample:	1606995- 6/16/2016	005C BD-	Lab ID:	30187563005	Collected:	06/16/16 00:01	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:		Sample Ty	/pe:				
Results r	reported o	n a "dry-weigl	nt" basis							
	Parame	eters	Metho	od A	ct ± Unc (MD	C) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-228		-	EPA 901.1	2.10 C:N/	2 ± 0.475 (0 A T:NA	.295)	pCi/g	07/14/16 12:5	6 15262-20-1	
Sample:	1606995- TZ-6/1	006C CentralC	CD- Lab ID:	30187563006	Collected:	06/16/16 13:40	Received:	06/23/16 10:50	Matrix: Solid	
PWS:			Site ID:		Sample Ty	/pe:				
Results r	eported o	n a "dry-weigł	t" basis							
	Parame	ters	Metho	d A	ct ± Unc (MD	C) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-2	26		EPA 901.1	1.23 C:N/	7 ± 1.946 (2 \ T:NA	.382)	pCi/g	07/14/16 12:5	7 13982-63-3	
Radium-2	28		EPA 901.1	1.21) C:N/	0±0.397 (0 \T:NA	.240)	pCi/g	07/14/16 12:5	7 15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

 Project:
 1606995

 Pace Project No.:
 30187563

QC Batch:	225883	Analysis Method:	EPA 901.1		
QC Batch Method:	EPA 901.1	Analysis Description:	901.1 Gamma Sp	ec	
Associated Lab Sam	oles: 30187563001, 30187563002	2, 30187563003, 30187563004	, 301 <mark>87</mark> 563005, 30	187563006	
METHOD BLANK:	1106602	Matrix: Solid			
Associated Lab Sam	oles: 30187563001, 30187563002	l, 30187563003, 30187563004	, 3018 7563005, 30	187563006	

Falameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.249 ± 1.401 (1.846) C:NA T:NA	pCi/g	07/11/16 20:46	<u>.</u>
Radium-228	0.000 ± 0.066 (0.290) C:NA T:NA	pCi/g	07/11/16 20:46	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Pace Analytical Services, Inc. 1638 Roseytown Road - Suites 2,3,4 Greensburg, PA 15601 (724)850-5600

QUALIFIERS

Project: 1606995 Pace Project No.: 30187563

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

November 03, 2016

Ed Riege Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-3833 FAX (505) 722-0210

RE: OCD Central Landfarm Semiannual Sampling

OrderNo.: 1610A38

Dear Ed Riege:

Hall Environmental Analysis Laboratory received 4 sample(s) on 10/20/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order: 1610A38 Hall Environmental Analysis Laboratory, Inc. Date Reported: 11/3/2016 **CLIENT:** Western Refining Southwest, Gallup Lab Order: 1610A38 **Project:** OCD Central Landfarm Semiannual Sampling Lab ID: 1610A38-001 Collection Date: 10/20/2016 9:38:00 AM Client Sample ID: CentralOCD-2271-10202016-SW-NW Matrix: SOIL Analyses Result MDL PQL Qual Units DF **Date Analyzed Batch ID EPA METHOD 300.0: ANIONS** Analyst: LGT 10/29/2016 12:36:19 AM 28324 Chloride 2600 31 75 mg/Kg 50 1610A38-002 Collection Date: 10/20/2016 10:40:00 AM Lab ID: Client Sample ID: CentralOCD-2271-10202016-SW-NE Matrix: SOIL Result MDL PQL Oual Units DF **Date Analyzed Batch ID** Analyses **EPA METHOD 300.0: ANIONS** Analyst: LGT Chloride 2600 31 75 mg/Kg 50 10/29/2016 12:48:43 AM 28324 Lab ID: 1610A38-003 Collection Date: 10/20/2016 11:10:00 AM Client Sample ID: CentralOCD-2271-10202016-SW-E Matrix: SOIL MDL PQL Units DF **Date Analyzed Batch ID** Analyses Result Oual **EPA METHOD 300.0: ANIONS** Analyst: LGT mg/Kg Chloride 640 12 30 10/27/2016 3:14:33 PM 28324 20 1610A38-004 Collection Date: 10/20/2016 Lab ID: CentralOCD-BD-10202016 Matrix: SOIL Client Sample ID: POL **Date Analyzed Batch ID** Analyses Result **MDL** Oual Units DF **EPA METHOD 300.0: ANIONS** Analyst: LGT Chloride 600 12 30 mg/Kg 20 10/27/2016 3:26:57 PM 28324

Analytical Report

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range	
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Pac	relof?
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	;c 1 01 2
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as sp	ecified

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Page 2 of 2

Client:	Western Refining Southwest, Gallup											
Project:	OCD Central Landfarm Semiannual Sampling											
Sample ID	MB-28324	SampType:	MBLK	TestCode: EPA Method 300.0: Anions								
Client ID:	PBS	Batch ID:	28324	F	RunNo: 38293							
Prep Date:	10/27/2016	Analysis Date:	10/27/2016	5	SeqNo: 1194989	Units: mg/Kg						
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowLimit	t HighLimit	%RPD	RPDLimit	Qual			
Chloride		ND	1.5									
Sample ID	LCS-28324	SampType:	LCS	Tes	tCode: EPA Metho	d 300.0: Anion	s					
Client ID:	LCSS	Batch ID:	28324	F	RunNo: 38293							
Prep Date:	10/27/2016	Analysis Date:	10/27/2016	SeqNo: 1194990 Units: mg/Kg								
Analyte		Result PC	L SPK value	SPK Ref Val	%REC LowLimit	t HighLimit	%RPD	RPDLimit	Qual			
Chloride		14	1.5 15.00	0	95.4 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
- R RPD outside accepted recovery limits
- 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 Detection Limit
- W Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Western Refining Gallup Work Order Number:	1610A38		RcptNo:	1
Received by/date: LC 10 2016				
Logged By: Lindsay Mangin 10/20/2016 4:40:00 PM	л	Junky Hongo		
Completed By: Lindsay Mangin , 10/21/2016 8:47:40 AM	N	Junebu Hongo		
Reviewed By: P. 10 21/16				
Chain of Custody				
Custody seals intact on sample bottles?	Yes	No	Not Present 🖌	
2 Is Chain of Custody complete?	Yes 🖌	No	Not Present	
2. How was the sample delivered?	Client			
<u>Log in</u>		,		
4. Was an attempt made to cool the samples?	Yes 🗸	No	NA	
	[]]	•• (***)	N.A. [] }	
Were all samples received at a temperature of >0° C to 6.0°C	Yes ⊻	NO []	NA L. i	
6. Sample(s) in proper container(s)?	Yes 🗸	No		
	1.77.21	(""]		
7. Sufficient sample volume for indicated test(s)?	Yes 🗹	No []		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🗹	No L.I	NA [7]	
9. Was preservative added to bottles?	Yes	No 💌	NA L. I	
10.VOA vials have zero headspace?	Yes	No []	No VOA Vials 🗹	
11. Were any sample containers received broken?	Yes	No 🗹		
			# of preserved bottles checked	
12.Does paperwork match bottle labels?	Yes 🗸	No	for pH:	ar >12 unless noted)
(Note discrepancies on chain of custody)	¥	No.	Adjusted?	
13. Are matrices correctly identified on Chain of Custody?	Yes 💌	No []	-	
14, is it clear what analyses were requested?	Yes 🔽	No []]	Checked by:	
(If no, notify customer for authorization.)	100		l	
Special Handling (if applicable)				
16. Was client notified of all discrepancies with this order?	Yes [No		-1
Person Notified: Date:				
By Whom: Via:	[]] eMail []]	Phone [] Fax	In Person	
Regarding:				
Client Instructions:				
17. Additional remarks:				
18 Cooler Information				
Cooler No Temp °C Condition Seal Intact Seal No	Seal Date	Signed By]	
1 2.8 Good Not Present			1	

Page 1 of 1

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HALL ENVIDONME	ANALYSTS LABORATOR	www.hallenvironmental.com	lawkins NE - Albuquerque, NM 87109	05-345-3975 Fax 505-345-4107	Analysis Request			×													ease or Grant Price (norice@frihvdro.com	Grant @ 307-745-7474 w/ questions. Date ackage w/ Tribvdro FDD needed within	ept.	
			4901 F	Tel. 5(marks [.] DI	ults. Call	/s of recit	2
			inual Sampling					Struc		HOLOAZS	× 100~	× ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	× 200-	× 1500-							ate Time		ate Time	4 10/20/10 b
	lsù.		Ifarm Semian					240	Marco Jie: 2. B	Preservativ e Type	none	none	none	none) 92		Vorreh
	X Standard	Project Name:	OCD Central Land	Project #:	697-052-004	Project Manager:	Ed Riege	Sampler.	Sample Temperatu	Container Type and #	T - 704	L - 204	t -204	T-zoh							Received by:		Received by:	Xundrey
ousious record		Refining	Route 3 Box 7		-3833	-0210	Level 4 (Full Validation)		e EDD	Sample Request ID	CentralOCD-2271-10202016-SW-NW	CentralOCD-2271-10202016-SW-NE	CentralOCD-2271-10202016-SW-E	CentralOCD-BD-100202016							d by:	R	d by	Prodente of Minister of the Hall Environmented and
	. R efining	stern k			505-722-	505-722-		□ Other	ise provid	Matrix	soil	soit	soil	soil				 			Relinquisher	V	Relinquisher	
ן כ	N F M	WCS	ress:	87301		¢#;	age:	Ę	pe)_Plea	Time	938	1040	1110	NA							Time:	1300	Time:	600
	Client:		Mailing Add	Gailup, NM	Phone #:	email or Fa	QA/QC Pack	Accreditatio		Date	10/20/2016	10/20/2016	10/20/2016	10/20/2016							ate:	91-02-91	ate:	6/16

SMW-2 Area and Boundary Well Installation Report



Gallup Refinery Marathon Petroleum Company Gallup, New Mexico

EPA ID# NMD000333211

APRIL 2019

roll

Scott Crouch, P.G DiSorbo Consulting, LLC



8501 North Mopac Expy 512.693.4190 (P)

 Suite 300
 Austin, TX 78759

 512.279.3118 (F)
 www.disorboconsult.com

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- Appendix C Field Methods
- Appendix D Soil Analytical Reports
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- Appendix F SMW-2 Area Analytical Reports

List of Acronyms

API	American Petroleum Institute
bgl	below ground level (bgl)
btoc	below top of casing
DRO	diesel range organics
EPA	Environmental Protection Agency
HSA	hollow-stem auger
IDW	investigation derived waste
MCL	maximum contaminant level
msl	mean sea level
MW	monitor well
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
PID	photoionization detector
PPM	parts per million
PVC	polyvinyl chloride
SPH	separate phase hydrocarbon
SVOC	semi volatile organic compound
SWMUs	Solid Waste Management Units
ТРН	total petroleum hydrocarbon
TCLP	toxicity characteristic leaching procedure
USCS	unified soil classification system
VOC	volatile organic compound
wocc	Water Ouality Control Commission

Executive Summary

The Gallup Refinery, which is located 17 miles east of Gallup, New Mexico, has been in operation since the 1950s. Pursuant to the terms and conditions of the facility Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit and 20.4.1.500 New Mexico Administrative Code, this report documents installation of boundary wells west of the on-site evaporation ponds and installation of wells in the area of well SMW-2. This area was identified by the New Mexico Environment Department (NMED) in comment letters regarding the 2013 and 2014 Annual Facility-Wide Ground Water Monitoring Reports as requiring additional groundwater monitoring wells.

The activities completed include the installation of five permanent monitoring wells (BW-4A, BW-4B, BW-5A, BW-5B, and BW-5C) and groundwater sampling along the western property boundary in an area approximately 500 feet west of Pond 9 and 780 feet south of existing monitor well OW-1. The activities also included the installation of two permanent monitoring wells (OW-59 and OW-60) in the area of SMW-2. Water samples were also collected at monitoring wells SMW-2 and SMW-4 and evaporation ponds EP-2 and EP-3. The field activities began on June 6, 2017 and continued through June 29, 2017.

Boundary Wells

Five permanent well completions were installed, although two of the wells were dry. Three groundwater samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, total petroleum hydrocarbons (TPH), metals, and inorganic/general water quality parameters) at wells BW-4B, BW-5B and BW-5C.

Total metals concentrations exceeded the respective screening levels for arsenic, barium, beryllium, chromium, cobalt, iron, lead, manganese, nickel, and vanadium in one groundwater sample collected from well BW-4B. The sample was very turbid and dissolved metals analyses were not performed. Chloride was detected at a concentration (1,400 mg/L) above the screening level (250 mg/L) in one sample collected from well BW-5C. Diesel range organics (DRO) were detected at low concentrations of 0.47 mg/L and 0.74 mg/L in groundwater samples collected at wells BW-4B and BW-5B, respectively, in comparison to the screening level of 0.086 mg/L.

Detectable concentrations of acetone and benzoic acid were reported in the sample collected from BW-4B. The concentrations were below the screening levels. In the sample collected from BW-5B acetone, toluene and benzoic acid were reported at concentrations below the screening levels.

SMW-2 Area Wells

Two permanent well completions were installed. Two soil samples (excluding additional quality assurance samples) were collected during the advancement of the soil borings for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, TPH, and metals).

In the soil sample collected from OW-59 the lead concentration exceeded the screening level for the leachate DAF of 20. In the soil sample collected from OW-60 the iron and lead concentrations exceeded the screening level for the leachate DAF of 20. The manganese concentration exceeded non-residential soil screening level. Detectable concentrations of volatile and semi-volatile organics were reported in both soil samples but did not exceed the screening levels.

Two groundwater samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, TPH, metals, inorganic/general water quality parameters and major cations/anions) at wells OW-59 and OW-60.

Total metals concentrations exceeded the respective screening levels for iron and manganese in both wells. Arsenic exceeded the screening level in OW-59. Beryllium exceeded the screening level in OW-60. Chloride and sulfate exceeded the respective screening levels in both wells. Dissolved metals concentrations exceeded the screening level for manganese in both wells. GRO and DRO concentrations exceeded the screening levels in the sample collected from OW-59. Detectable concentrations of volatile and semi-volatile organics were reported in both groundwater samples but did not exceed the screening levels.

SMW-2 Area – Additional Sampling

Water samples collected from Monitoring wells SMW-2 and SMW-4 and evaporation ponds EP-2 and EP-3 were analyzed for major cations/anions. The chloride concentrations reported from the surface water samples collected from evaporation ponds EP-2 and EP-3 were the highest concentrations reported during the sampling event. The chloride concentrations decreased moving up-gradient from SMW-2 to OW-59 and OW-60. The highest sulfate concentrations were observed in the groundwater

sample collected from OW-59, located on the down-gradient end of the OCD Central landfarm. The sulfate concentrations decreased down-gradient at SMW-2 and were significantly lower up-gradient in the groundwater sample collected from OW-60. Based on the existing information, the source(s) of the elevated concentrations of chloride and sulfate observed in SWMU-2 are not conclusive. It is possible that there may be separate sources for sulfate and chloride.

Section 1 Introduction

The Gallup Refinery is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County. The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Gallup Refinery property covers approximately 810 acres. Figure 1 presents the refinery location and the regional vicinity, which is characterized as high desert plain comprised primarily of public lands used for grazing by cattle and sheep.

The Gallup Refinery generally processes crude oil from the Four Corners area transported to the facility by pipeline or tanker truck. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, isomerization, sulfur recovery, merox treater, and hydrotreating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

The location of the new boundary wells is shown on Figure 2. The purpose of these wells is to provide additional groundwater monitoring down-gradient of Evaporation Ponds 6 and 9. To accomplish this objective, two additional shallower monitoring wells (BW-4A and BW-4B) were installed near existing monitor well OW-1 to create three clustered wells similar to what was installed earlier at the boundary well locations (BW-1, BW-2, and BW-3). Three additional clustered wells (BW-5B and BW-5C) were installed approximately 500 feet west of Pond 9.

The location of the new wells in the area of SMW-2 is shown on Figure 3. The purposed of these wells (OW-59 and OW-60) is to determine the source of the elevated chloride and sulfated detected at monitoring well SMW-2. Groundwater samples were also collected from SMW-2 and SMW-4. Surface water samples were collected from Evaporation Ponds EP-2 and EP-3.

Section 2 describes the scope of work completed, including completion of soil borings, installation of permanent monitoring wells, soil sample collection, groundwater sample collection and surface water sample collection. Section 3 explains the results of the field investigation, including the general surface and subsurface conditions and detailed site-specific information acquired during subsurface investigations. Section 4 presents the analytical results of soil samples, groundwater samples, and surface water samples. The results of these analyses are compared to applicable State or federal screening levels.

Section 2 Background

This section presents background information for the area of the refinery property near monitoring wells SMW-2 and OW-1, including a review of historical waste management activities to identity the following:

Type and characteristics of all waste and all contaminants handled in the subject areas; Known and possible sources of contamination;

History of operations; and

Prior investigations.

2.1 SMW-2 Area

Monitoring well SMW-2 is located immediately south of the closed Land Treatment Unit (LTU). This well is not included in the RCRA Permit as part of the detection or shallow monitoring well networks, but groundwater samples are routinely collected and analyzed per the Facility-Wide Ground Water Monitoring Plan. Well SMW-2 is located on the up-gradient end of the LTU. Historical analytical results for groundwater samples collected since 2010 are included in Table 1 of the *Work Plan SWM-2 Area Investigation and Boundary Wells Installations* (DiSorbo, 2016). Also included in Table 1 of the work plan are the analytical results for groundwater samples collected in SMW-4, which is located on the north (down-gradient) end of the LTU. These historical analyses indicate the detection of chloride, sulfate, manganese, and uranium at concentrations above the applicable screening levels per the RCRA Permit. Uranium was also detected in groundwater samples collected from SMW-4 at concentrations above the screening level. MTBE has been detected in groundwater samples collected at SMW-2, but has remained below the screening level.

Well SMW-2 is located down-gradient of the Central Landfarm, which is permitted by the New Mexico Oil Conservation Division (NMOCD) and also potentially down-gradient of the evaporation ponds (Figure 3). It is noted that the area where the NMOCD Central Landfarm is currently located may overlie former Evaporation Pond #10. According to information provided in the *Inventory of Solid Waste Management Units,* cell or Evaporation Pond #10 was used for wastewater from the boiler house and water softener regeneration wastes, but did not receive process wastewater discharges through the API Separator. The process of discharging directly to Evaporation Pond #10 was

replaced with the addition of a neutralization tank in 1980 (Geoscience Consultants, Ltd., 1985a). Evaporation Pond #10 was no longer in service in 1985 based on information provided in the 1985 Discharge Plan Application (Geoscience Consultants, Ltd., 1985b).

2.2 OW-1 Area

Monitoring well OW-1 was installed in November 1980 as part of the initial site investigations conducted pursuant to RCRA (Figure 2). The well was drilled to depth of 100 feet and is screened in the Sonsela Sandstone aquifer. Well OW-10, which is also screened in the Sonsela Sandstone aquifer, is located to the east and up-gradient of OW-1. The only site operations known to have been conducted in the area are the evaporation ponds located to the east and hydraulically up-gradient of OW-1.

Analytical results for groundwater samples collected from OW-1 and OW-10 are included in Table 2 in the Work Plan SWM-2 Area Investigation and Boundary Wells Installations (DiSorbo, 2016.) MTBE was detected in groundwater samples collected at OW-10 in 2012 and 2013 at concentrations above the screening level, but has since shown concentrations below the screening level. There have been a few detections of nitrate above screening levels in OW-1 and OW-10. Chloride has consistently been detected above the screening level in groundwater samples collected at OW-10. Total metals analyses of water samples collected at OW-1 have shown sporadic occurrences of arsenic, chromium, iron, lead, and manganese above screening levels. Total analyses of uranium have consistently exceeded screening levels in samples collected at both OW-1 and OW-10. Dissolved metals analyses of water samples collected at OW-1 have shown sporadic occurrences of iron, lead, and manganese above screening levels. Dissolved analyses of uranium have consistently exceeded screening levels in samples collected at both OW-1 and OW-10. Other organic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-1 include benzene, toluene, and total xylenes. Organic constituents that have been detected at very low concentrations below screening levels in water samples collected at OW-10 include 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene,

Section 3 Scope of Activities

3.1 Monitor Well Installation and Sample Collection

Pursuant to the approved SWMU-2 Area Investigation and Boundary Well Installations Work Plan, five permanent monitoring wells were installed west of Evaporation Ponds 6 and 9 (Figure 2). Two permanent monitoring wells were installed in the area of the OCD Landfarm (Figure 3).

3.1.1 Boundary Wells

Two new wells were installed near OW-1. Well BW-4A was installed with the screen interval set in the zone designated as the Upper Sand. Well BW-4B was installed with the screen interval set just above the Chinle bedrock in the Chinle/Alluvial Interface zone. Copies of the well logs are included in Appendix A.

Three clustered wells were drilled approximately 500 feet west of Pond 9 and 780 feet south of existing monitor well OW-1. Monitor well BW-5A was installed with screened interval set in the zone designated as the Upper Sand. Monitor well BW-5B was installed with screened interval set just above the Chinle bedrock in the Chinle/Alluvial Interface zone. Monitor well BW-5C was installed with the screened interval set in the Sonsela Sandstone aquifer. Copies of the well logs are included in Appendix A.

Soil samples obtained from the soil borings were screened in the field on 2.0 foot intervals for evidence of contaminants. The screening methods included, (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds. No discrete soil samples were retained for laboratory analysis since the field screening methods did not indicate any potential contamination.

The following list provides a summary of the five permanent wells advanced using hollow stem augers:

- BW-4A; screened from 21 feet below ground level (bgl) to 36 feet bgl;
- BW-4B; screened from 41 feet bgl to 61 feet bgl;
- BW-5A; screened from 10 feet bgl to 20 feet bgl;

- BW-5B; screened from 48 feet bgl to 58 feet bgl; and
- BW-5C; screened from 64.3 feet bgl to 74.3 feet bgl.

Groundwater samples were collected from three of the five permanent monitoring wells. The groundwater samples were analyzed for volatile and semi-volatile organics, TPH (GRO, DRO, and MRO), Skinner List metals, cyanide, iron, manganese, chloride, fluoride, and sulfate. The following list provides a brief summary of the groundwater sample collection:

- BW-4A; dry; well did not yield enough water to sample;
- BW-4B; developed and sampled; yielded enough water for a full analytical suite, the groundwater was too turbid to collect a filtered sample for dissolved metals analyses;
- BW-5A; dry; well did not yield enough water to sample;
- BW-5B; developed and sampled; yielded enough water for a full analytical suite; and
- BW-5C; developed and sampled; yielded enough water for a full analytical suite.

3.1.2 SMW-2 Area

Two new wells were installed adjacent to the OCD Landfarm, which is located north of evaporation ponds EP-2 and EP-3 and up-gradient of SMW-2. Well OW-59 was installed adjacent to the northwest (down-gradient) corner of the OCD Landfarm. Well OW-60 was installed adjacent to the southeast (up-gradient) corner of the OCD Landfarm. OW-59 and OW-60 are located outside of the bermed area for the OCD Landfarm. The wells are screened in the Chinle/Alluvial Interface zone. Copies of the well logs are included in Appendix A.

Soil samples obtained from the soil borings were screened in the field on 2.0 foot intervals for evidence of contaminants. The screening methods included, (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds. One discrete soil sample was collected from each soil boring. The samples were from the interval exhibiting the highest soil vapor reading.

The following list provides a summary of the two permanent wells advanced using hollow stem augers:

- OW-59; screened from 20 feet bgl to 35 feet bgl; and
- OW-60; screened from 25 feet bgl to 45 feet bgl.

3.2 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with the installation of the permanent wells were contained and characterized using methods based on the boring locations and type of contaminants suspected or encountered. All drill cuttings generated during the boundary well installations were collected and placed into 55-gallon drums. A composite sample of the drums generated during the June 2017 well installation event was collected using a decontaminated stainless steel spoon and sent to Hall Environmental Laboratory for waste characterization analysis. The sample was analyzed for the following:

- Reactivity Cyanide (SW846 CH7);
- Reactivity Sulfide (SW846 CH7);
- Ignitability (Method 1030);
- Corrosivity pH (Method 9045);
- RCRA 8 (TCLP) Metals (Method 6010B);
- Diesel Range Organics (Method 8015B);
- Motor Oil Range Organics (Method 8015B);
- Gasoline Range Organics (Method 8015B); and
- TCLP Volatiles (Method 1311/8260B).

The Hall analytical report (#1708D66) is included in Appendix B. Based on the analyses, 28 non-hazardous/non-DOT regulated drums (16,380 pounds) were shipped off-site to Advanced Chemical Treatment in Albuquerque, NM for disposal on 8/30/2017.

Copies of the waste manifests are included in Appendix B. All purge water and decontamination water was disposed in the refinery wastewater system upstream of the API Separator.

3.3 Surveys

A global positioning system receiver was used to record the coordinates of each permanent monitor well. These coordinates were recorded on the field boring logs. Surveys were completed by a registered land surveyor for the seven permanent wells to include geographic position and land surface elevation.

Section 4 Field Investigation Results

This section provides a summary of the surface and subsurface conditions at the refinery, including the area west of Evaporation Ponds 6 and 9 and the SMW-2 area. A discussion is included on the installation of soil borings and field screening of soils. This is followed by a description of the installation of permanent monitoring wells and the collection of groundwater samples.

4.1 Surface Conditions

Site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Elevations on the refinery property range from 6,860 feet to 7,040 feet above mean sea level (msl). The area near monitor well OW-1 is at an approximate elevation of 6,866 feet msl. The elevation in the area of SMW-2 is approximately 6,887 feet msl.

Surface soils within most of the area of investigation are primarily Rehobeth silty clay loam. Rehobeth soil properties include a pH ranging from 8 to 9 standard units and salinity (naturally occurring and typically measuring up to approximately 8 mmhos/cm).

Regional surface water features include the refinery evaporation ponds and a number of small ponds (one cattle water pond and two small unnamed spring fed ponds). The site is located in the Puerco River Valley, north of the Zuni Uplift with overland flows directed northward to the tributaries of the Puerco River. The Puerco River continues to the west to the confluence with the Little Colorado River. The South Fork of the Puerco River is intermittent and retains flow only during and immediately following precipitation events.

4.2 Subsurface Conditions

The shallow subsurface soils consist of fluvial and alluvial deposits comprised of clay and silt with minor inter-bedded sand layers. The diverse properties and complex, irregular stratigraphy of the surface soils across the site cause a wide range of hydraulic conductivity ranging from less than 10⁻² cm/sec for gravelly sands immediately overlying the Petrified Forest Formation to 10⁻⁸ cm/sec in the clay soils located near the surface (Western Refining, 2009). Generally, shallow groundwater at the refinery follows the upper contact of the Chinle Group (i.e., Chinle/Alluvial Interface zone) with prevailing flow from the southeast to the northwest, with some flow potentially to the northeast on

the northeastern portion of the refinery property. In the northwestern portion of the facility there are thin intermittent sand layers above the Chinle/Alluvial Interface zone, which may be saturated. These intervals are referred to as the Upper Sands with groundwater flow directions downdip to the northwest.

The Quaternary alluvium, which occurs at the land surface in the area of the refinery is mapped regionally as a narrow band trending west-northwest and running just north of I-40 (Figure 4). The Quaternary alluvium is thought to be the parent material of the Rehobeth soils, which are present at the facility.

Subcropping beneath the Quaternary alluvium is the Triassic Chinle Group (Figure 4). The stratigraphy of the Chinle Group was described in detail for the nearby Fort Wingate quadrangle by Lucas et al, 1997. The Painted Desert Member of the Petrified Forest Formation is the uppermost member of the Chinle Group present in the area of the refinery. The Painted Desert Member is described as reddish-brown and greyish red mudstone with minor beds of resistant, laminated or crossbedded, litharenite. This is consistent with the bedrock encountered at the refinery. Beneath the Painted Desert Member is the Sonsela Member, which is described by Lucas et al (1997) as grey to yellowish-brown, fine-grained to conglomeratic, crossbedded sandstone. The Sonsela Member forms an artesian aquifer across most of the facility. The base of the Sonsela Member is recognized as a basin wide unconformity, which was termed the Tr-4 unconformity (Heckert and Lucas, 1996). The Blue Mesa Member, which underlies the Sonsela Member, is the lowest member of the Petrified Forest Formation. The Blue Mesa Member is described as mostly purple and greenish-grey mudstone.

4.3 Subsurface Investigations

No underground pipelines were detected during clearance of utilities in the area of the well installations. This subsection provides a detailed description of subsurface soil and groundwater investigations conducted during the installation of the seven permanent monitoring wells.

A description of the field screening procedures are presented in Appendix C – Field Methods. Copies of the boring logs/well construction logs are provided in Appendix A. In addition to being included on the soil boring logs, the soil vapor (i.e., headspace) screening results are summarized in Table 1. The locations of the soil borings/monitor wells appear on Figure 2 and Figure 3.

4.3.1 Well Installation and Groundwater Sample Collection

Seven soil borings were advanced using the hollow-stem auger (HSA) method. The drilling equipment was decontaminated between each borehole, as described in Appendix C. The well development and purging is also discussed in Appendix C. Detailed soil boring logs are included in Appendix A. The soil boring logs describe the subsurface lithology, the presence of saturation, the field screening results, and permanent well construction details. The drilling of the soil borings, well installation, and groundwater sampling is discussed below in numerical order.

3.3.1.1 Boundary Wells

<u>BW-4A</u>

On June 14, 2017 the drilling rig was set up on location BW-4A. Well BW-4A is located approximately 10 feet north of monitor well OW-1. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 2 feet below ground level (bgl) (low plasticity, firm, dry to damp, brown, no odor);
- Clay: 2 feet bgl 18 feet bgl (high plasticity, stiff to very stiff, damp, brown, no odor);
- Clayey Silt/Silty Clay: 18 feet bgl 26 feet bgl (low plasticity, firm/crumbly, damp, light brown/tan, no odor, interbedded);
- Clay: 26 feet bgl 32 feet bgl (high plasticity, very stiff, damp, brown to darker brown, no odor); and
- Silty Clay: 32 feet bgl 34 feet bgl (low plasticity, very stiff, damp, light reddish brown, trace very fine grain sand, no odor).
- Clayey Silt/Silty Clay: 34 feet bgl 36 feet bgl (low plasticity, firm to stiff, damp, reddish brown and grey, alternating silt/clay, no odor)
- Silty Clay: 36 feet bgl 44 feet bgl (low plasticity, stiff, damp, reddish brown and grey, no odor).

The sampling was terminated at 44 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. On June 15, 2017 an interface probe was lowered inside the augers. No groundwater was detected. A permanent monitor well was installed at this location

with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 21 feet bgl to 36 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the clayey silt (22 feet bgl to 24 feet bgl) and the silty clay (32 feet bgl to 34 feet bgl) that exhibited traces of very fine grain sands. A sand filter pack was installed to approximately 18 feet bgl. A bentonite seal was installed to approximately 14.5 feet bgl. The top of the well casing is approximately 3 feet above ground level.

On June 15, 2017, June 16, 2017, June 19, 2017, and June 26, 2017 the well was gauged. No groundwater was detected during the gauging events, thus no water sample was collected.

The annular seal (bentonite grout) was installed on June 27, 2017. The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-4B</u>

On June 15, 2017 the drilling rig was set up on location BW-4B. Well BW-4B is located approximately 10 feet south of monitor well OW-1. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 2 feet bgl (low plasticity, firm, dry to damp, brown, no odor);
- Clay: 2 feet bgl 18 feet bgl (high plasticity, stiff to very stiff, damp, brown, no odor);
- Clayey Silt/Silty Clay: 18 feet bgl 25 feet bgl (low plasticity, firm/crumbly, damp, light brown/tan, no odor, interbedded);
- Clay: 25 feet bgl 28 feet bgl (high plasticity, very stiff, damp, brown to darker brown, no odor);
- Silty Clay: 28 feet bgl 31 feet bgl (moderate to low plasticity, very stiff, damp, dark brown grading to light reddish brown, trace fine grain sand at base, no odor);
- Sandy Gravelly Clay: 31 feet bgl 31.75 feet bgl (low plasticity, stiff, dry to damp, light grey and brown, no odor);
- Silty Clay: 31.75 feet bgl 32 feet bgl (low plasticity, stiff, damp, reddish brown, no odor);

- Clayey Silt/Silty Clay: 32 feet bgl 34 feet bgl (low plasticity, firm/crumbly, damp, reddish brown and grey);
- Silty Clay: 34 feet bgl 44.75 feet bgl (low plasticity, firm/crumbly, damp, reddish brown and grey, no odor);
- Gravelly Silty Clay: 44.75 feet bgl 45.50 feet bgl (low plasticity, firm/crumbly, dry, grey and reddish brown, no odor, calcium carbonate nodules present);
- Sandy Clay: 45.50 feet bgl 46 feet bgl (low plasticity, firm/crumbly, dry, grey and reddish brown, very fine grain sand present, no odor);
- Silty Clay: 46 feet bgl 54 feet bgl (low plasticity, very stiff, dry to damp, reddish brown, no odor, trace grey clay at base with occasional gravel);
- Silty Clay: 54 feet bgl 60 feet bgl (low plasticity, very stiff, dry to damp, reddish brown, no odor, trace grey clay); and
- Silty Clay: 60 feet bgl 68 feet bgl (low plasticity, very stiff, dry to damp, reddish brown and grey, no odor).

The sampling was terminated at 68 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. On July 16, 2017 the sampling resumed. The lithology encountered consisted of the following:

- Silty Clay: 68 feet bgl 70 feet bgl (low plasticity, very stiff, dry to damp, reddish brown and bluish grey, no odor, calcareous);
- Silty Clay: 70 feet bgl 84 feet bgl (low plasticity, firm/crumbly, damp, reddish brown, no odor);
- Silty Clay: 84 feet bgl 88 feet bgl (low plasticity, very stiff, damp, reddish brown and trace of grey clay, no odor); and
- Silty Clay: 88 feet bgl 90 feet bgl (low plasticity, very stiff, damp, reddish brown and trace of grey clay, no odor, interbedded with fine grain sandstone white, hard/dense).

The sampling was terminated at 90 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. At 0926 on June 19, 2017 an interface probe was lowered inside the augers. The depth to groundwater was approximately 71 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole and the rig was mobilized to a different location. At 1730 an interface probe was lowered inside the augers. The depth to groundwater by 69.50 feet bgl.

On June 20, 2017 the rig was mobilized to the location for BW-4B. Bentonite pellets were installed in the bottom of the borehole from a depth of 64.5 feet bgl to 90 feet bgl. The pellets were allowed to hydrate. A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 41 feet bgl to 61 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the gravelly silty clay encountered from 44.75 to 45.50 feet bgl. A sand filter pack was installed to approximately 39 feet bgl. A bentonite seal was installed to approximately 36 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 27, 2017 the well was gauged. The depth to groundwater was 30.92 feet btoc (27.92 feet bgl). The well was developed on June 27, 2017. The depth to groundwater after well development was 63.88 feet btoc. The water sample was collected on June 28, 2017. The depth to groundwater prior to sampling was 51.65 feet btoc (48.65 feet bgl).

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-5A</u>

On June 23, 2017 the drilling rig was set up on location BW-5A. Well BW-5A is the southernmost well in the BW-5A, 5B, and 5C well cluster. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 6 feet bgl (low plasticity, firm, dry, brown, no odor);
- Clay: 6 feet bgl 10 feet bgl (high plasticity, very stiff, dry, brown, no odor);
- Clay: 10 feet bgl 12 feet bgl (moderate plasticity, very stiff, dry, brown, no odor, gravel at base);
- Gravelly Silt/Sand: 12 feet bgl 14 feet bgl (very fine grain sand, dry, tan, no odor, 5-10 mm sized gravel was present, a stiff clay was at the base of this interval);
- Silty Clay: 14 feet bgl 18 feet bgl (low plasticity, stiff, dry, light reddish brown, tan and grey, trace very fine grain sand, no odor); and

• Sandy Silty Clay: 18 feet bgl – 20.50 feet bgl (low plasticity, very stiff, dry, light reddish brown with occasional grey, no odor, very fine grain sand present).

The sampling was terminated at 20.50 feet bgl. No apparent saturated sediments were encountered. A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 10 feet bgl to 20 feet bgl. The screen was set to intercept possible groundwater that may exist in the gravel and sand encountered from 12 feet bgl to 14 feet bgl and the very fine grain sands encountered within the silty clay from 14 feet bgl to 20.50 feet bgl. A sand filter pack was installed to approximately 8 feet bgl. A bentonite seal was installed to approximately 4 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 26, 2017 the well was gauged. The depth to groundwater was 22.80 feet btoc (19.80 feet bgl) and the total depth was gauged at 23.28 feet btoc (20.28 feet bgl). The well was developed on June 26, 2017. BW-5A was bailed dry with the depth to groundwater at 23.20 feet after bailing was completed.

On June 27, 2017 the well was gauged. The depth to groundwater was 23.21 feet btoc. A water sample was not collected since there was an insufficient amount of groundwater in the well for a water sample.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-5B</u>

On June 23, 2017 the drilling rig was set up on location BW-5B. Well BW-5B is the middle well in the BW-5A, 5B, and 5C well cluster. The well is located approximately 10 feet from BW-5A and 10 feet from BW-5C. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening methods did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 6 feet bgl (low plasticity, firm, dry, brown, no odor);
- Clay: 6 feet bgl 11 feet bgl (high plasticity, very stiff, dry, brown, no odor);
- Silty Clay: 11 feet bgl 12 feet bgl (low plasticity, very stiff, dry, tan to light brown, no odor, calcareous);
- Gravelly Silt/Sand: 12 feet bgl 14 feet bgl (very fine grain sand, very dense, dry, tan, no odor, sandstone and chert gravel);
- Silty Clay: 14 feet bgl 16 feet bgl (low plasticity, firm to stiff/crumbly, dry to damp, reddish brown and grey, trace gravel and very fine grain sand, no odor);
- Clayey Silt/Sand: 16 feet bgl 20 feet bgl (very fine grain sand, firm/crumbly, dry, light brown and grey to light reddish brown, no odor);
- Sandy Silty Clay: 20 feet bgl 30 feet bgl (low plasticity, very stiff, dry, light reddish brown and light grey, no odor, very fine grain sand present);
- Silty Clay: 30 feet bgl 48 feet bgl (low plasticity, firm to stiff, damp, reddish brown, no odor, softer than above, trace grey clay);
- Silty Clay: 48 feet bgl 54 feet bgl (low plasticity, very stiff, damp, light reddish brown, no odor, pink sandstone present); and
- Silty Clay: 54 feet bgl 58.5 feet bgl (low plasticity, very stiff, damp/dry, reddish brown, and grey, bluish grey from 56 feet bgl to 58 feet bgl, no odor).

The sampling was terminated at 58.5 feet bgl. No apparent saturated sediments were encountered. A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 48 feet bgl to 58 feet bgl. The screen was set to intercept possible groundwater that may exist in the sandstone encountered within the silty clays from 48 feet bgl to 54 feet bgl. A sand filter pack was installed to approximately 46 feet bgl. A bentonite seal was installed to approximately 44 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 26, 2017 the well was gauged. The depth to groundwater was 29.80 feet btoc (26.80 feet bgl). On June 27, 2017 the well was gauged. The depth to groundwater was 13.50 feet btoc (10.50 feet bgl). The well was developed on June 26, 2017. BW-5B was bailed down with the depth to groundwater at 61.10 feet btoc after bailing was completed. A water sample was collected on June 28, 2017. The depth to water prior to sampling was 20.60 feet btoc (17.60 feet bgl).

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>BW-5C</u>

On June 19, 2017 the drilling rig was set up on location BW-5C. Well BW-5C is the northernmost well in the BW-5A, 5B, and 5C well cluster. Sample collection was accomplished using the HSA drilling method and split spoon samplers. No discrete soil samples were retained for laboratory analysis since the field screening results did not indicate potential contamination. The lithology encountered consisted of the following:

- Silty Clay: 0 6 feet bgl (low plasticity, firm, dry, brown, no odor);
- Clay: 6 feet bgl 11 feet bgl (high plasticity, very stiff, dry, brown, no odor);
- Silty Clay: 11 feet bgl 12 feet bgl (low plasticity, very stiff, dry, tan to light brown, no odor, calcareous);
- Gravelly Silt/Sand: 12 feet bgl 14 feet bgl (very fine grain sand, very dense, dry, tan, no odor, sandstone and chert gravel);
- Silty Clay: 14 feet bgl 16 feet bgl (low plasticity, firm to stiff/crumbly, dry to damp, reddish brown and grey, trace gravel and very fine grain sand, no odor);
- Clayey Silt/Sand: 16 feet bgl 20 feet bgl (very fine grain sand, firm/crumbly, dry, light brown and grey to light reddish brown, no odor);
- Sandy Silty Clay: 20 feet bgl 30 feet bgl (low plasticity, very stiff, dry, light reddish brown and light grey, no odor, very fine grain sand present);
- Silty Clay: 30 feet bgl 38 feet bgl (low plasticity, firm to stiff, damp, reddish brown, no odor, softer than above, trace grey clay); and
- Silty Clay: 38 feet bgl 50 feet bgl (low plasticity, stiff to very stiff, damp, reddish brown, no odor, calcareous, pink sandstone at base very dense, dry, no odor).

The sampling was terminated at 50 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. At 0840 on June 20, 2017 an interface probe was lowered inside the augers. No groundwater was detected. Activities at this location were then shut down for the day. The augers were left in the borehole and the rig was mobilized to a different location.

On June 21, 2017 the rig was mobilized back to the location for BW-5C and sampling continued. The lithology encountered consisted of the following:

- Silty Clay: 50 feet bgl 54 feet bgl (low plasticity, stiff, dry, reddish brown and grey, calcareous, no odor, sandstone present white and very dense);
- Silty Clay: 54 feet bgl 58 feet bgl (low plasticity, very stiff, dry, reddish brown, occasional grey clay that increases with depth, no odor);
- Shale: 58 feet bgl 64 feet bgl (very dense, light brown and grey, damp to saturated in cracks, no odor, fissile, becomes dry from 60 feet bgl to 64 feet bgl, very fine grain sand present and increases with interbedded clays present, no odor);
- Sandstone: 64 feet bgl 66 feet bgl (very dense, fine grain sand, dry, brown, interbedded with clay lenses, no odor);
- Sandstone: 66 feet bgl 68 feet bgl (very dense, fine grain sand, damp in fractures, light purplish brown, interbedded with clay lenses, weathered, soft, micaceous, no odor);
- Sand: 68 feet bgl 69 feet bgl (fine to medium grain, loose, saturated, brown, no odor)
- Siltstone: 69 feet bgl 69.5 feet bgl (dense, dry to damp, brown, no odor); and
- Sandstone: 69.5 feet bgl 76 feet bgl (firm to dense, damp to moist, grey, no odor dark grey to black shale at base, damp, stiff).

The sampling was terminated at 76 feet bgl. Activities at this location were then shut down for the day. The augers were left in the borehole. At 0950 on June 22, 2017 an interface probe was lowered inside the augers. The depth to groundwater was approximately 11.40 feet bgl.

A permanent monitoring well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 64.30 feet bgl to 74.30 feet bgl. The top of the screen was set approximately 4 foot above the occurrence of saturated sand (68 feet bgl to 69 feet bgl). The screen was extended to a depth of 74.3 feet bgl which allowed for the screening across additional moist intervals encountered within a sandstone (69.5 feet bgl to 74 feet bgl). A sand filter pack was installed to approximately 60 feet bgl. A bentonite seal was installed to approximately 56.90 feet bgl. The top of the well casing is approximately 3 feet above ground level. The annular seal (bentonite grout) was installed on June 22, 2017.

On June 23 and 26, 2017 the well was gauged. The depth to groundwater readings were 2.30 ft btoc and 2.42 ft btoc, respectively.

On June 27, 2017 the well was gauged. The depth to groundwater was 2.44 feet btoc. The well was developed on June 27, 2017. The depth to water after development was 47.90 feet btoc. A water sample was collected on June 28, 2017. The depth to water prior to sampling was 2.70 feet btoc.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

3.3.1.2 SMW-2 Area

Monitoring wells OW-59 and OW-60 were installed, developed and groundwater samples collected during the June 2017 field activities. The wells yielded enough water for a full analytical suite. The soil borings and subsequent wells are located adjacent to the OCD Landfarm.

<u>0W-59</u>

On June 12, 2017 the drilling rig was set up on location OW-59. Well OW-59 is located adjacent to the northwest (down-gradient) corner of the OCD Landfarm. Sample collection was accomplished using the HSA drilling method and split spoon samplers. One discrete soil sample was retained for laboratory analysis. The lithology encountered consisted of the following:

- Silty Clay: 0 6 feet bgl (low plasticity, firm, damp, brown, no odor);
- Clay: 6 feet bgl 8 feet bgl (high plasticity, stiff, damp, brown, no odor);
- Silty Clay: 8 feet bgl 10 feet bgl (low plasticity, stiff, damp, light brown, no odor, sandy at the base);
- Silt: 10 feet bgl 12 feet bgl (low plasticity, compact, damp, brown, no odor);
- Silty Clay: 12 feet bgl 14 feet bgl (low plasticity, very stiff, damp, brown, no odor, trace sand);
- Silty Clay: 14 feet bgl 18 feet bgl (high plasticity, very stiff, damp, brown, no odor);
- Silty Clay: 18 feet bgl 20 feet bgl (low to moderate plasticity, stiff, damp, brown, no odor);
- Sandy Silty Clay: 20 feet bgl 22 feet bgl (low plasticity, firm to soft, damp, brown, no odor);
- Sandy Clay: 22 feet bgl 24 feet bgl (low plasticity, soft, damp, brown, no odor);
- Silty Clay: 24 feet bgl 26 feet bgl (low plasticity, soft, damp, brown, no odor);
- Sandy Silt: 26 feet bgl 30 feet bgl (very fine grain, very moist, brown, no odor);
- Silty Clay: 30 feet bgl 33 feet bgl (low plasticity, firm, damp, brown, no odor);

- Silty Sand: 33 feet bgl 34 feet bgl (very fine grain, compact, saturated, brown, no odor);
- Silty Clay: 34 feet bgl 38 feet bgl (low plasticity, firm, damp, brown, no odor);
- Clay: 38 feet bgl 39 feet bgl (high plasticity, firm, damp, brown, no odor); and
- Silty Clay: 39 feet bgl 40 feet bgl (low plasticity, firm to soft, damp, grey and white, no odor, trace sand and white nodules).

The sampling was terminated at 40 feet bgl. One soil sample was collected for laboratory analysis from the soil boring for OW-59. The sample was collected from the interval 33 to 34 feet bgl, which exhibited the highest soil vapor reading of 16.3 ppm.

Activities at this location were then shut down for the day. The augers were left in the borehole. On June 13, 2017 an interface probe was lowered inside the augers. The depth to groundwater was 24 feet bgl. A permanent monitor well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 20 feet bgl to 35 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the sandy silt (26 feet bgl to 30 feet bgl) and the silty sand (33 feet bgl to 34 feet bgl). A sand filter pack was installed to approximately 18 feet bgl. A bentonite seal was installed to approximately 15.75 feet bgl. The top of the well casing is approximately 2.67 feet above ground level. The annular seal (bentonite grout) was installed on June 26, 2017.

On June 14, 2017 the well was gauged and the depth to groundwater was 24.44 feet btoc. On June 19, 2017 the well was gauged and the depth to groundwater was 24.75 feet btoc. On June 27, 2017 the well was gauged and the depth to groundwater was 25.00 feet btoc. The well was developed on June 27, 2017 using a disposable bailer. The well was bailed dry after approximately 8 gallons of groundwater was removed. On June 28, 2017 the well was gauged and the depth to groundwater was 26.15 feet btoc. The well was sampled and yielded enough groundwater for a full analytical suite.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

<u>0W-60</u>

On June 13, 2017 the drilling rig was set up on location OW-60. Well OW-60 is located adjacent to the southeast (up-gradient) corner of the OCD Landfarm. Sample collection was accomplished using the HSA drilling method and split spoon samplers. One discrete soil sample was retained for laboratory analysis. The lithology encountered consisted of the following:

- Silty Clay: 0 2 feet bgl (low plasticity, firm, damp, brown, no odor);
- Clay: 2 feet bgl 10 feet bgl (high plasticity, firm to stiff, damp, brown, no odor);
- Silty Clay: 10 feet bgl 28 feet bgl (moderate plasticity, firm to soft, damp, brown, no odor, traces of gravel from 24 to 26 feet and pockets of tan silt from 26 to 28 feet);
- Clayey Silt: 28 feet bgl 30 feet bgl (low plasticity, soft/crumbly, damp, light brown and grey, no odor);
- Silty Clay: 30 feet bgl 36 feet bgl (low plasticity, firm to crumbly, damp, light reddish brown with a trace of grey);
- Silty Clay: 36 feet bgl 38 feet bgl (low plasticity, very stiff, crumbly, damp, light reddish brown and grey, no odor); and
- Silt: 38 feet bgl 48 feet bgl (low plasticity, compact to dense/stiff, crumbly, damp, light grey, no odor, trace reddish brown clay from 46 to 48 feet).

The sampling was terminated at 48 feet bgl. One soil sample was collected for laboratory analysis from the soil boring for OW-60. The sample was collected from the interval 20 to 22 feet bgl, which exhibited the highest soil vapor reading of 15.3 ppm.

Activities at this location were then shut down for the day. The augers were left in the borehole. On June 14, 2017 an interface probe was lowered inside the augers. No groundwater was detected. A monitor well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 25 feet bgl to 45 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the silt (38 feet bgl to 48 feet bgl). A sand filter pack was installed to approximately 22.5 feet bgl. A bentonite seal was not installed in order to adjust the well setting if necessary. The top of the well casing was approximately 3.00 feet above ground level. Water was present with the soil cuttings that were removed from the augers as they were removed from the wellbore. The well was gauged after the installation of the well materials. No groundwater was encountered. Additional gauging was conducted on OW-60 with the following results:

- June 15, 2017 24.68 feet below top of casing (btoc);
- June 16, 2017 17.74 feet btoc; and
- June 19, 2017 17.45 feet btoc.

It was determined that the sidewalls of the wellbore had caved off into the wellbore onto the top of the sand filter pack. On June 26, 2017 the well materials were removed from the wellbore and the borehole was reamed. New well materials were installed in the borehole. A permanent monitor well was installed at this location with 2-inch Schedule 40 PVC screen and casing. The well was installed with the screened interval ranging from 25 feet bgl to 45 feet bgl. The screen was set to intercept possible groundwater bearing sediments in the silt (38 feet bgl to 48 feet bgl). A sand filter pack was installed to approximately 21.70 feet bgl. A bentonite seal was installed to approximately 19.40 feet bgl. The annular seal (bentonite grout) was installed on June 27, 2017.

On June 27, 2017 the well was gauged and the depth to groundwater was 10.25 feet btoc. The well was developed on June 27, 2017 using a disposable bailer. The well was bailed down after approximately 12 gallons of groundwater was removed. The depth to water was 44.65 feet btoc. On June 28, 2017 the well was gauged and the depth to groundwater was 33.15 feet btoc. The well was sampled and yielded enough groundwater for a full analytical suite.

The surface completion consists of a stickup completion, which included a protective steel cover secured in a concrete pad. The protective steel cover is equipped with a lid that is locked. Bollards were installed around the concrete pad. The surface completion and bollards were installed on June 29, 2017.

4.4 SMW-2 Area – Additional Sampling

On June 27, 2017 monitoring well SMW-2 was purged. On June 28, 2017 SMW-2 was sampled. Monitoring well SWM-4 was purged and groundwater samples collected on June 28, 2017. SMW-2 and SMW-4 yielded enough water for a full analytical suite. The measurement of field purging parameters included measurement of groundwater pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. The groundwater field parameters collected during the sampling event are included in Table 5. Groundwater gauging measurements collected during the field activities are presented in Table 6.
In addition to collecting groundwater samples at SMW-2 and SMW-4, surface water samples were collected from Evaporation Ponds EP-2 and EP-3. The field parameters collected during the collection of the samples are included in Table 5.

Section 5 Regulatory Criteria

The applicable screening and potential cleanup levels are specified in NMED's *Risk* Assessment *Guidance for Site Investigations and Remediation* dated March 2019 and in the Environmental Protection Agency's (EPA) Regional Screening Levels dated November 2018.

For non-residential properties (e.g., the Gallup Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper ten feet based on NMED criteria. NMED residential soil screening levels are applied to the upper ten feet and soil screening levels for protection of groundwater apply throughout the vadose zone. EPA soil screening levels for direct contact exposure apply to the upper two feet of the vadose zone. The soil screening levels are included in Table 2 for comparison to concentrations of constituents reported for soil samples. The sample results are not segregated based on the aforementioned depths for this initial comparison.

The groundwater cleanup levels are based on New Mexico Water Quality Control Commission (WQCC) standards (20.6.2.7 WW NMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal maximum contaminant level (MCL), in which case the lower of the two values is selected as the cleanup level. If neither a WCQQ standard nor an MCL is available, then the cleanup level is based on a NMED Tap Water Screening Level. If a NMED Tap Water Screening Level is not available for a constituent, then an EPA Regional Screening Level is used. If an EPA Regional Screening Level is for a carcinogenic compound, then the screening level is multiplied by 10 to bring the risk level to 1E-05 to be consistent with the NMED screening levels. Table 3 presents the groundwater cleanup levels used for comparison to reported groundwater concentrations. The same screening levels are also used in Tables 4 and 8.

The aforementioned Table 2 has soil screening levels for the soil-to-groundwater pathway that are based on a dilution/attenuation factor (DAF) of 20. Pursuant the discussion in Section 4.9 of NMED's most recent Risk Assessment Guidance, the highest soil leachate-based soil screening level based on a DAF of 20 has been provided in Table A-1 of the guidance and is to be applied for initial screening. If an MCL based value is available, then it is used, if not, then NMED's Cw soil screening

level from Table A-1 is used. If neither of these screening levels is available for a particular constituent, then an EPA screening level is used.

The applicable TPH screening levels for comparison to the individual soil samples are selected from Tables 6-2 and 6-4 of the NMED guidance (NMED, 2019). The groundwater screening levels for TPH are taken from Table 6-4. Both soil and groundwater TPH screening levels for "unknown oil" are used for comparison to site concentrations.

Only one constituent (di-n-octyl-phthalate) was detected in groundwater that does not have a screening level. It is not classified as a known carcinogen.

Section 6 Site Impacts

This section discusses the chemical analyses performed and presents the analytical results that were obtained through the analysis of soil, groundwater and surface water samples.

6.1 Soil Analytical Results

One soil sample was collected from each of the soil borings for OW-59 and OW-60. The samples were collected from the interval with the highest soil vapor reading. In the boring for OW-59 a sample was collected from the interval 33 to 34 feet bgl, which exhibited the highest soil vapor reading of 16.3 ppm. In the boring for OW-60 a sample was collected from the interval 20 to 22 feet bgl, which exhibited the highest soil vapor reading of 15.3 ppm.

The soil samples were analyzed for organic constituents by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds;
- SW-846 Method 8015D gasoline range organics; and
- SW-846 Method 8015M/D diesel and motor oil range organics.

Soil samples were analyzed for the following metals using the indicated analytical methods:

- SW-846 Method 6010B
 - o Antimony
 - o Arsenic
 - o Barium
 - o Beryllium
 - Cadmium
 - o Chromium
 - o Cobalt
 - o Iron
 - o Manganese
 - o Nickel
 - o Selenium
 - \circ Silver
 - \circ Vanadium
 - o Zinc

- SW-846 Method 7471
 - o Mercury
- SW-846 Method 9012
 - o Cyanide

The analytical results and the applicable screening levels are presented in Table 2. The laboratory analytical reports are included in Appendix D. The individual results that exceed the applicable cleanup levels are highlighted. The constituents with reported concentrations that exceed screening levels are discussed below.

The following soil samples exceeded the screening levels for the listed constituents. The screening level is included in the parenthesis:

<u>OW-59 (33-34')</u>

• Lead (0.052 mg/kg – Leachate DAF of 20) – 0.72 mg/kg

<u>OW-60 (20-22')</u>

- Iron (6,958.86 mg/kg Leachate DAF of 20) 10,000 mg/kg
- Lead (0.052 mg/kg Leachate DAF of 20) 1.6 mg/kg
- Manganese (463.84 mg/kg Non-Residential Soil Screening Level) 470 mg/kg

Detectable concentrations of 1-methylnaphthalene, 2-methylnaphthalene, acetone, benzene, ethylbenzene, toluene, xylenes, bis(2-ethylhexyl)phthalate, diethyl phthalate, and di-n-butyl phthalate were detected in the soil samples from OW-59 and OW-60. MTBE and naphthalene were also detected in the soil sample from OW-59. None of the volatile or semi-volatile constituents detected in the soil samples from OW-59 and OW-60 exceeded the screening levels.

6.2 Groundwater Analytical Results

The groundwater samples collected from the boundary wells (BW-4B, BW-5B and BW-5C) and the SMW-2 area wells (OW-59 and OW-60) were analyzed for organic constituents by the following methods:

• SW-846 Method 8260 volatile organic compounds;

- SW-846 Method 8270 semi-volatile organic compounds;
- SW-846 Method 8015D gasoline range organics; and
- SW-846 Method 8015M/D diesel and motor oil range organics.

Groundwater samples were analyzed for the following total and dissolved metals using the indicated analytical methods.

Analyte	Analytical Method
Antimony	SW-846 Method 200.8
Arsenic	SW-846 Method 200.8
Barium	SW-846 Method 200.7
Beryllium	SW-846 Method 200.7
Cadmium	SW-846 Method 200.7
Chromium	SW-846 Method 200.7
Cobalt	SW-846 Method 200.7
Iron	SW-846 Method 200.7
Lead	SW-846 Method 200.8
Manganese	SW-846 Method 200.7
Nickel	SW-846 Method 200.7
Selenium	SW-846 Method 200.8
Silver	SW-846 Method 200.7
Vanadium	SW-846 Method 200.7
Zinc	SW-846 Method 200.7

Groundwater samples were also analyzed for the following total metals using the indicated analytical methods.

Analyte	Analytical Method
Cyanide	SW-846 Method 9012B

Analyte	Analytical Method
Mercury	SW-846 Method 245.1

In addition, groundwater samples were analyzed for chloride, fluoride, bromide, phosphorus, sulfate and nitrate+nitrite as N using EPA method 300.

The analytical results and the applicable screening levels are presented in Table 3. The laboratory analytical reports are included in Appendix E. The individual results that exceed the applicable cleanup levels are highlighted. The constituents with reported concentrations that exceed screening levels are discussed below.

The following boundary wells exceeded the screening levels for the listed constituents. The screening level is included in the parenthesis:

<u>BW-4B</u>

- Arsenic (10 ug/L) 12 ug/L;
- Barium (2,000 ug/L) 4,700 ug/L;
- Beryllium (4 ug/L) 48 ug/L;
- Chromium (50 ug/L) 170 ug/L;
- Cobalt (50 ug/L) 79 ug/L;
- Iron (1,000 ug/L) 82,000 ug/L;
- Lead (15 ug/L) 200 ug/L;
- Manganese (200 ug/L) 5,600 ug/L;
- Nickel (372 ug/L) 540 ug/L;
- Vanadium (63.1 ug/L) 140 ug/L; and
- DRO (0.04 mg/L) 0.47 mg/L.

<u>BW-5B</u>

• DRO (0.04 mg/L) – 0.74 mg/L.

<u>BW-5C</u>

• Chloride (250,000 ug/L) - 1,400,000 ug/L.

Detectable concentrations of acetone and benzoic acid were reported in the sample collected from BW-4B. The concentrations were below the screening levels. In the sample collected from BW-5B acetone, toluene and benzoic acid were reported at concentrations below the screening levels. Detectable concentrations of 1,1-dichloroethane, 1,2-dichloroethane, acetone, MTBE, benzoic acid, di-n-octyl phthalate, and GRO were reported in the sample collected from BW-5C. The concentrations were below the screening levels.

The following groundwater results from the SMW-2 area exceeded the screening levels for the listed constituents. The screening level is included in the parenthesis.

<u>0W-59</u>

- Arsenic (10 ug/L) 11 ug/L;
- Iron (1,000 ug/L) 9,700 ug/L;
- Manganese (200 ug/L) 1,200 ug/L;
- Manganese Dissolved (200 ug/L) 670 ug/L;
- Chloride (250,000 ug/L) 2,000,000 ug/L;
- Sulfate (600,000 ug/L) 3,000,000 ug/L;
- GRO (0.04 mg/L) 0.23 mg/L; and
- DRO (0.04 mg/L) 0.56 mg/L.

Detectable concentrations of 1,2,4-trimethybenzene, acetone, MTBE, and benzoic acid, were reported in the groundwater sample collected from OW-59. None of the constituents exceeded the screening levels.

<u>0W-60</u>

- Beryllium (4 ug/L) 4.6 ug/L;
- Iron (1,000 ug/L) 28,000 ug/L;
- Manganese (200 ug/L) 2,200 ug/L;
- Manganese Dissolved (200 ug/L) 550 ug/L;
- Chloride (250,000 ug/L) 1,600,000 ug/L; and

• Sulfate (600,000 ug/L) - 740,000 ug/L.

Detectable concentrations of 4-lsopropyltoluene, acetone, MTBE, toluene, benzoic acid, and bis(2ethyhexyl)phthalate were reported in the groundwater sample collected from OW-60. None of the concentrations exceeded the screening levels.

6.3 SMW-2 Area – Additional Sampling

Groundwater samples from SMW-2 and SWM-4 and surface water samples collected from Evaporation Ponds EP-2 and EP-3 were analyzed for chloride, fluoride, bromide, phosphorus, sulfate and nitrate+nitrite as N using EPA method 300. The samples were also analyzed for calcium, magnesium, potassium, and sodium using EPA method 200.7.

The analytical results and the applicable screening levels are presented in Table 4. The laboratory analytical reports are included in Appendix F. The analytical results for the aforementioned constituents reported for OW-59 and OW-60 are also included in Table 4 for a direct comparison to the nearby sampling locations. The individual results that exceed the applicable cleanup levels are bolded. The constituents with reported concentrations that exceed screening levels are discussed below. The screening level is included in the parenthesis:

<u>0W-59</u>

- Chloride (250 mg/L) 2,000 mg/L; and
- Sulfate (600 mg/L) 3,000 mg/L.

<u>0W-60</u>

- Chloride (250 mg/L) 1,600 mg/L; and
- Sulfate (600 mg/L) 740 mg/L.

<u>SMW-2</u>

- Chloride (250 mg/L) 2,600 mg/L; and
- Sulfate (600 mg/L) 1,500 mg/L.

Evaporation Pond #2 (Surface Water Sample)

• Chloride (250 mg/L) – 5,000 mg/L;

- Sulfate (600 mg/L) 1,400 mg/L; and
- Fluoride (1.6 mg/L) 18 mg/L.

Evaporation Pond #3 (Surface Water Sample)

- Chloride (250 mg/L) 7,100 mg/L;
- Sulfate (600 mg/L) 1,800 mg/L; and
- Fluoride (1.6 mg/L) 16 mg/L.

Included as Figure 5 is a potentiometric map developed from groundwater elevations collected in September 2017 in the SMW-2 area. As shown on Figure 5 the groundwater flow direction is from the east-southeast to the west-northwest. OW-60 is an up-gradient well located near the southeast corner of the OCD Central Landfarm. OW-59 is located approximately 440 feet downgradient to OW-60 and 230 feet upgradient to SMW-2. Monitoring well SMW-4 is located approximately 780 feet downgradient of SMW-2.

Figure 6 presents sulfate and chloride concentrations reported from groundwater and surface water samples collected in the SWM-2 area. The chloride concentrations reported from the surface water samples collected from EP-2 and EP-3 were the highest concentrations reported during the sampling event, 5,000 mg/l and 7,100 mg/l, respectively. The chloride concentrations increased downgradient from OW-60 (1,600 mg/L) to OW-59 (2,000 mg/L) and increase in SMW-2 (2,600 mg/L). The chloride concentrations decreased from 2,600 mg/L in SMW-2 to 63 mg/L in the sample from SMW-4.

The sulfate concentrations in samples collected from EP-2 and EP-3 were elevated, but were not the highest concentrations reported in the sampling area. The highest reported concentration reported was from OW-59 (3,000 mg/L). Figure 6 indicates that the sulfate concentration increased from OW-60 (740 mg/L) to OW-59 (3,000 mg/L) and then decreased in SMW-2 (1,500 mg/L). The sulfate concentration in the sample from SMW-4 (downgradient well) was the lowest reported at 180 mg/L.

Based on the flow direction of groundwater and the reported concentrations, the elevated chloride concentrations in SMW-2 may be originating from a source located in the area of the OCD Central landfarm, or further up-gradient. The sulfate concentrations increase across the OCD Central landfarm moving down-gradient, with the highest reported concentrations in the area in the groundwater sample collected in OW-59. This could suggest the OCD Central landfarm is a source of the sulfate.

6.4 General Groundwater Chemistry

The measurement of field purging parameters included measurement of groundwater pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. The groundwater field parameters collected during the sampling event are included in Table 5. Groundwater gauging measurements collected during the field activities are presented in Table 6.

6.5 Subsequent Data

Additional groundwater data has been collected from the five monitoring wells installed and sampled in June 2017. Included as Table 7 are the fluid level measurements of the five wells through the 2018 fourth quarter gauging event. Table 8 presents the analytical data collected during the 2017 fourth quarter sampling event.

Section 7 Conclusions and Recommendations

The analytical results from groundwater samples collected at new wells OW-59 and OW-60, along with groundwater samples collected at existing well SMW-2 and surface water samples collected from Evaporation Ponds EP-2 and EP-3 provide a better understanding of the distribution of chloride and sulfate in the immediate vicinity. However, the data is not conclusive as to a particular source of either constituent. The highest sulfate concentrations appear at the down-gradient end of the OCD Central landfarm, which could be the primary source of sulfate affecting groundwater at SMW-2. An obvious source of the chloride was not identified in the immediate area.

It is recommended to install additional monitoring wells to better determine if a local source of chloride and/or sulfate is present. An Investigation Work Plan for additional monitoring wells was submitted in August, 2018 pursuant to NMED's request.

Section 8 References

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Table 1Soil Vapor Screening ResultsMarathon Petroleum Company - Gallup RefineryGallup, New Mexico

Sample							
Interval Depth	BW-4A	BW-4B	BW-5A	BW-5B	BW-5C	OW-59	0W-60
(ftbgl)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
0 - 2	7.7	1.3	NR	NR	0.0	0.0	6.5
2 - 4	9.5	1.2	NR	NR	0.1	0.0	5.8
4 - 6	9.0	1.3	NR	NR	0.0	0.0	6.3
6 - 8	6.8	1.7	NR	NR	0.0	2.0	8.1
8 - 10	5.4	2.0	NR	NR	0.1	1.0	9.6
10 - 12	3.3	2.1	0.0	NR	0.0	0.3	9.1
12 - 14	5.8	3.1	0.0	NR	0.1	0.5	8.2
14 - 16	4.0	3.4	0.0	NR	0.0	1.3	7.9
16 - 18	2.0	5.1	0.0	NR	0.0	1.7	8.3
18 - 20	6.9	3.2	0.0	NR	0.0	1.1	10.1
20 - 22	5.0	3.9	TD 20 ftbgl	NR	0.0	1.2	15.3
22 - 24	3.6	3.5		NR	0.0	0.2	12.1
24 - 26	3.7	3.9		NR	0.0	3.3	11.6
26 - 28	6.2	1.8		NR	0.0	10.9	10.9
28 - 30	3.5	1.8		NR	0.0	11.6	10.5
30 - 32	6.1	2.0		NR	0.0	11.4	11.1
32 - 34	6.1	2.2		NR	0.0	14.9/16.3	15.0
34 - 36	3.8	5.6		NR	0.0	10.5	12.8
36 - 38	6.1	3.6		NR	0.0	7.3	12.7
38 - 40	5.2	2.3		NR	0.0	10.0	10.4
40 - 42	4.2	6.2		NR	0.0	TD 40 ftbgl	9.9
42 - 44	3.9	5.0		NR	0.0	0	10.7
44 - 46	TD 44 ftbgl	2.6		NR	0.0		10.1
46 - 48		3.5		NR	0.1		9.6
48 - 50		1.9		0.0	0.0		TD 48 ftbgl
50 - 52		5.1		0.0	0.0		
52 - 54		5.6		0.0	0.0		
54 - 56		3.8		0.0	0.0		
56 - 58		3.4		0.0	0.0		
58 - 60		2.4		TD 58 ftbgl	0.0		
60 - 62		4.9			0.0		
62 - 64		1.7			0.0		
64 - 66		5.8			0.0		
66 - 68		2.7			0.0		
68 - 70		3.9			0.0		
70 - 72		1.6			NR		
72 - 74		1.7			NR		
74 - 76		1.0			NR		
76 - 78		0.1			TD 76 ftbgl		
78 - 80		0.4			8		
80 - 82		0.1					
82 - 84		0.2					
84 - 86		0.0					
86 - 88		0.0					
88 - 90		0.2					
		TD 90 fthal					
		1 D D D T LOGI					

ftbgl - feet below ground level ppm - parts per million NR - No reading was collected.

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	0W-59 (33-34	4')	OW-60 (20-2	22')
					Lab ID		Ince OW-59 (33-34') OW-60 (20-2) $1706910-003$ $1706910-004$ $6/12/2017$ $6/13/2017$ 0) < 0.996 u < 1.0017 3) < 0.8796 u 1.33 0) 130 v 160 0) 0.34 v 0.52 0) < 0.0628 u < 0.0631 0) 4.6 v 6.41 3) 2.1 v 3.1 3) < 0.25 u < 0.25 3) $6,400$ v $10,000$ 0) 0.72 v 1.66 3) $6,400$ v 4.90 3) < 0.062 u < 0.063 3) < 0.062 u < 0.0623 3) < 1.800 u < 0.0623 3) < 0.002 u < 0.0021 0) < 1.800 u < 0.0001 3)		34	
					Sample D	ate	6/12/2017	'	6/13/201	.7
Metals (mg/kg)										
Antimony	3.13E+01	(1)	1.42E+02	(5)	5.42E+00	(10)	< 0.996	u	< 1.0017	u
Arsenic	7.07E+00	(1)	3.59E+01	(4)	5.83E+00	(8)	< 0.8796	u	1.3	J
Barium	1.56E+04	(1)	4.39E+03	(5)	1.65E+03	(10)	130	٧	160	v
Beryllium	1.56E+02	(1)	1.48E+02	(5)	6.32E+01	(10)	0.34	v	0.52	v
Cadmium	7.05E+01	(1)	7.21E+01	(5)	7.52E+00	(10)	< 0.0628	u	< 0.0631	u
Chromium (Total)	9.66E+01	(1)	1.34E+02	(5)	3.60E+06	(10)	4.6	V	6.4	V
Cobalt	2.34E+01	(1)	3.67E+01	(5)	5.40E+00	(8)	2.1	v	3.1	v
Cyanide	1.12E+01	(1)	1.21E+01	(5)	7.13E-01	(8)	< 0.25	u	< 0.25	u
Iron	5.48E+04	(1)	2.48E+05	(5)	6.96E+03	(8)	6,400	v	10,000	v
Lead	4.00E+02	(2)	8.00E+02	(6)	5.20E-02	(10)	0.72	v	1.6	v
Manganese	1.05E+04	(1)	4.64E+02	(5)	2.63E+03	(8)	180	v	470	v
Mercury (elemental)	2.38E+01	(1)	2.07E+01	(5)	2.09E+00	(8)	< 0.0063	u	< 0.0063	u
Nickel	1.56E+03	(1)	7.53E+02	(5)	4.85E+02	(8)	3.5	٧	4.9	v
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.17E+00	(10)	< 1.8009	u	< 1.8111	u
Silver	3.91E+02	(1)	1.77E+03	(5)	1.38E+01	(8)	< 0.062	u	< 0.0623	u
Vanadium	3.94E+02	(1)	6.14E+02	(5)	1.26E+03	(8)	11	V	14	V
Zinc	2.35E+04	(1)	1.06E+05	(5)	7.41E+03	(8)	7.5	V	10	V
Volatiles (mg/kg)										
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	3.60E-02	(8)	< 0.0001	u	<0.0001	u
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	1.28E+00	(10)	< 0.0001	u	< 0.0001	u
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	4.81E-03	(8)	< 0.0002	u	<0.0001	u
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	2.68E-02	(8)	< 0.0001	u	< 0.0001	u
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	1.36E-01	(8)	< 0.0001	u	< 0.0001	u
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	4.79E-02	(10)	< 0.0001	u	< 0.0001	u
1,1-Dichloropropene	-	-	-	-	-	-	< 0.0002	u	< 0.0001	u
Trichlorobenzene, 1,2,3-	6.30E+01	(2)	9.30E+02	(6)	4.20E-01	(9)	< 0.0001	u	< 0.0001	u
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	5.82E-05	(8)	< 0.0003	u	< 0.0003	u
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.0002	u	< 0.0001	u
Trimethylbenzene, 1,2,4-	3.00E+02	(2)	1.80E+03	(6)	1.62E+00	(9)	< 0.0002	u	<0.0002	u
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.39E-03	(8)	< 0.0002	u	< 0.0002	u
1,2-Dibromoethane (Ethylene										
dibromide)	6.72E-01	(1)	3.31E+00	(4)	2.36E-04	(10)	< 0.0002	u	<0.0001	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.0002	u	< 0.0001	u
1,2-Dichloroethane	8.32E+00	(1)	4.07E+01	(4)	2.38E-02	(8)	< 0.0002	u	< 0.0001	u
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	2.77E-02	(8)	< 0.0002	u	< 0.0001	u
Trimethylbenzene, 1,3,5-	2.70E+02	(2)	1.50E+03	(6)	1.74E+00	(9)	< 0.0002	u	< 0.0002	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.0002	u	< 0.0001	u
Dichloropropane, 1,3-	1.60E+03	(2)	2.30E+04	(6)	2.60E+00	(9)	< 0.0001	u	< 0.0001	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.0002	u	< 0.0001	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(4)	8.93E-01	(8)	0.0003	J	0.0003	J
2,2-Dichloropropane	-	-	-	-	-	-	< 0.0001	u	< 0.0001	u
2-Butanone (Methyl ethyl ketone,										
MEK)	3.74E+04	(1)	9.17E+04	(5)	2.01E+01	(8)	<0.0006	u	<0.0005	u
o-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	3.56E+00	(8)	< 0.0002	u	< 0.0001	u
Hexanone, 2-	2.00E+02	(2)	1.30E+03	(6)	1.76E-01	(9)	< 0.0003	u	<0.0002	u
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	0.0004	J	0.0003	J
Chlorotoluene, p-	1.60E+03	(2)	2.30E+04	(6)	4.80E+00	(9)	< 0.0002	u	< 0.0002	u
4-Isopropyltoluene	-	-	-	-	-	-	< 0.0002	u	<0.0002	u
Methyl isobutyl ketone	5.81E+03	(1)	2.02E+04	(5)	4.80E+00	(8)	< 0.0005	u	< 0.0004	u
	1		1							<u> </u>

	Residential Soil Screening Level	Source	Non- Residential Soil Screening	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	OW-59 (33-3	84')	OW-60 (20-2	22')
	ļ		20101	ļ	Lab ID	ļ	1706910-00)3	1706910-00)4
					Sample D	ate	6/12/201	7	6/13/201	7
Acetone	6.63E+04	(1)	2.42E+05	(5)	4.98E+01	(8)	0.0119	v	0.011	v
Benzene	1.78E+01	(1)	8.72E+01	(4)	4.18E-02	(8)	0.0019	v	0.0007	v
Bromobenzene	2.90E+02	(2)	1.80E+03	(6)	8.40E-01	(9)	< 0.0002	u	< 0.0002	u
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	6.21E-03	(8)	< 0.0002	u	< 0.0002	u
Tribromomethane (Bromoform)	6.74E+02	(1)	1.76E+03	(4)	1.47E-01	(8)	< 0.0002	u	< 0.0001	u
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	3.43E-02	(8)	< 0.0004	u	< 0.0003	u
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	4.42E+00	(8)	< 0.0003	u	< 0.0003	u
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	3.67E-02	(8)	< 0.0001	u	< 0.0001	u
Chlorobenzene (Monochlorobenzene	3.78E+02	(1)	4.12E+02	(5)	1.08E+00	(8)	< 0.0001	u	< 0.0001	u
Ethyl chloride	1.90E+04	(1)	1.66E+04	(5)	1.07E+02	(8)	< 0.0002	u	< 0.0001	u
Chloroform	5.90E+00	(1)	2.87E+01	(4)	1.09E-02	(8)	< 0.0002	u	< 0.0001	u
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	9.52E-02	(8)	< 0.0002	u	< 0.0002	u
cis-1,2-Dichloroethene	1.56E+02	(1)	7.08E+02	(5)	3.52E-01	(8)	< 0.0002	u	< 0.0001	u
cis-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0001	u	< 0.0001	u
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	7.55E-03	(8)	< 0.0001	u	< 0.0001	u
Dibromomethane (Methylene						. ,				
Bromide)	2.40E+01	(2)	9.90E+01	(6)	4.20E-02	(9)	<0.0001	u	<0.0001	u
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	7.23E+00	(8)	< 0.0002	u	< 0.0001	u
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.23E+01	(8)	0.0003	J	0.0002	J
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.0002	u	< 0.0002	u
Cumene (isopropylbenzene)	2.36E+03	(1)	2.74E+03	(5)	1.14E+01	(8)	< 0.0002	u	< 0.0002	u
tert-Butyl methyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	5.53E-01	(8)	0.0007	J	< 0.0003	u
Methylene chloride (Dichloromethane	4.09E+02	(1)	1.21E+03	(5)	2.21E-02	(10)	< 0.0003	u	< 0.0003	u
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	0.0003	J	< 0.0001	u
Butylbenzene, n-	3.90E+03	(2)	5.80E+04	(6)	6.40E+01	(9)	< 0.0002	u	< 0.0002	u
Propyl benzene	3.80E+03	(2)	2.40E+04	(6)	2.40E+01	(9)	< 0.0002	u	< 0.0002	u
Butylbenzene, sec-	7.80E+03	(2)	1.20E+05	(6)	1.18E+02	(9)	< 0.0002	u	< 0.0002	u
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.71E+00	(10)	< 0.0001	u	< 0.0001	u
Butylbenzene, tert-	7.80E+03	(2)	1.20E+05	(6)	3.20E+01	(9)	< 0.0002	u	<0.0002	u
Tetrachloroethene	1.11E+02	(1)	1.20E+02	(5)	3.98E-02	(10)	< 0.0001	u	<0.0001	u
Toluene	5.23E+03	(1)	1.40E+04	(5)	1.11E+01	(10)	0.0008	v	0.0004	J
trans-1,2-Dichloroethene	2.95E+02	(1)	3.05E+02	(5)	5.03E-01	(8)	< 0.0002	u	<0.0001	u
trans-1,3-Dichloropropene	-	-	-	-	-	-	< 0.0001	u	< 0.0001	u
Trichloroethylene	6.77E+00	(1)	6.90E+00	(5)	3.10E-02	(8)	< 0.0001	u	< 0.0001	u
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	1.57E+01	(8)	< 0.0001	u	<0.0001	u
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	1.34E-02	(8)	< 0.0001	u	< 0.0001	u
Xylenes	8.71E+02	(1)	7.98E+02	(5)	1.54E+02	(8)	0.001	J	0.0007	J
Semi-volatiles (mg/kg)										
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	3.10E+00	(8)	< 0.183	u	< 0.1838	u
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	9.08E+00	(8)	< 0.1492	u	< 0.1499	u
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.1377	u	< 0.1384	u
1,4-Dichlorobenzene	1.29E+03	(1)	6.73E+03	(4)	1.12E+00	(8)	< 0.1615	u	< 0.1622	u
1-Methylnaphthalene	1.72E+02	(1)	8.13E+02	(7)	8.93E-01	(8)	< 0.192	u	< 0.1929	u
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	6.62E+01	(8)	< 0.1472	u	< 0.1479	u
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	6.74E-01	(8)	< 0.1565	u	< 0.1572	u
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	8.25E-01	(8)	< 0.1567	u	< 0.1575	u
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	6.45E+00	(8)	< 0.0883	u	< 0.0887	u
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	6.69E-01	(8)	< 0.1179	u	< 0.1184	u
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	4.92E-02	(8)	< 0.1855	u	< 0.1863	u
2,6-Dintitrotoluene	3.56E+00	(1)	1.72E+01	(4)	1.02E-02	(8)	< 0.1746	u	< 0.1754	u
b-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	5.70E+01	(8)	< 0.178	u	< 0.1788	u

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	OW-59 (33-3	34')	OW-60 (20-22		
	1		2010.	ļ	Lab ID		1706910-00)3	1706910-00)4	
					Sample D	ate	6/12/201	7	6/13/201	.7	
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	1.15E+00	(8)	< 0.1437	u	< 0.1444	u	
2-Methylnaphthalene	2.32E+02	(1)	1.00E+03	(5)	2.76E+00	(8)	< 0.1668	u	< 0.1676	u	
Cresol. o-	3.20E+03	(2)	4.10E+04	(6)	1.50E+01	(9)	< 0.1469	u	< 0.1476	u	
Nitroaniline, 2-	6.30E+02	(2)	8.00E+03	(6)	1.60E+00	(9)	< 0.1824	u	< 0.1832	u	
2-Nitrophenol	-	-	-	-		-	< 0.1869	u	< 0.1878	u	
3.3-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	1.24E-01	(8)	< 0.1462	u	< 0.1469	u	
3+4-Methylphenol	-	-	-	-	-	-	< 0.1338	u	< 0.1344	u	
3-Nitroaniline	-	-	_	-	-	-	< 0.1774	u	< 0.1782	u	
4.6-Dinitro-o-cresol	4.93E+00	(1)	2.15E+01	(5)	3.98E-02	(8)	< 0.1504	u	< 0.1511	u	
4-Bromophenyl phenyl ether	_	-		-	-	-	< 0.162	u	< 0.1628	u	
4-Chloro-3-methylphenol	_	-	_	-	_	-	< 0.1803	u	< 0.1812	u	
Chloroaniline, p-	2.70E+01	(3)	1.10E+02	(7)	3.20E-03	(9)	< 0.1541	u	< 0.1549	u	
4-Chlorophenyl phenyl ether	-	-	_	-	_	-	< 0.1548	u	< 0.1555	u	
Nitroaniline, 4-	2.70E+02	(3)	1.10E+03	(7)	3.20E-02	(9)	< 0.1687	u	< 0.1695	u	
4-Nitrophenol		-		-	-	-	< 0.1542	u	< 0.1549	u	
Acenaphthene	3.48F+03	(1)	1.51E+04	(5)	8.25F+01	(8)	< 0.163	u u	< 0.1637	ŭ	
Acenaphthylene	-	-	-	-	-	-	< 0.1829	u U	< 0.1837	ŭ	
Aniline	9.50F+02	(3)	4.00F+03	(7)	9.20F-02	(9)	< 0.1121	u u	< 0.1127	ŭ	
Anthracene	1.74F+04	(1)	7.53E+04	(5)	8.51F+02	(8)	< 0.1813	u u	< 0.1822	ŭ	
Azobenzene	5.60F+01	(3)	2.60F+02	(7)	1.86F+06	(9)	< 0.183	u u	< 0.1839	ŭ	
Benzo(a)anthracene	1.53E+00	(0)	3 23E+01	(4)	6 37F-01	(8)	< 0 1704		< 0.1712	u u	
Benzo(a)pyrene	1.00E+00	(1)	2 36F+01	(4) (<u>4</u>)	3 53E+00	(10)	< 0.1768		< 0.1712	u II	
Benzo(b)fluoranthene	1.53E+00	(1)	3 23E+01	(4) (<u>4</u>)	6.17E+00	(8)	< 0.1892		< 0.1901	u II	
Benzo(g h i)pervlene	-	(1)	-	()	-	-	< 0.1618		< 0.1626	u II	
Benzo(k)fluoranthene	1 53E+01	(1)	3 23E+02	(4)	6.05E+01	(8)	< 0.1010		< 0.1620	u II	
Benzoic acid	2.50E+05	(2)	3 30E+06	(6)	3.00E+02	(9)	< 0.1502	<u>и</u>	< 0 1509	u U	
Benzyl alcohol	6.30F+03	(2)	8 20F+04	(6)	9.60E+00	(9)	< 0.1665	U U	< 0.1673	ŭ	
Bis(2-chloroethoxy)methane	1.90F+02	(2)	2.50F+03	(6)	2.60F-01	(9)	< 0.1795	u	< 0.1803	ŭ	
Bis(2-chloroethyl) ether	3.11F+00	(1)	1.95F+00	(5)	6.05F-04	(8)	< 0.1276	u u	< 0.1281	ŭ	
Bis(2-chloroisopropyl) ether	9.93F+01	(1)	5.19F+02	(4)	4.75F-02	(8)	< 0.1981	u u	< 0.199	ŭ	
Bis(2-ethylhexyl)phthalate [Di(2-		(-/		(' '		(-)					
ethylhexyl)phthalate, DEHP1	3.80E+02	(1)	1.83E+03	(4)	2.15E+01	(10)	0.21	J	0.25	J	
Butyl Benzyl Phthalate	2.90E+03	(3)	1.20E+04	(7)	4.60E+00	(9)	< 0.1648	u	< 0.1656	u	
Carbazole	_	-	_	-	_	-	< 0.1576	u	< 0.1584	u	
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.86E+02	(8)	< 0.1496	u	< 0.1503	u	
Dibenz(a.h)anthracene	1.53E-01	(1)	3.23E+00	(4)	1.97E+00	(8)	< 0.1596	u	< 0.1603	u	
Dibenzofuran	_	-	_	-	-	-	< 0.1714	u	< 0.1722	u	
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	9.79E+01	(8)	0.19	J	0.26	b	
Dimethyl phthalate (DMP, Phthalic											
Acid)	6.16E+04	(1)	2.69E+05	(5)	3.57E+00	(8)	< 0.1858	u	< 0.1867	u	
Di-n-butyl phthalate (Dibutyl						. ,					
phthalate)	6.16E+03	(1)	2.69E+04	(5)	3.38E+01	(8)	0.17	J	0.34	J	
Di-n-octyl phthalate	-		-	,	-	-	< 0.1491	u	< 0.1498	u	
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	1.34E+03	(8)	< 0.1655	u	< 0.1663	u	
Fluorene	2.32E+03	(1)	1.00E+04	(5)	8.00E+01	(8)	< 0.152	u	< 0.1527	u	
Hexachlorobenzene	3.33E+00	(1)	1.17E+02	(5)	1.89E-01	(8)	< 0.1831	u	< 0.184	u	
Hexachloro-1,3-butadiene	6.16E+01	(1)	5.21E+01	(4)	4.13E-02	(8)	< 0.1694	u	< 0.1702	u	
Hexachlorocyclopentadiene	2.30E+00	(1)	8.67E+02	(5)	2.40E+00	(8)	< 0.1584	u	< 0.1592	u	
Hexachloroethane	1.33E+02	(1)	1.88E+02	(5)	3.20E-02	(8)	< 0.1434	u	< 0.144	u	
Indeno(1,2,3-c,d)pyrene	1.53E+00	(1)	3.23E+01	(4)	2.01E+01	(8)	< 0.164	u	< 0.1648	u	
Isophorone	5.61E+03	(1)	2.70E+04	(4)	0.00E+00	(9)	< 0.1902	u	< 0.1911	u	
۱ <u>ــــــــــــــــــــــــــــــــــــ</u>	•	· · · · ·	•	•							

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	Leachate DAF (20) (mg/kg) SoilGW	Source	OW-59 (33-3	84')	OW-60 (20-2	22')
					Lab ID		1706910-00)3	1706910-00)4
					Sample Da	ate	6/12/201	7	6/13/201	.7
Naphthalene	1.16E+03	(1)	5.02E+03	(5)	8.23E-02	(8)	< 0.1845	u	< 0.1854	u
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	1.44E-02	(8)	< 0.1654	u	< 0.1661	u
Nitroso-di-N-propylamine, N-	7.80E-01	(3)	3.30E+00	(7)	1.62E-04	(9)	< 0.1759	u	< 0.1767	u
N-Nitrosodiphenylamine	1.09E+03	(1)	5.24E+03	(4)	1.00E+01	(8)	< 0.1908	u	< 0.1917	u
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	1.52E-01	(8)	< 0.1705	u	< 0.1713	u
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	8.59E+01	(8)	< 0.1756	u	< 0.1764	u
Phenol	1.85E+04	(1)	7.74E+04	(5)	5.23E+01	(8)	< 0.1375	u	< 0.1381	u
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.92E+02	(8)	< 0.1493	u	< 0.15	u
Pyridine	7.80E+01	(2)	1.20E+03	(6)	1.36E-01	(9)	< 0.1322	u	< 0.1328	u
Total Petroleum Hydrocarbons (mg/k	(g)									
Gasoline Range Organics (GRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 1.1271	u	< 1.1271	u
Diesel Range Organics (DRO)	1.00E+03	(11) 3.80E+03		(11)	4.61E+03 (11)		< 1.529	u	< 1.5232	u
Motor Oil Range Organics (MRO)	1.00E+03	(11)	3.80E+03	(11)	4.61E+03	(11)	< 47.4834	u	< 47.3037	u

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (March 2019)

EPA - Regional Screening Levels (Nov. 2018)

(1) NMED Residential Screening Level

(2) EPA Residential Screening Level

(3) EPA Residential - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic

(4) NMED Industrial Occupational Screening Level

(5) NMED Construction Worker Screening Level

(6) EPA Industrial - Screening Levels

(7) EPA Industrial - Screening Levels multiplied by 10 pursuant to Section IV.D.2 of the Oct. 31, 2013 RCRA Post-Closure Permit because the constituent is listed as carcinogenic

(8) SoilGW NMED Cw Dilution Attenuation Factor (DAF) = 20

(9) SoilGW Risk-based EPA DAF = 20

(10) SoilGW MCL-based NMED DAF = 20

(11) NMED Tables 6-2 and 6-4 TPH Soil Screening Levels "unknown oil" - see report Section 5 for use of screening levels

Bold represents value above Non-Residential Screening Level

yellow highlight represents value above Leachate (DAF) Screening Level Bold with yellow highlight value exceeds Residential Screening Level and DAF

v = reportable detection above the Practical quantitation limit (PQL)

u - result is not detected at method detection limit (MDL)

J - estimated result at concentration above MDL but less than PQL

	Screening Levels	Source	BW-4B		BW-5B		BW-5C		0W-59		09-WO	
Lab ID			1706G62-003		1706G62-005	5	1706G62-004		1706G62-00	7(1706G62-00)1
Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Metals (ug/l) TOTAL												
Antimony	6	(3)	<1.86	u	<1.86	u	<1.86	u	<1.86	u	<1.86	u
Arsenic	10	(3)	12	Ζ	2.8	J	<1.49	u	11	Ζ	8.1	v
Barium	2000	(3)	4700	Ζ	73	v	210	v	350	٧	1600	v
Beryllium	4	(3)	48	Ζ	<0.26	u	<0.26	u	1.5	J	4.6	Ζ
Cadmium	5	(3)	<2.91	u	<0.58	u	<0.58	u	<0.58	u	<0.58	u
Chromium	50	(3)	170	Ζ	3	J	<1.09	u	14	٧	48	v
Cobalt	50	(3)	79	v	1	J	1.2	J	8	v	21	v
Cyanide	200	(3)	<5	u	<5	u	<5	u	26.8	v	<5	u
Iron	1000	(3)	82000	Ζ	1500	Ζ	740	Ζ	9700	Ζ	28000	Ζ
Lead	15	(3)	200	Ζ	0.93	J	<0.48	u	9.4	v	31	Ζ
Manganese	200	(3)	5600	Z	26	v	130	Z	1200	Z	2200	Z
Mercury	2	(3)	0.24	v	0.07	J	0.18	J	0.08	J	0.1	J
Nickel	372	(4)	540	Z	<3.61	u	<3.61	u	20	v	47	v
Selenium	50	(3)	<7.11	u	4.4	J	4.9	J	15	v	13	v
Silver	50	(3)	<2.09	u	<0.42	u	<0.42	u	<0.42	u	<0.42	u
Vanadium	63.1	(4)	140	J	22	J	2.9	J	26	J	70	v
Zinc	10000	(3)	3400	v	3.8	J	3.6	J	32	v	71	v
Chloride	250000	(3)	73000	v	50000	v	1400000	Z	2000000	Ζ	1600000	Ζ
Fluoride	1600	(3)	1300	v	280	J	<218.5	u	<218.5	u	<218.5	u
Sulfate	600000	(3)	230000	v	100000	v	220000	v	3000000	Ζ	740000	Ζ
Metals (ug/I) DISSOLVED												
Antimony (D)	6	(3)	NS		<0.17	u	< 0.17	u	1	J	0.28	J
Arsenic (D)	10	(3)	NS		2.4	v	1.9	J	9.4	J	4.4	J
Barium (D)	2000	(3)	NS		52	v	210	v	14	v	44	v
Beryllium (D)	4	(3)	NS		<0.29	u	<0.29	u	0.39	J	0.45	J
Cadmium (D)	5	(3)	NS		<1	u	<1	u	<1	u	<0.58	u
Calcium (D)	-	-	NS		2800	v	64000	v	210000	٧	170000	v
Chromium (D)	50	(3)	NS		1.8	J	1.6	J	<1.01	u	<1.09	u
Cobalt (D)	50	(3)	NS		<1.59	u	<1.59	u	3.5	J	1.9	J
Cyanide (D)	200	(3)	NS		-		-		-		-	
Iron (D)	1000	(3)	NS		110	v	<16.45	u	30	٧	<10.21	u
Lead (D)	15	(3)	NS		< 0.00013	J	< 0.00013	u	<0.84	u	<0.84	u
Magnesium (D)	-	-	NS		350	J	8300	v	65000	٧	33000	v
Manganese (D)	200	(3)	NS		8.2	v	120	Ζ	670	Ζ	550	Ζ
Nickel (D)	372	(4)	NS		<1.07	u	4.9	J	10	٧	6.1	J
Potassium (D)	-	-	NS		850	J	3500	v	1700	٧	5000	v
Selenium (D)	50	(3)	NS		5.3	v	6.8	v	23	٧	14	v
Sodium (D)	-	-	NS		260000	v	950000	v	2400000	٧	1100000	v
Silver (D)	50	(3)	NS		<0.88	u	<0.88	u	<0.88	u	<0.42	u
Vanadium (D)	63.1	(4)	NS		18	J	<1.94	u	4.2	J	6.6	J
Zinc (D)	10000	(3)	NS		12	v	11	v	13	٧	11	v
Volatiles (ug/l)												
1,1,1,2-Tetrachloroethane	5.74	(4)	<0.21	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
1,1,1-Trichloroethane	200	(3)	<0.15	u	<0.07	u	<0.07	u	<0.07	u	<0.07	u
1,1,2,2-Tetrachloroethane	10	(3)	<0.27	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
1,1,2-Trichloroethane	5	(3)	<0.28	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
1,1-Dichloroethane	25	(3)	<0.8	u	<0.4	u	0.61	J	<0.4	u	<0.4	u
1,1-Dichloroethene	7	(3)	<0.16	u	<0.08	u	<0.08	u	<0.08	u	<0.08	u
1,1-Dichloropropene	-	-	<0.19	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
1,2,3-Trichlorobenzene	7	(1)	<0.23	u	<0.12	u	<0.12	u	< 0.12	u	<0.12	u
1,2,3-Trichloropropane	0.00835	(4)	<0.78	u	<0.39	u	< 0.39	u	<0.39	u	<0.39	u

	Screening Levels	Source	BW-4B		BW-5B		BW-5C		0%-29		09-MO	
Lab ID			1706G62-003		1706G62-005	5	1706G62-004		1706G62-00	7	1706G62-00)1
Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	1
1,2,4-Trichlorobenzene (V)	70	(3)	<0.28	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
1,2,4-Trimethylbenzene	56	(1)	<0.23	u	<0.11	u	<0.11	u	0.13	J	<0.11	u
1,2-Dibromo-3-chloropropane	0.2	(2)	<2.77	u	<1.39	u	<1.39	u	<1.39	u	<1.39	u
1,2-Dibromoethane (EDB)	0.05	(3)	<0.26	u	<0.13	u	<0.13	u	<0.13	u	<0.13	u
1,2-Dichlorobenzene (V)	600	(3)	<0.18	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
1,2-Dichloroethane (EDC)	5	(3)	<0.8	u	<0.4	u	0.57	J	<0.4	u	<0.4	u
1,2-Dichloropropane	5	(3)	<0.2	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
1,3,5-Trimethylbenzene	60	(1)	<0.17	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
1,3-Dichlorobenzene (V)	-	-	<0.3	u	<0.15	u	<0.15	u	<0.15	u	<0.15	u
1,3-Dichloropropane	370	(1)	< 0.33	u	<0.17	u	<0.17	u	<0.17	u	<0.17	u
1,4-Dichlorobenzene (V)	75	(2)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
1-Methylnaphthalene (V)	11.37	(4)	< 0.32	u	<0.16	u	<0.16	u	<0.16	u	<0.16	u
2,2-Dichloropropane	-	_	< 0.31	u	<0.16	u	<0.16	u	<0.16	u	<0.16	u
2-Butanone	5564	(4)	<2.26	u	<1.13	u	<1.13	u	<1.13	u	<1.13	u
2-Chlorotoluene	233	(4)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
2-Hexanone	38	(1)	<1.31	u	<0.66	u	<0.66	u	<0.66	u	<0.66	u
2-Methylnaphthalene (V)	35.11	(4)	<0.3	u	<0.15	u	<0.15	u	<0.15	u	<0.15	u
4-Chlorotoluene	250	(1)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
4-Isopropyltoluene	-	-	<0.19	u	<0.1	u	<0.1	u	<0.1	u	0.21	J
4-Methyl-2-pentanone	1243	(4)	<1.41	u	<0.71	u	<0.71	u	<0.71	u	<0.71	u
Acetone	14063	(4)	10	J	3.1	J	5.4	J	6	J	13	v
Benzene	5	(3)	<0.12	u	<0.06	u	<0.06	u	<0.06	u	<0.06	u
Bromobenzene	62	(1)	<0.28	u	<0.14	u	<0.14	u	<0.14	u	<0.14	u
Bromodichloromethane	1.34	(4)	< 0.35	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
Bromoform	32.85	(4)	<0.42	u	<0.21	u	<0.21	u	<0.21	u	<0.21	u
Bromomethane	7.54	(4)	<0.51	u	<0.26	u	<0.26	u	<0.26	u	<0.26	u
Carbon disulfide	810	(4)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
Carbon Tetrachloride	5	(3)	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Chlorobenzene	100	(2)	<0.21	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Chloroethane	20900	(4)	<0.47	u	<0.23	u	<0.23	u	<0.23	u	<0.23	u
Chloroform	100	(3)	<0.8	u	<0.4	u	<0.4	u	<0.4	u	<0.4	u
Chloromethane	20.3	(4)	<0.59	u	<0.29	u	<0.29	u	<0.29	u	<0.29	u
cis-1,2-DCE	70	(3)	<0.41	u	<0.2	u	<0.2	u	<0.2	u	<0.2	u
cis-1,3-Dichloropropene	4.71	(4)	<0.16	u	<0.08	u	<0.08	u	<0.08	u	<0.08	u
Dibromochloromethane	1.68	(4)	<0.14	u	<0.07	u	<0.07	u	<0.07	u	<0.07	u
Dibromomethane	8.3	(1)	<0.18	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
Dichlorodifluoromethane	197	(4)	<2	u	<1	u	<1	u	<1	u	<1	u
Ethylbenzene	700	(3)	<0.19	u	<0.09	u	<0.09	u	<0.09	u	<0.09	u
Hexachlorobutadiene (V)	1.39	(4)	<1.6	u	<0.8	u	<0.8	u	<0.8	u	<0.8	u
Isopropylbenzene	447	(4)	<0.1	u	<0.05	u	<0.05	u	<0.05	u	<0.05	u
Methyl tert-butyl ether (MTBE)	100	(4)	<0.48	u	<0.24	u	38	۷	6.8	۷	0.86	J
Methylene Chloride	5	(3)	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Naphthalene (V)	30	(3)	<0.23	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
n-Butylbenzene	-	-	<0.26	u	<0.13	u	<0.13	u	<0.13	u	<0.13	u
n-Propylbenzene	-	-	<0.15	u	<0.07	u	<0.07	u	<0.07	u	<0.07	u
sec-Butylbenzene	-	-	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Styrene	100	(3)	<0.31	u	<0.16	u	<0.16	u	<0.16	u	<0.16	u
tert-Butylbenzene	-	-	<0.21	u	<0.1	u	<0.1	u	<0.1	u	<0.1	u
Tetrachloroethene (PCE)	5	(3)	<0.26	u	<0.13	u	<0.13	u	<0.13	u	<0.13	u
Ioluene	1000	(3)	<0.13	u	0.23	J	<0.06	u	< 0.06	u	0.24	J
trans-1,2-DCE	100	(3)	<0.37	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
trans-1,3-Dichloropropene	4.71	(4)	<0.44	u	<0.22	u	<0.22	u	<0.22	u	<0.22	u

Lab ID ITOBGR2-005 ITOBGR2-005 ITOBGR2-007 ITOBGR2-007 <thitobgr2-007< th=""> <thitobgr2-007< th=""> <thi< th=""><th></th><th>Screening Levels</th><th>Source</th><th colspan="2">BW-4B</th><th>BW-5B</th><th></th><th colspan="2">BW-5C</th><th>0W-59</th><th></th><th>09-WO</th><th></th></thi<></thitobgr2-007<></thitobgr2-007<>		Screening Levels	Source	BW-4B		BW-5B		BW-5C		0W-59		09-WO	
Sample Date 6/28/2017	Lab ID			1706G62-003		1706G62-005	5	1706G62-004		1706G62-00	7	1706G62-00)1
Tichhoroshnen (TCE) 5 (3) <0.22 u <0.111 u <0.118 u <0.018 u <0.011 u <0.011 u <0.0118 u <0.0118 <td>Sample Date</td> <td></td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td> <td>6/28/2017</td> <td></td>	Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Trehtoroluromethane 1140 (4) <0.37 u <0.18	Trichloroethene (TCE)	5	(3)	<0.22	u	<0.11	u	<0.11	u	<0.11	u	<0.11	u
Vinyet.hirvinia 2 (3) <0.36 u <0.18 u <0.32 u <0.33 u <0.33 u <0.213 u <0.214 u	Trichlorofluoromethane	1140	(4)	<0.37	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
Sylenes, Total 620 (3) <0.64 (a) <0.32 (a) <0.33 (a) <0.33 (a) <0.32 (a) <0.32 (a) <0.33	Vinyl chloride	2	(3)	<0.36	u	<0.18	u	<0.18	u	<0.18	u	<0.18	u
Sambadius (ug/l) Image: sambadius (ug/	Xylenes, Total	620	(3)	<0.64	u	<0.32	u	<0.32	u	<0.32	u	<0.32	u
12.4-Trichtonbenzene 70 (2) <21.26 u <21.3 u <21.0 u <23.0 u<23.0 u <23.0 u	Semivolatiles (ug/l)		. ,										
12-Dethomobenzene 600 (3) <20.1 u	1,2,4-Trichlorobenzene	70	(2)	<21.28	u	<2.13	u	<2.13	u	<2.13	u	<2.13	u
1.3.0cbrookenzene - <18.27	1,2-Dichlorobenzene	600	(3)	<20.1	u	<2.01	u	<2.01	u	<2.01	u	<2.01	u
1.4 Dethylaphthalene 75 (3) <21.37	1,3-Dichlorobenzene	-	-	<18.27	u	<1.83	u	<1.83	u	<1.83	u	<1.83	u
1 Mathyinaphthalene 11.38 (4) <33.08 u <3.31 u< <3.31 u<<<<<	1,4-Dichlorobenzene	75	(3)	<21.37	u	<2.14	u	<2.14	u	<2.14	u	<2.14	u
2.4.5-Trichorophenol 1186 (4) <51	1-Methylnaphthalene	11.38	(4)	<33.08	ů	<3.31	u	<3.31	u	<3.31	u	<3.31	u
2.4.6-Trichlorophenol 11.9 (4) <55	2.4.5-Trichlorophenol	1166	(4)	<51	ů	<5.1	u	<5.1	u	<5.1	u	<5.1	u
2.4 Dichlorophenol 45.3 (4) <56.8	2.4.6-Trichlorophenol	11.9	(4)	<55	ū	<5.5	u	<5.5	u	<5.5	u	<5.5	u
2.4.Dimetrylphenol 354 (4) <28.29	2.4-Dichlorophenol	45.3	(4)	<56.81	u.	<5.68	ш.	<5.68	U.	< 5.68	u.	<5.68	ū
2.4.Dintrophenol 38.7 (1) 22.59 0 22.86 0 2.87 0 2.28 0 2.44 0 2.44 0 2.44 0 2.44 0 2.44 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 2.37 0 <th2.33< th=""></th2.33<>	2.4-Dimethylphenol	354	(4)	<28.29	ŭ	<2.83	ŭ	<2.83	ш	<2.83	u U	<2.83	ŭ
All nitrosphene Oil Land V Califier Oil Califier Oil Califier Oil Califier Oil Califier Oil Califier Oil Califier Califier <thcalifier< th=""> <</thcalifier<>	2 4-Dinitrophenol	38.7	(4)	<25.20	u u	<2.58	u	<2.58	м П	<2.58	u u	<2.58	ŭ
Antional and the second seco	2.4-Dinitrotoluene	2 37	(1)	< 39.66		<3.97		<3.97	и	<3.97		<3.97	
Abbreview Abbreview <t< td=""><td>2.6-Dinitrotoluene</td><td>0.485</td><td>(4)</td><td><44.92</td><td>u</td><td><1.07</td><td>u</td><td><4.49</td><td>u II</td><td><4.49</td><td>u</td><td><1.01</td><td>u</td></t<>	2.6-Dinitrotoluene	0.485	(4)	<44.92	u	<1.07	u	<4.49	u II	<4.49	u	<1.01	u
2-hinomingunation 10 40	2-Chloronanhthalene	733	(4)	<36.96	u	×7.75	u	<37		×==== <3.7	u	<3.7	u
2-Initroprend 3-1 (4) (-1,3-4) (1) (-1,3-5) <	2 Chlorophonol	01	(4)	<75.34	u	<7.52	u 	<7.52	u 	<7.52	u	<7.52	u
2-metry(phenol 930 (1) <32.00 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <3.21 0 <4.32 0 <4.32 0 <4.32 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.95 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92 0 <4.92	2 Mothylpaphthalono	35.1	(4)	<73.34	u	<7.00	u 	<7.53	u	<7.53	u	<7.55	u
Zmeterylphenol 33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (1) <33.0 (2)	2 Methylnaphthalene	030	(4)	<32.05	u	<3.21	u	<3.21	u	<3.21	u 	<3.21	u
2/Ntrophenol - < < < < < < < < < < < < < < < < < < < < < <	2 Nitroanilino	190	(1)	< 10.46	u	< 1.05	u	< 1.05	u	< 1.05	u 	< 1.05	u
2-minopland 1 2-minopland 2-minopland <td>2 Nitrophonol</td> <td>190</td> <td>(1)</td> <td><49.40</td> <td>u </td> <td><4.95</td> <td>u </td> <td><4.95</td> <td>u </td> <td><4.95</td> <td>u </td> <td><4.95</td> <td>u</td>	2 Nitrophonol	190	(1)	<49.40	u 	<4.95	u 	<4.95	u 	<4.95	u 	<4.95	u
3.3 - Unit Modelizatine 1.2.5 (4) (5.3.2) 0 (5.3.4) 0 (4.6.2) 0 (4.6.2) 0 (4.6.2) 0 (4.6.2) 0 (4.6.3) 0 (4.6.3) 0 (4.6.3) 0 (4.6.3) 0 (5.3.5) 0 (5.5.5) 0 (5.5.5) 0 (5.5.6) 0 (5.6.3) 0 (5.6.3) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4) 0 (5.6.4)	2 3 Dichlorobonzidino	1 25	(4)	<31.95	u	<2.19	u	<3.13	u	<3.19	u 	<3.19	u
Orthodynamic of the size of the	3+1-Methylphenol	930	(4)	<32.07	u	<3.92	u	<3.92	u	<3.92	u	<3.92	u
A-6.Dirito-2-methylphenol 1.52 (4) <38.67	3-Nitroaniline	-	(1)	3.07</td <td>u</td> <td><4.34</td> <td>u</td> <td><4.34</td> <td>u II</td> <td><4.34</td> <td>u</td> <td><4.34</td> <td>u</td>	u	<4.34	u	<4.34	u II	<4.34	u	<4.34	u
ABCOMDEND (Phenyl ether 1.02 (1) 1.03 1.04 1.03.1 1.04 <th1.03.1< <="" td=""><td>4 6-Dinitro-2-methylphenol</td><td>1 52</td><td>(4)</td><td><38.67</td><td>u</td><td><3.87</td><td>u</td><td><3.87</td><td>u II</td><td>< 3.87</td><td>u</td><td>< 3.87</td><td>u</td></th1.03.1<>	4 6-Dinitro-2-methylphenol	1 52	(4)	<38.67	u	<3.87	u	<3.87	u II	< 3.87	u	< 3.87	u
Achloro-Brithendi -	4-Bromonbenyl phenyl ether	1.02	-	<46.2		<4.62		<4.62	ч	<4.62		<4.62	
Achoroaniline 3.7 (5) 35.1 u 35.1 u 35.2 u 36.1 u 36.1 u 36.1 u 36.1 u 36.1 u 36.1 u	4-Chloro-3-methylphenol	-	_	<63.41	и	<6.34	ш	<6.34	п	<6.34	и	<6.34	u
Achlorophenyl phenyl ether -	4-Chloroaniline	37	(5)	<35.11	ŭ	<3.52	ŭ	<3.52	ш	<3.52	ы П	<3.52	ŭ
Anitroaniline 38 (5) <40.33 u <4.03 u <3.53	4-Chlorophenyl phenyl ether	-	-	<36.15	ŭ	<3.61	ũ	<3.61	ũ	<3.61	м П	<3.61	ы. П
ANitrophenol - <t< td=""><td>4-Nitroaniline</td><td>38</td><td>(5)</td><td><40.33</td><td>ŭ</td><td><4.03</td><td>ŭ</td><td><4.03</td><td>ш</td><td><4.03</td><td>ы П</td><td><4.03</td><td>ŭ</td></t<>	4-Nitroaniline	38	(5)	<40.33	ŭ	<4.03	ŭ	<4.03	ш	<4.03	ы П	<4.03	ŭ
Acenaphthene 535 (4) <36.15 u <3.61 u <3.61 <td>4-Nitrophenol</td> <td>-</td> <td>-</td> <td><54.78</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td> <td><5.48</td> <td>ŭ</td>	4-Nitrophenol	-	-	<54.78	ŭ	<5.48	ŭ	<5.48	ŭ	<5.48	ŭ	<5.48	ŭ
Acenaphthylene - <35.31 u <35.53	Acenaphthene	535	(4)	<36.15	ū	<3.61	u	<3.61	u	<3.61	u	<3.61	u
Aniline 130 (5) <30.59 u <3.06 u <3.05 u <3.05	Acenaphthylene	-	-	<35.31	u.	<3.53	ш.	<3.53	U.	<3.53	u.	<3.53	u.
Anthracene 1721 (4) <35.37 u <3.54 u <4.53 u <4.53 u <4.53 u <4.53 u <4.53 u <4.53 u <3.87 u <3.87 u <3.87 u <3.87 u <3.89 u <3.99	Aniline	130	(5)	<30.59	ū	<3.06	u	<3.06	u	<3.06	u	<3.06	u
Azobenzene1.2(5)<45.33u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.53u<4.54u<4.54u<4.54u<4.54u <td>Anthracene</td> <td>1721</td> <td>(4)</td> <td><35.37</td> <td>ū</td> <td><3.54</td> <td>u</td> <td><3.54</td> <td>u</td> <td><3.54</td> <td>u</td> <td><3.54</td> <td>ū</td>	Anthracene	1721	(4)	<35.37	ū	<3.54	u	<3.54	u	<3.54	u	<3.54	ū
Benz(a)anthracene 0.12 (4) <38.66 u <3.87 u <3.99 u <3.95 u <3.95 u <3.95 u <3.95 u <3.95 u <3.95 u <4.39 u <4.3	Azobenzene	1.2	(5)	<45.33	ū	<4.53	u	<4.53	u	<4.53	u	<4.53	u
Benzo(a)pyrene 0.2 (3) <39.92 u <3.99 u <3.95 u <3.95 u <3.95 u <4.39 u <4.39 u <4.39 u <4.39 u <4.39 <td>Benz(a)anthracene</td> <td>0.12</td> <td>(4)</td> <td><38.66</td> <td>ū</td> <td><3.87</td> <td>u</td> <td><3.87</td> <td>u</td> <td><3.87</td> <td>u</td> <td><3.87</td> <td>u</td>	Benz(a)anthracene	0.12	(4)	<38.66	ū	<3.87	u	<3.87	u	<3.87	u	<3.87	u
Benzo(b)fluoranthene 0.343 (4) <39.52 u <3.95 u <4.04 u <4.04 u <4.39 u <4.32 u <4.32 u <4.32 u	Benzo(a)pyrene	0.2	(3)	<39.92	u	<3.99	u	<3.99	u	<3.99	u	<3.99	u
Benzolg,h,i)perylene -	Benzo(b)fluoranthene	0.343	(4)	<39.52	u	<3.95	u	<3.95	u	<3.95	u	<3.95	u
Benzok/fluoranthene 3.43 (4) <43.87 u <4.39 u <4.59 u <4.59 u <4.59 u <4.59 u <4.32 u <4.32 u <4.32 u <4.32 u <4.33 u <4.32 u <4.33 u <<	Benzo(g,h,i)perylene	-	-	<40.38	u	<4.04	u	<4.04	u	<4.04	u	<4.04	u
Benzoic acid 75000 (1) 93 J 8.2 J 7.9 J 8.3 J 7.8 J Benzyl alcohol 2000 (1) <45.91	Benzo(k)fluoranthene	3.43	(4)	<43.87	u	<4.39	u	<4.39	u	<4.39	u	<4.39	u
Benzyl alcohol 2000 (1) <45.91 u <4.59 u <4.32 u <4.32 u <4.32 u <4.32 u <4.32 u <4.33 u <3.87 u <3.87 </td <td>Benzoic acid</td> <td>75000</td> <td>(1)</td> <td>93</td> <td>J</td> <td>8.2</td> <td>J</td> <td>7.9</td> <td>J</td> <td>8.3</td> <td>J</td> <td>7.8</td> <td>J</td>	Benzoic acid	75000	(1)	93	J	8.2	J	7.9	J	8.3	J	7.8	J
Bis(2-chloroethoxy)methane 59 (1) <43.22 u <4.32 u <4.33 u <4.82 u <4.82 u <4.82 <thu< th=""> <4.82 u <t< td=""><td>Benzyl alcohol</td><td>2000</td><td>(1)</td><td><45.91</td><td>u</td><td><4.59</td><td>u</td><td><4.59</td><td>u</td><td><4.59</td><td>u</td><td><4.59</td><td>u</td></t<></thu<>	Benzyl alcohol	2000	(1)	<45.91	u	<4.59	u	<4.59	u	<4.59	u	<4.59	u
Bis(2-chloroethyl)ether 0.1365 (4) <43.28 u <4.33 u <3.87 u <3.83 u	Bis(2-chloroethoxy)methane	59	(1)	<43.22	u	<4.32	u	<4.32	u	<4.32	u	<4.32	u
Bis(2-chloroisopropyl)ether 9.81 (4) <38.74 u <3.87 u <3.83 u <4.63 u	Bis(2-chloroethyl)ether	0.1365	(4)	<43.28	u	<4.33	u	<4.33	u	<4.33	ŭ	<4.33	u
Bis(2-ethylhexyl)phthalate 6 (2) <48.24 u <4.82 u <4.83 u <4.63 u <4.58 u <4.58 u <4.58 u <4.58 u <4.58 <thu< th=""> <4.58 u <th< td=""><td>Bis(2-chloroisopropyl)ether</td><td>9.81</td><td>(4)</td><td><38.74</td><td>ū</td><td><3.87</td><td>ū</td><td><3.87</td><td>ű</td><td><3.87</td><td>ū</td><td><3,87</td><td>ū</td></th<></thu<>	Bis(2-chloroisopropyl)ether	9.81	(4)	<38.74	ū	<3.87	ū	<3.87	ű	<3.87	ū	<3,87	ū
Butyl benzyl phthalate 160 (5) <46.27 u <4.63 u <4.58 u <4.58 <td>Bis(2-ethylhexvl)phthalate</td> <td>6</td> <td>(2)</td> <td><48.24</td> <td>u u</td> <td><4.82</td> <td>ũ</td> <td><4.82</td> <td> U</td> <td><4.82</td> <td>v U</td> <td>5.1</td> <td>Ţ</td>	Bis(2-ethylhexvl)phthalate	6	(2)	<48.24	u u	<4.82	ũ	<4.82	 U	<4.82	v U	5.1	Ţ
Carbazole - <45.82 u <4.58 u <4.58 <thu< th=""> <4.58 <thu< th=""> <thu< td="" th<=""><td>Butyl benzyl phthalate</td><td>160</td><td>(5)</td><td><46.27</td><td>ŭ</td><td><4.63</td><td>ŭ</td><td><4.63</td><td>ű</td><td><4.63</td><td>u</td><td><4,63</td><td>ū</td></thu<></thu<></thu<>	Butyl benzyl phthalate	160	(5)	<46.27	ŭ	<4.63	ŭ	<4.63	ű	<4.63	u	<4,63	ū
Chrysene 34.3 (4) <38.19 u <3.82 u <3.82 u <3.82 u <3.82 u <3.82 u	Carbazole	-	-	<45.82	u	<4.58	u	<4.58	u	<4.58	ŭ	<4.58	u
	Chrysene	34.3	(4)	<38.19	u	<3.82	u	<3.82	u	<3.82	u	<3.82	u

	Screening Levels	Source	BW-4B	BW-4B		BW-5B			0M-59		0%-60	
Lab ID			1706G62-003		1706G62-00	5	1706G62-004		1706G62-00)7	1706G62-001	
Sample Date			6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Dibenz(a,h)anthracene	0.0343	(4)	<46.4	u	<4.64	u	<4.64	u	<4.64	u	<4.64 u	I
Dibenzofuran	7.9	(1)	<40.75	u	<4.08	u	<4.08	u	<4.08	u	<4.08 u	I
Diethyl phthalate	14800	(4)	<40.49	u	<4.05	u	<4.05	u	<4.05	u	<4.05 u	ı
Dimethyl phthalate	611.56	(4)	<35.78	u	<3.58	u	<3.58	u	<3.58	u	<3.58 u	ı
Di-n-butyl phthalate	885	(4)	<50.34	u	<5.03	u	<5.03	u	<5.03	u	<5.03 u	ı
Di-n-octyl phthalate	-	-	<46.77	u	<4.68	u	5	J	<4.68	u	<4.68 u	ı
Fluoranthene	802	(4)	<42.64	u	<4.26	u	<4.26	u	<4.26	u	<4.26 u	I
Fluorene	288	(4)	<40.08	u	<4.01	u	<4.01	u	<4.01	u	<4.01 u	I
Hexachlorobenzene	1	(2)	<38.49	u	<3.85	u	<3.85	u	<3.85	u	<3.85 u	I
Hexachlorobutadiene	1.39	(4)	<13.49	u	<1.35	u	<1.35	u	<1.35	u	<1.35 u	I
Hexachlorocyclopentadiene	50	(2)	<12.74	u	<1.27	u	<1.27	u	<1.27	u	<1.27 u	I
Hexachloroethane	3.28	(4)	<11.99	u	<1.2	u	<1.2	u	<1.2	u	<1.2 u	I
Indeno(1,2,3-cd)pyrene	0.343	(4)	<41.62	u	<4.16	u	<4.16	u	<4.16	u	<4.16 u	ı
Isophorone	780.63	(4)	<43.58	u	<4.36	u	<4.36	u	<4.36	u	<4.36 u	1
Naphthalene	1.65	(4)	<28.73	u	<2.87	u	<2.87	u	<2.87	u	<2.87 u	ı
Nitrobenzene	1.4	(4)	<35.87	u	<3.59	u	<3.59	u	<3.59	u	<3.59 u	ı
N-Nitrosodimethylamine	0.00167	(4)	<35.01	u	<3.5	u	<3.5	u	<3.5	u	<3.5 u	ı
N-Nitrosodi-n-propylamine	0.11	(5)	<45.68	u	<4.57	u	<4.57	u	<4.57	u	<4.57 u	I
N-Nitrosodiphenylamine	121.92	(4)	<38.86	u	<3.89	u	<3.89	u	<3.89	u	<3.89 u	ı
Phenanthrene	170	(4)	<43.44	u	<4.34	u	<4.34	u	<4.34	u	<4.34 u	ı
Pentachlorophenol	1	(3)	<49.21	u	<4.92	u	<4.92	u	<4.92	u	<4.92 u	I
Phenol	5760	(4)	<31.14	u	<3.11	u	<3.11	u	<3.11	u	<3.11 u	I
Pyrene	117	(4)	<44.33	u	<4.43	u	<4.43	u	<4.43	u	<4.43 u	ı
Pyridine	20	(1)	<22.96	u	<2.3	u	<2.3	u	<2.3	u	<2.3 u	ı
TPH (mg/l)												_
Gasoline Range Organics (GRC	0.0858	(6)	< 0.05	٧	< 0.025	u	0.039	J	0.23	v	< 0.025 v	1
Diesel Range Organics (DRO)	0.0858	(6)	0.47	J	0.74	J	< 0.36	u	0.56	J	< 0.36 u	ı
Motor Oil Range Organics (MR	0.0858	(6)	< 5	u	< 5	u	< 5	u	< 5	u	< 5 u	ı

- No screening level or analytical result available

 $\boldsymbol{450}$ - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (November 2018) - Tap Water

(2) EPA - Regional Screening Levels (November 2018) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/I TDS Concentration or less (December 2018)

(4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (February 2019)

(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds

(6) NMED SSG (March 2019)

v = reportable detection above the Practical quantitation limit (PQL)

u - result is not detected at method detection limit (MDL)

j - estimated result at concentration above MDL but less than PQL

z - concentration exceeds MCL

Table 4 SMW-2 Area Additional Sampling Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

							Evaporation	Evaporation
Sample Location			65-M0	09-MO	Z-MMS	SMW-4	Pond #2	Pond #3
Lab Sample ID			1706662-007	17066662-001	1706637-001	1706G37-002	1706G37-003	1706G37-002
Sample Date			6/28/2017	6/28/2017	6/28/2017	6/28/2017	6/28/2017	6/28/2017
Parameter	Screening Level	Source						
Method E300 (mg/L) Total								
Bromide	NE		3.6 v	2.4 v	2.8 v	0.26 J	1.9 v	2.3 v
Chloride	250	4	Z000 Z	1600 Z	7600 v	63 v	5000 v	7100 v
Fluoride	1.6	4	<0.2185 u	<0.2185 u	<0.2185 u	1.1 v	18 Z	16 Z
Nitrate+Nitrite as N	10	9	<0.26 u	3 ۷	<0.26 u	0.21 J	1.1 J	1.1 J
Phosphorus, Orthophosphate (As P)	NE		<55 u	<1.25 u	<55 u	<1.25 u	<2.5 u	<2.5 u
Sulfate	009	4	Z 000E	740 Z	1500 v	180 v	1400 v	1800 v
Method E200.7 (mg/L) Dissolved								
Calcium - E200.7	NE		210 v	170 v	7 00E	4.5 v	410 v	540 v
Magnesium	NE		05 v	33 v	^ 06	1.2 v	100 v	150 v
Potassium	NE		1.7 v	5 v	0.75 J	0.52 J	140 v	230 v
Sodium	NE	ı	2400 v	1100 v	2300 v	310 v	3100 v	4300 v
NE Not Ectobliched								

NE - Not Established

450 - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (November 2018) - Tap Water

(2) EPA - Regional Screening Levels (November 2018) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/I TDS Concentration or less (December 2018) (4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (February 2019)

(5) EPA Screening Level - Tap Water x 10 for carcinogenic compounds

(6) 40 CFR 141.61 MCL (November 2015)

v = reportable detection above the Practical quantitation limit (PQL)

u - result is not detected at method detection limit (MDL)

J - estimated result at concentration above MDL but less than PQL

Z - concentration exceeds MCL

Table 5 Groundwater and Surface Water Field Measurements Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

WELL	DATE	DEPTH TO GROUNDWATER	TEMPERATURE	SPECIFIC CONDUCTIVITY	DISSOLVED OXYGEN	рН	OXYGEN REDUCTION
		(ft BTOC)	°C	(uS/cm)	(mg/L)		POTENTIAL
BW-4A	06/28/17	ND	Well was no	ot sampled due to ir	nsufficient grour	ndwater	volume.
BW-4B	06/28/17	51.65	16.3	1458	3.66	8.87	11.2
BW-5A	06/28/17	23.21	Well was no	ot sampled due to ir	nsufficient grour	ndwater	volume.
BW-5B	06/28/17	20.60	18.0	1155	6.04	8.80	48
BW-5C	06/28/17	2.70	20.2	5274	1.83	7.65	-28.0
OW-59	06/28/17	26.15	15.4	11067	9.61	7.40	111.1
OW-60	06/28/17	33.15	16.3	6189	8.12	7.43	98.1
SMW-2	06/28/17	24.80	16.3	11232	5.24	7.08	117.7
SMW-4	06/28/17	32.13	16.2	1384	4.37	8.44	86.7
EP-2	06/28/17	NA	22.9	16175	1.31	8.17	-212.7
EP-3	06/28/17	NA	23.6	22127	1.33	8.17	-56.7

ND - not detected

NA - not applicable

ft BTOC - feet below top of casing

Table 6 Groundwater Gauging Results Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

WELL	STICKUP (ft ABGL)	DATE	DATUM	DEPTH TO GROUNDWATER (ft BGL)	DEPTH TO GROUNDWATER (ft BTOC)	COMMENTS
	-	06/15/17	BGL	ND	NA	COLLECTED FROM INSIDE THE AUGERS
	3.00	06/16/17	BTOC	ND	ND	
BW-4A	3.00	06/19/17	BTOC	ND	ND	
	3.00	06/26/17	BTOC	ND	ND	
	3.00	06/28/17	BTOC	ND	ND	
	-	06/19/17	BGL	71.00	NA	COLLECTED FROM INSIDE THE AUGERS
	-	06/19/17	BGL	69.50	NA	COLLECTED FROM INSIDE THE AUGERS
BW-4B	3.00	06/27/17	BTOC	27.92	30.92	PRIOR TO DEVELOPMENT
	3.00	06/27/17	BTOC	60.88	63.88	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/28/17	BTOC	48.65	51.65	PRIOR TO SAMPLING
	3.00	06/26/17	BTOC	19.80	22.80	PRIOR TO DEVELOPMENT
BW-5A	3.00	06/26/17	BTOC	20.20	23.20	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/27/17	BTOC	20.21	23.21	
	3.00	06/26/17	BTOC	26.80	29.80	
BW-5B	3.00	06/27/17	BTOC	10.50	13.50	PRIOR TO DEVELOPMENT
BWSB	3.00	06/27/17	BTOC	58.10	61.10	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/28/17	BTOC	17.60	20.60	PRIOR TO SAMPLING
	-	06/20/17	BGL	ND	ND	COLLECTED FROM INSIDE THE AUGERS-TD@47.80'
	-	06/22/17	BGL	11.40	NA	COLLECTED FROM INSIDE THE AUGERS
	3.00	06/23/17	BTOC	0.70 ft ABGL	2.30	
BW-5C	3.00	06/26/17	BTOC	0.58 ft ABGL	2.42	
	3.00	06/27/17	BTOC	0.56 ft ABGL	2.44	PRIOR TO DEVELOPMENT
	3.00	06/27/17	BTOC	44.90	47.90	IMMEDIATELY AFTER WELL DEVELOPMENT
	3.00	06/27/17	BTOC	0.30 ft ABGL	2.70	PRIOR TO SAMPLING

Table 6 Groundwater Gauging Results Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

WELL	STICKUP	DATE	DATUM	DEPTH TO GROUNDWATER	DEPTH TO GROUNDWATER	COMMENTS
	- (IT ADGL)	06/13/17	BGL	24 ft BGL	NA	COLLECTED FROM INSIDE THE AUGERS
	2.67	06/14/17	BTOC	21.77	24.44	
OW-59	2.67	06/19/17	BTOC	22.08	24.75	
	2.67	06/27/17	BTOC	22.33	25.00	PRIOR TO DEVELOPMENT
	2.67	06/28/17	BTOC	23.48	26.15	PRIOR TO SAMPLING
	3.00	06/14/17	BGL	ND	ND	COLLECTED FROM INSIDE THE AUGERS
	3.00	06/14/17	BGL	ND	ND	IMMEDIATELY AFTER WELL INSTALLATION
	3.00	06/15/17	BTOC	21.68	24.68	
	3.00	06/16/17	BTOC	14.74	17.74	
OW-60	3.00	06/19/17	BTOC	14.45	17.45	
	2.50	06/27/17	-	-	-	WELL WAS REINSTALLED
	2.50	06/27/17	BTOC	7.75	10.25	PRIOR TO DEVELOPMENT
	2.50	06/27/17	BTOC	42.15	44.65	IMMEDIATELY AFTER WELL DEVELOPMENT
	2.50	06/28/17	BTOC	30.65	33.15	PRIOR TO SAMPLING

BGL - below ground level

BTOC - below top of casing

ABGL - above ground level

ND - not detected

NA - not available

Table 7 Fluid Levels	Marathon Petroleum Company - Gallup Refinery	Gallup, New Mexico
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Stratigraphic unit in which	screen exists	Upper Sand	Chinle/Alluvial Interface	Upper Sand	Chinle/Alluvial Interface	Sonsela Sandstone																									
Screened Interval Depth Top to	Bottom (ft)	21 - 36	21 - 36	21 - 36	21 - 36	21 - 36	21 - 36	41 - 61	41 - 61	41 - 61	41 - 61	41 - 61	41 - 61	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	48 - 58	48 - 58	48 - 58	48 - 58	48 - 58	48 - 58	64.3-74.30	64.3-74.30	64.3-74.30	64.3-74.30	64.3-74.30	64.3-74.30
Corrected Water Table Elevation	(factor 0.8) (ft)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						
Ground water Elevation	(ft)	DRY	DRY	DRY	DRY	DRY	DRY	6,841.65	6,835.28	6,834.80	6,829.63	6,834.18	6,828.36	DRY	DRY	DRY	DRY	DRY	DRY	6,868.17	6,867.82	6,866.54	6,867.07	6,866.78	6,866.25	6,873.86	6,874.05	6,874.22	6,874.30	6,873.53	6,873.36
Depth to Water	(fi)	DRY	DRY	DRY	DRY	DRY	DRY	31.58	37.95	38.43	43.60	39.05	44.87	DRY	DRY	DRY	DRY	DRY	DRY	8.65	00.6	10.28	9.75	10.04	10.57	2.99	2.80	2.63	2.55	3.32	3.49
SPH Column	inickness (ft)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA						
Depth to	(ft)	ΠN	ΠN	ND	ΠN	ΠN	ND	ΠN	ΠN	ΠN	ΠN	QN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	ΠN	DN	DN	ΠN	ΠN	ΠN	QN	ND
Total Well Depth	(H)	38.80	38.30	38.80	38.80	38.80	38.30	63.50	63.50	63.50	63.50	63.50	63.50	23.00	23.02	23.02	23.02	23.02	23.02	61.45	61.45	61.45	61.45	61.45	61.45	76.35	76.35	76.35	76.35	76.35	76.35
Stick-up	iengun (π)	2.51	2.51	2.51	2.51	2.51	2.51	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.50	2.50	2.50	2.50	2.50	2.50	2.63	2.63	2.63	2.63	2.63	2.63
Well Casing Rim Elevation	(ft)	6,873.18	6,873.18	6,873.18	6,873.18	6,873.18	6,873.18	6,873.23	6,873.23	6,873.23	6,873.23	6,873.23	6,873.23	6,877.00	6,877.00	6,877.00	6,877.00	6,877.00	6,877.00	6,876.82	6,876.82	6,876.82	6,876.82	6,876.82	6,876.82	6,876.85	6,876.85	6,876.85	6,876.85	6,876.85	6,876.85
Ground Level Elevation	(ft)	6,870.67	6,870.67	6,870.67	6,870.67	6,870.67	6,870.67	6,870.62	6,870.62	6,870.62	6,870.62	6,870.62	6,870.62	6,874.39	6,874.39	6,874.39	6,874.39	6,874.39	6,874.39	6,874.32	6,874.32	6,874.32	6,874.32	6,874.32	6,874.32	6,874.22	6,874.22	6,874.22	6,874.22	6,874.22	6,874.22
Casing Diameter	(Inch)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Inspection or	sampie uate	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/07/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18	09/21/17	12/08/17	02/26/18	04/25/18	08/15/18	11/13/18
Well ID	Number	BW-4A	ı	ı			·	BW-4B	ı	ı	I	ı	I	BW-5A	ı	ı	ı	ı	I	BW-5B		ı				BW-5C		ı	ı	L	<u>.</u>
Date of	Installation	06/29/17						06/29/17						06/29/17						06/29/17						06/29/17					

Table 7 Fluid Levels Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

/ell ID umber	Inspection or Sample Date	Casing Diameter (Inch)	Ground Level Elevation (ft)	Well Casing Rim Elevation (ft)	Stick-up length (ft)	Total Well Depth (ft)	Depth to SPH (ft)	SPH Column Thickness (ft)	Depth to Water (ft)	Ground water Elevation (ft)	Corrected Water Table Elevation (factor 0.8) (ft)	Screened Interval Depth Top to Bottom (ft)	Stratigraphic unit in which screen exists
/60	21/17	2.00	6,887.63	6,889.73	2.10	38.30	ND	NA	24.30	6,865.43	NA	20 - 35	Chinle/Alluvial Interface
12	/05/17	2.00	6,887.63	6,889.73	2.10	38.50	ND	NA	24.30	6,865.43	NA	20 - 35	Chinle/Alluvial Interface
02	/21/18	2.00	6,887.63	6,889.73	2.10	38.55	DN	NA	24.00	6,865.73	NA	20 - 35	Chinle/Alluvial Interface
70	1/26/18	2.00	6,887.63	6,889.73	2.10	38.48	DN	NA	24.05	6,865.68	NA	20 - 35	Chinle/Alluvial Interface
0	8/14/18	2.00	6,887.63	6,889.73	2.10	38.52	ND	NA	24.13	6,865.60	NA	20 - 35	Chinle/Alluvial Interface
	l1/06/18	2.00	6,887.63	6,889.73	2.10	38.50	ND	NA	23.90	6,865.83	NA	20 - 35	Chinle/Alluvial Interface
_	09/21/17	2.00	6,891.06	6,893.51	2.45	45.55	ND	NA	16.45	6,877.06	NA	25 - 45	Chinle/Alluvial Interface
	12/05/17	2.00	6,891.06	6,893.51	2.45	45.70	ND	NA	16.40	6,877.11	NA	25 - 45	Chinle/Alluvial Interface
_	02/21/18	2.00	6,891.06	6,893.51	2.45	46.06	ND	NA	16.26	6,877.25	NA	25 - 45	Chinle/Alluvial Interface
	04/26/18	2.00	6,891.06	6,893.51	2.45	46.15	ND	NA	16.52	6,876.99	NA	25 - 45	Chinle/Alluvial Interface
	08/14/18	2.00	6,891.06	6,893.51	2.45	46.42	ND	NA	16.52	6,876.99	NA	25 - 45	Chinle/Alluvial Interface
	11/06/18	2.00	6,891.06	6,893.51	2.45	45.70	ND	NA	16.25	6,877.26	NA	25 - 45	Chinle/Alluvial Interface
			NA = Not Applica	ble			MN	= Not Measu	red				
			Dry indicates no	water was detect	ted.								
rbor	SL												

Table 8.1 BW-5B and BW-5C BTEX and MTBE Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

					PARAMETERS		
	STANDARDS		Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
WQCC 20	NMAC 6.2.3103 (DECEMB	ER 2018)	0.005	1	0.7	0.62	0.1
40 CFR	141.61 MCL (NOVEMBER	2015)	0.005	1	0.7	10	NE
NMED TAP WATER (FEBRUARY 2019)			0.00455	1.09	0.0149	0.193	0.143
EPA RS	L TAP WATER (NOVEMBER	2018)	0.00046	1.1	0.0015	0.19	0.014
WELL ID	DATE SAMPLED	METHOD					
BW-5B	12/08/17	8260B	<0.001	0.0018	<0.001	<0.0015	0.00064
BW-5C	12/08/17	8260B	<0.001	<0.001	<0.001	<0.0015	0.039

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.61 Detection Limits for Organic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

Table 8.1.1 BW-5B and BW-5C General Chemistry and DRO/GRO/MRO Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

			-				PARAME	TERS				
			Fluoride	Chloride	Bromide	Nitrite	Nitrate	Phosphorus	Sulfate	DRO	GRO	MRO
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
WQCC 2	ONMAC 6.2.3103 (DEC	EMBER 2018)	1.6	250.0	NE	1	10	NE	600.0	NE	NE	NE
	40 CFR 141.62 MC	-	4.0	NE	NE	1	10	NE	NE	NE	NE	NE
NME	ED TAP WATER (FEBRU)	ARY 2019)	1.18	NE	NE	1.97	31.59	NE	NE	NE	NE	NE
EPAR	SL TAP WATER (NOVEN	ABER 2018)	0.8	NE	NE	2	32	NE	NE	NE	NE	NE
	NMED SSG (March 20	119)	NE	NE	NE	NE	NE	NE	NE	0.0858	0.0858	0.0858
Well ID	DATE SAMPLED	METHOD										
BW-5B	12/08/17	E300	0.27	110	0.47	0.15	0.15	<2.5	110	<1	0.014	<5
BW-5C	12/08/17	E300	<0.5	1400	1.2	0.23	0.23	<2.5	210	<1	0.035	<5

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1 NMED Soil Screening Guidance Volume 1, Table 6-4 (groundwater), (March 2017)

								PAR	AMETERS					
			Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Selenium	Mercury	Uranium	Zinc
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
WQCC 201	NMAC 6.2.3103 (DE	CEMBER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.002	0.03	10.0
40 CFR	141.62 MCL (NOVE	MBER 2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	0.002	0.03	NE
NMED	TAP WATER (FEBRI	UARY 2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.000626	0.0592	5.96
EPA RSL	TAP WATER (NOVE	EMBER 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.00063	0.004	6
Well ID	DATE SAMPLED	METHOD												
BW-5B	12/08/17	200.7/200.8	0.003	0.085	<0.002	0.012	<0.006	1.7	0.00097	0.042	<0.005	0.00015	0.042	0.0086
BW-5C	12/08/17	200.7/200.8	0.0022	0.12	<0.002	<0.006	<0.006	0.54	<0.0025	0.058	<0.005	0.000081	0.038	<0.01

Table 8.1.2 BW-5B and BW-5C Total Metals Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup. New Mexico

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1 (Dec 2014)

Table 8.1.3 BW-5B and BW-5C Dissolved Metals Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

							PA	RAMETER:					
	STANDARD	S	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	lron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Selenium (mg/L)	Uranium (mg/L)	Zinc (mg/L)
WQCC 20	INMAC 6.2.3103 (I	JECEMBER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.03	10.0
40 CFR	141.62 MCL (NOV	/EMBER 2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	0.03	NE
NMEC	O TAP WATER (FEB	RUARY 2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.0592	5.96
EPA RS	L TAP WATER (NO	VEMBER 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.004	6
Well ID	DATE SAMPLED	METHOD											
BW-5B	12/08/17	200.7/200.14	0.0032	0.05	<0.002	<0.006	<0.006	0.024	<0.0005	0.0064	0.0039	0.04	0.007
BW-5C	12/08/17	200.7/200.15	<0.02	0.11	<0.002	<0.006	<0.006	0.29	<0.0005	0.043	<0.01	0.041	0.0074

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less. a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

Table 8.1.4

BW-5A and BW-5B Semi-Volatile Organic Compound Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico

			PARAMETERS
	STANDARDS		Bis(2-ethylhexyl)phthalate (mg/L)
WQCC 20N	IMAC 6.2.3103 (DECEMI	BER 2018)	NE
40 CFR 1	141.61 MCL (NOVEMBER	R 2015)	0.006
NMED	TAP WATER (FEBRUARY	2019)	0.0556
EPA RSL	TAP WATER (NOVEMBE	R 2018)	0.0056
Well ID	DATE SAMPLED	METHOD	
BW-5B	12/08/17	8270C	<0.01
BW-5C	12/08/17	8270C	<0.01

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1 (Dec 2014)

NOTES

1) Detected for the first time. Possible lab contaminant.

2) Request to remove 8270C Analysis in 2015 approved per NMED Comment 7(b), Approval with Modification, FWGWMWP - 2012 Updates; 2013 Updates; 2014 Updates for 2015.

Gallup, New Mexico

								PARAM	ETERS						
			Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene	Total Xylenes	MTBE (mg/L)	Fluoride (mg/L)	Chloride (mg/L)	Nitrite (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	DRO (mg/L)	GRO (mg/L)	MRO (mg/L)
	STANDARDS				(mg/ L)	(mg/r)									
WQCC 20NN	MAC 6.2.3103 (DECE	MBER 2018)	0.005	1	0.7	0.62	0.1	1.6	250	1	10	600	NE	NE	NE
40 CFR 1	41.61 MCL (NOVEME	3ER 2015)	0.005	1	0.7	10	NE	4.0	NE	1	10	NE	NE	NE	NE
NMED T	AP WATER (FEBRUA	RY 2019)	0.00455	1.09	0.0149	0.193	0.143	1.18	NE	1.97	31.59	NE	NE	NE	NE
EPA RSL T	AP WATER (NOVEM	BER 2018)	0.00046	1.1	0.0015	0.19	0.014	0.8	NE	2	32	NE	NE	NE	NE
NN	1ED SSG (MARCH 20	19)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.0858	0.0858	0.0858
Well ID	DATE SAMPLED	METHOD													
OW-59	12/06/17	8260B	<0.001	<0.001	<0.001	<0.0015	0.0094	<0.5	1700	<2	<2	2600	0.55	3.1	<5
OW-60	12/06/17	8260B	<0.001	<0.001	<0.001	<0.0015	0.00028	1.1	1700	14	14	780	<1	0.031	<5

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water 40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

NMED Soil Screening Guidance Volume 1, Table 6-4 (groundwater), (March 2017)

OW-59 and OW-60 Total Metals Analytical Result Summary Marathon Petroleum Company - Gallup Refinery Gallup, New Mexico Table 8.2.1

								PI	ARAMETERS	S					
			Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Selenium	Silvor	Mercury	Uranium	Zinc
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(mg/L)	(mg/L)
MQCC	CONMAC 6.2.3103 (DECEMB)	ER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.05	0.002	0.03	10.0
40 (CFR 141.62 MCL (NOVEMBER	2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	NE	0.002	0.03	NE
NN	AED TAP WATER (FEBRUARY :	2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.0812	0.000626	0.0592	5.96
EPA	RSL TAP WATER (NOVEMBEF	: 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.094	0.00063	0.004	9
Vell ID	DATE SAMPLED	METHOD													
W-59	12/06/17	200.7/200.8	2600.0	0.064	<0.002	<0.006	0.0042	2.1	0.0014	0.17	<0.02	0.0037	<0.0002	0.17	0.0041
09-M(12/06/17	200.7/200.8	<0.02	0.12	<0.002	0.0033	<0.006	3.1	0.002	0.13	0.021	0.0024	<0.0002	0.048	0.0097

DEFINITIONS

NE = Not established

NA = Not analyzed Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less. a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table NMED Risk Assessment Guidance for Investigations and Remediations Table A-1
OW-59 and OW-60 Dissolved Metals Analytical Result Summary **Marathon Petroleum Company - Gallup Refinery** Gallup, New Mexico Table 8.2.2

		-						PAR	AMETERS					
			Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Selenium	Silver	Uranium	Zinc
	STANDARDS		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(mg/L)
MQCC	20NMAC 6.2.3103 (DE	CEMBER 2018)	0.01	2	0.005	0.05	1.0	1.0	0.015	0.2	0.05	0.05	0.03	10.0
40 CI	FR 141.62 MCL (NOVEN	ABER 2015)	0.01	2.0	0.005	0.1	1.3	NE	0.015	NE	0.05	NE	0.03	NE
IMN	ED TAP WATER (FEBRU	ARY 2019)	0.000855	3.28	0.00624	0.0057	0.7898	13.8	NE	2.02	0.0987	0.0812	0.0592	5.96
EPA F	ISL TAP WATER (NOVE	MBER 2018)	0.000052	3.8	0.0092	NE	0.8	14	0.015	0.43	0.1	0.094	0.004	6
Well ID	DATE SAMPLED	METHOD												
0W-59	12/06/17	200.7/200.8	0.012	0.013	<0.002	<0.006	<0.006	0.024	<0.0025	0.13	0.023	0.0047	0.14	0.011
09-MO	12/06/17	200.7/200.8	0.013	0.029	<0.002	<0.006	<0.006	0.02	<0.0005	0.042	0.031	0.0029	0.047	0.01

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

NOTES

Table 8.2.3

OW-59 and OW-60 Semi-Volatile and Volatile Organic Compounds, Analytical Result Summary Marathon Petroleum Company - Gallup Refinery

Gallup, New Mexico

			Р	ARAMETERS	
	STANDARDS		1-Methyl naphthalene (mg/L)	Acetone (mg/L)	Bis(2- ethylhexyl)phthalate (mg/L)
WQCC 201	NMAC 6.2.3103 (DECEM	BER 2018)	NE	NE	NE
40 CFR	141.61 MCL (NOVEMBE	R 2015)	NE	NE	0.006
NMED	TAP WATER (FEBRUAR)	′ 2019)	0.0114	14.06	0.0556
EPA RSL	TAP WATER (NOVEMBE	R 2018)	0.0011	14	0.0056
Well ID	DATE SAMPLED	METHOD			
OW-59	12/06/17	8260B	<0.004	0.0028	<0.01
OW-60	12/06/17	8260B	<0.004	0.0025	0.045

DEFINITIONS

NE = Not established

NA = Not analyzed

Bold and highlighted values represent values above the applicable standards

STANDARDS

WQCC 20 NMAC 6.2.3103 - Standards for Ground Water of 10,000 mg/l TDS Concentration or Less.

a) Human Health Standards; b) Other Standards for Domestic Water

40 CFR 141.62 Detection Limits for Inorganic Contaminants

EPA Regional Screening Level (RSL) Summary Table

NMED Risk Assessment Guidance for Investigations and Remediations Table A-1

NOTES

Figures

- Figure 1 Site Location Map
- Figure 2 Well Location Map Boundary Wells
- Figure 3 Well Location Map SMW-2 Area
- Figure 4 Geologic Map of New Mexico
- Figure 5 Chinle/Alluvium Interface Potentiometric Map September 2017
- Figure 6 Sulfate and Chloride Concentrations

















Appendix A Well Logs

Envir	onme Wes Jo	Senta tern Gall ob No	O al Co Refininç up Refi b. WEST	g SW, In nery T17020	ing Fi	Crm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon/ Hand Auger to 5' BGL : 44' : Not Encountered : 6/14/2017 : 6/14/2017	Elev., TOC (ft.m Elev., PAD (ft. m Elev., GL (ft. ms Site Coordinate N E	ELL NO. BW-4A (Sheet 1 of 3) hsl) : 6873.18 hsl) : 6870.67 sl) : s : : N1634063.05 : W2542465.22
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery (%)	Sample	DI	ESCRIPTION	C Well No.	Completion Results BW-4A
-3 -2 -2 -1 -1										Steel Protective Casing
	7.7			CL	100		SILTY CLAY, low, no odor,	firm, dry to damp, brown,		Concrete Pad - 4'x4'x6"
	9.5			СН	100		CLAY, high, stiff, t	damp, brown, no odor,		
	9.0			СН	100		CLAY, SIMILAR T no odor,	O ABOVE (STA), very stiff,		— Grout
	6.8			СН	90		CLAY, STA, no oo	dor,		—2" Sch 40 PVC w/Threaded Joints
9	5.4			СН	80		CLAY, STA, no oo	dor,		
	3.3			СН	80		CLAY, STA, no oc	dor,		
12- 	5.8			СН	50		CLAY, STA, no oo	dor,		
14- - - 15-	4.0			СН			CLAY, STA, no oc	dor,		-Bentonite Pellets
1010 Tra Houston 713-955	avis Stre , Texas -1230	et 77002	2				DiSorbo Co	onsulting, LLC	1	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

D	Í	5	0	rk)(C	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WELL NO. BW-4A (Sheet 2 of 3)
Envir	Onme Wes Jo	enta stern Gall ob No	al Co Refinin up Refi . WES	g SW, In nery T17020	ing Fi	rm	Sampling Method Sampling Method Comments Total Depth Ground Water Start Date	: 44' : Not Encountered : 6/14/2017	Elev., TOC (ft.msl) : 6873.18 Elev., PAD (ft.msl) : 6870.67 Elev., GL (ft.msl) : Site Coordinates : N : N1634063.05 E : W2542465.22
		Π						. 0/14/2017	
					•				Completion Results
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery (%)	Sample	DE	SCRIPTION	Well No. BW-4A
15-	4.0		///	СН	60				
16-			+	-			CLAY, STA, no od	or,	
17-	2.0			СН	80				
18-							CLAYEY SILT, Iov	w, firm/crumbly, damp, light	
19-	6.9			ML	40		brown/tan, no odoi	ſ,	w/Threaded Joints
20-							CLAYEY SILT/SIL	TY CLAY, STA,	
21-	5.0			ML/CL	70		interbedded, no oc	lor,	
22							CLAYEY SILT. IO	w. firm/crumbly.damp. tan.	
23-	3.6			ML	50		no odor,	······································	
24							CLAYEY SILT/SIL	TY CLAY, STA,	
25-	3.7			ML/CL	60		Interbedded, no oc	lor,	
26-							CLAY, high, very s	tiff, damp, brown, no odor,	
27-	6.2		//	СН	60				2" Sch 40 PVC Slottted 0.01" Screen w/Threaded Joints
28-			+				CLAY, STA, darke	r brown, no odor,	
29-	3.5			СН	70				
30-			4				CLAY, STA, no od	or,	
31-	6.1			СН	80				
32-	6.1			CL			SILTY CLAY, low, light brown (reddis sand,	very stiff, damp, no odor, h), trace very fine grain	
1010 T-	ovie Str-	ot					DiSorbo Co	nsulting, LLC	8501 N. MoPac Expv. Suite 300
Houstor 713-955	, Texas -1230	77002	2						Austin, Texas 78759 512-693-4190

D Envir	onmo Wes	Senta stern Gall ob No	O al Co Refining up Refining . WEST	g SW, In nery 17020	o ing Fi	C rm	Geologist: Tracy PayneDriller: Enviro-Drill Inc/CohaganDrilling Rig: CME75Drilling Method: Hollow Stem Auger 7 1/4"Sampling Method: 2' Split Spoon/Comments: Hand Auger to 5' BGLTotal Depth: 44'Ground Water: Not EncounteredStart Date: 6/14/2017Finish Date: 6/14/2017	WELL NO. BW-4A (Sheet 3 of 3) Elev., TOC (ft.msl) : 6873.18 Elev., PAD (ft. msl) : 6870.67 Elev., GL (ft. msl) : Site Coordinates : N : N1634063.05 E : W2542465.22
(;t) (;t) (;t) (;t) (;t) (;t) (;t) (;t)	(wdd) OI 6.1 3.8 6.1 5.2 4.2	Saturation	Lithology	CL CL CL CL	60 60 60 60 60 60 60 60 60 60 60 60 60 6	Sample	Pinish Date 16/14/2017 DESCRIPTION CLAYEY SILT/SILTY CLAY, low, firm to stiff, damp, reddish brown and grey, alternating silt/clay, no odor, SILTY CLAY, low, stiff, damp, reddish brown and grey (less grey than above), no odor, SILTY CLAY, STA, no odor, SILTY CLAY, STA, reddish brown and grey, no odor,	Completion Results Well No. BW-4A
Users/cholmes/Documents/M-Tech/samples/Western Refinery/Boundary Wells/BW-4A.bou 1 1	3.9			CL	60		SILTY CLAY, STA, no odor.	
iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	avis Stre n, Texas 5-1230	et 77002	2				DiSorbo Consulting, LLC	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

Envir	onme Wes Jo	Senta stern Gall ob No	O al Co Refininç lup Refi b. WES	g SW, In nery T17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	Elev., TOC (Elev., PAD (Elev., GL (ft. Site Coordin N E	VELL NO. ft.msl) : 6873 ft. msl) : 6870 msl) : ates : : N163 : W25	BW-4B (Sheet 1 of 5) .23 .62 44043.22 42462.98
Depth (ft.)	PID (ppm)	Saturation	Lithology	nscs	Recovery	Sample	DE	SCRIPTION	Well N	Completior Io. BW-4B	n Results
-3 -2 -1										Steel F	Protective Casing
	1.3			CL	100		SILTY CLAY, low, no odor,	firm, dry to damp, brown,		Concre	ete Pad - 4'x4'x6"
	1.2			СН	100		CLAY, high, stiff, d	amp, brown, no odor,			
5-	1.3			СН	100		CLAY, SIMILAR TO	O ABOVE (STA), very stiff,		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
7-	1.7			СН	90		CLAY, STA, no od	or,			
9- 	2.0			СН	80		CLAY, STA, no od	or.		2" Sch 40 w/Thread	PVC ed Joints
11 – 12 –	2.1		\square	СН	80		CLAY, STA, no od	or.			
13-	3.1			СН	80		CLAY, STA no od	or.		1997 - 19	
15-	3.4			СН	80		CLAY, STA, no od	or,			
17- 1010 Tr. Houstor 713-955	5.1 avis Stre a, Texas 5-1230	et 77002	2	СН			DiSorbo Co	nsulting, LLC		8501 N. Mof A	Pac Expy, Suite 300 ustin, Texas 78759 512-693-4190

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D Envir	onme Wes	5 ent tern Gal	O al Co Refining	g SW, In nery) ing Fi	D rm	Geologist : Tracy Payne Driller : Enviro-Drill Inc/Cohagan Drilling Rig : CME75 Drilling Method : Hollow Stem Auger 7 1/4" Sampling Method : 2' Split Spoon - Hand Auger to 5' BGL Total Depth : 90' Ground Water : Not Encountered	WELL NO. BW-4B (Sheet 2 of 5) Elev., TOC (ft.msl) : 6873.23 Elev., PAD (ft.msl) : 6870.62 Elev., GL (ft.msl) : Site Coordinates :		
). WES	117020			Start Date : 6/15/2017 Finish Date : 6/16/2017	N : N1634043.22 E : W2542462.98		
Depth (ft.)	(mdd) Ole	Saturation	ithology	SSS	Recovery	sample	DESCRIPTION	Completion Results Well No. BW-4B		
17-	5.1		_	СН	70					
18-	3.2			ML	60		CLAYEY SILT, low, firm/crumbly, damp, light brown/tan, no odor,			
20-	3.9			ML/CL	70		CLAYEY SILT/SILTY CLAY, STA, no odor, interbedded,			
22-	3.5			ML	60		CLAYEY SILT, low, firm/crumbly, damp, brown and tan, no odor,			
24-	3.9			ML/CL	60		CLAYEY SILT/SILTY CLAY, STA, no odor,			
26			\square	СН	60		CLAY, nign, very stiff, damp, brown, no odor, CLAY, STA, darker brown, no odor,			
27-	1.8			СН	70					
28-	1.8			CL	80		SILTY CLAY, moderate to low, very stiff, damp, dark brown grading to light reddish brown, trace fine grain sand at base, no odor,	2" Sch 40 PVC w/Threaded Joints		
30-	2.0			CL	80		SILTY CLAY, STA,			
32-	2.0			CL CL	80 80		SANDY GRAVELLY CLAY, low, stiff, dry to damp, light grey and brown, no odor,			
33	2.2			ML/CL	80		NCLAY, IOW, STIIT, damp, reddish brown, no odor, CLAYEY SILT/SILTY CLAY, Iow, firm/crumbly, damp, reddish brown and grey,			
	5.6			CL	80		SILTY CLAY, STA, no odor,			
36-	3.6			CL			SILTY CLAY, STA, no odor,	Bentonite Pellets		
							DiSorbo Consulting, LLC			

1010 Travis Street Houston, Texas 77002 713-955-1230 8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

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	D	í	5	0	rk)	C	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WE	ELL NO. BW-4B (Sheet 3 of 5)
	Enviro	Onme Wes Jo	ent stern Gal ob No	al Co Refining lup Refi b. WES	g SW, In nery T17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	Elev., TOC (ft.r Elev., PAD (ft. r Elev., GL (ft. m Site Coordinate N E	nsl) : 6873.23 msl) : 6870.62 sl) : :s : : N1634043.22 : W2542462.98
											Completion Results
	Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	SCRIPTION	Well No.	BW-4B
Ī	37-	3.6			CL	80					l
	38-							SILTY CLAY, STA	, no odor,		—Bentonite Pellets
	39-	2.3			CL	80					
	40-							SILTY CLAY, STA	, no odor,		
	41-	6.2			CL	80					w/Threaded Joints
	42							SILTY CLAY, STA	, no odor,		
	43-	5.0			CL	70					
	44 -				CL	80		SILTY CLAY, STA	, no odor,		
	45 -	2.6 CL 80 CL 80 CL 80				dry-calcium carbor	CLAY, low, firm/crumbly, nate nodules, grey and odor.				
lod	46	25						SANDY CLAY, low and reddish brown	<i>i</i> , firm/crumbly, dry, grey , very fine grain sand, no		
\BW-4B.	47	3.5			UL	80		odor, SILTY CLAY, low,	very stiff, dry to damp,		10/20 Sinua Sand Filter Dade
ry Wells	40	1 0				80		SILTY CLAY, STA	odor, , no odor,		
∖Bounda	49 - - 	1.5				00					2" Sch 40 PVC Slotted 0 01"
Refinery	51	51			CI	80		SILTY CLAY, STA	, no odor,		Screen w/Threaded Joints
Vestern	52	0.1									
amples/\	53	5.6			CI	70		SILTY CLAY, STA occasional gravel,	, trace grey clay, no odor,		
l-Tech∖s	54										
ments\N	55-	3.8			CL	70		SILTY CLAY, low, reddish brown, no	very stiff, dry to damp, odor,		
ies\Docu	56										
srs\cholm	57 –	3.4			CL			SILTY CLAY, STA	, trace grey clay, no odor,		
03-29-2018 C:\Use	1010 Tra Houston 713-955	avis Stre , Texas -1230	et 7700	2				DiSorbo Co	nsulting, LLC		8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

	Enviro	onme Wes Jo	Sent stern Gal ob No	O al Co Refinin lup Refi b. WES	g SW, In nery T17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	WELL NO. BW-4B (Sheet 4 of 5) Elev., TOC (ft.msl) : 6873.23 Elev., PAD (ft. msl) : 6870.62 Elev., GL (ft. msl) : Site Coordinates : N : N1634043.22 E : W2542462.98		
	Depth (ft.)	PID (ppm)	Saturation	Lithology	nscs	Recovery	Sample	DE	SCRIPTION	Completion Results Well No. BW-4B		
	57-	3.4			CL	60						
	58 - - 59 -	2.4			CL	80		SILTY CLAY, STA	, no odor,			
	60 - 61 -	4.9			CL	80		SILTY CLAY, low, reddish brown grey	very stiff, dry to damp, y clay, no odor,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints 2" Flush Threadeed		
	62 63	1.7			CL	80		SILTY CLAY, STA	, no odor,	Sch 40 PVC Cap		
	64 - 65 -	5.8			CL	80		SILTY CLAY, STA	., no odor,			
4B.boi	66 67	5 3.5 CL 80 6 7 2.7 CL 80 8 8				SILTY CLAY, STA	9					
dary Wells\BW-	68 69	3.9			CL	80		SILTY CLAY, low, to damp, brown an	very stiff, calcareous, dry d blueish grey, no odor,	— Pel Plug		
n Refinery/Boun	70- 71-	1.6			CL	80		SILTY CLAY, low, reddish brown, no	firm/crumbly, damp, odor,			
amples\Wester	72 - 73 -	1.7			CL	60		SILTY CLAY, STA	, no odor,			
s\M-Tech\s	74							SILTY CLAY, STA	., no odor,			
Document:	75	1.0			CL	60						
ers\cholmes\	76 - 77 -	0.1			CL			SILTY CLAY, STA	, no odor,			
03-29-2018 C:\Us	1010 Tra Houston 713-955	avis Stre , Texas -1230	et 7700	2				DiSorbo Co	nsulting, LLC	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190		

D	onmo Wes	Sent stern Gall ob No	O al Co Refining lup Refi b. WES	g SW, In nery 17020	o ing Fi) rm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon - Hand Auger to 5' BGL : 90' : Not Encountered : 6/15/2017 : 6/16/2017	WELL NO. BW-4B (Sheet 5 of 5) Elev., TOC (ft.msl) : 6873.23 Elev., PAD (ft.msl) : 6870.62 Elev., GL (ft.msl) : Site Coordinates N : N1634043.22 E : W2542462.98
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	ESCRIPTION	Completion Results Well No. BW-4B
77_	0.1			CL	70				
78-	0.4			CI	60		SILTY CLAY, STA	a, no odor,	
80	0.1							no odor	
81-	0.1			CL	70			, 10 0001,	
82							SILTY CLAY, STA	, no odor,	_
83-	0.2			CL	60				— Pel Plug
85-	0.0			CL	70		SILTY CLAY, STA no odor,	a, very stiff, trace grey clay,	
86-	0.1			CL	40		SILTY CLAY, STA	a, no odor,	
88							SILTY CLAY, STA	, imbedded with fine grain	_
89-	0.2			CL/SS	40		sandstone, hard/d	ense, white.	
90-			× A						
92									
93									
94									
96									
97-							DiSorbo Co	onsulting, LLC	REGAN MoDee Furth Cuite 200
1010 Tr Houstor 713-955	avis Stre n, Texas i-1230	et 77002	2					<i>.</i>	Austin, Texas 78759 512-693-4190

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D	Í	5	0	rk)()	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WELL NO. BW-5A (Sheet 1 of 1)
Envir	Onme Wes Jo	tern Gall b No	al Co Refining up Refin b. WEST	nsult g SW, In nery M77020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon : : 20.5' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC (ft.msl) : 6877.00 Elev., PAD (ft.msl) : 6874.39 Elev., GL (ft.msl) : Site Coordinates : N : N1633259.56 E : W2542551.45
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DES	SCRIPTION	Completion Results Well No. BW-5A
-3									
	0.0			CL	100		SILTY CLAY, low, fi	rm, dry, brown, no odor,	Concrete Pad - 4'x4'x6"
	0.1			CL	100		SILTY CLAY, SIMIL odor,	AR TO ABOVE (STA), no	
	0.0			CL	100		SILTY CLAY, STA,	no odor,	
	0.0			СН	40		CLAY, high, very sti	ff, dry, brown, no odor,	Bentonite Pellets
8- 9- 1	0.1			СН	80		CLAY, STA, no odo	r,	
	0.0			CL	60		CLAY, moderate, ve dry, brown, no odor,	ery stiff, gravel at base,	
	0.0			SP	80		GRAVELLY SILT/S/ gravel-clay at base	AND, very fine, 5-10 mm - stiff, dry, tan, no odor,	
14	0.0			CL	70		SILTY CLAY, low, s brown, tan and grey sand,	tiff, dry, light reddish , trace very fine grain	- 10/20 Sieve Sand Filter Pack
	0.0			CL	60		SILTY CLAY, STA,		Screen w/Threaded Joints
18-	0.0			CL	80		SANDY SILTY CLA fine sand, light redd grey, no odor.	Y, low, very stiff, very ish brown, occasional	
20			/ I			-			2" Flush Threaded Sch 40 PVC Cap
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D Envir	onme Wes Jo	Senta tern Gall b No	O al Co Refining lup Refi b. WEST	nsult g SW, In nery [17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC Elev., PAD Elev., GL (1 Site Coordi N E	(ft.msl) (ft. msl) (ft. msl) nates	- NO. BW-5B (Sheet 1 of 4) : 6876.82 : 6874.32 : : : : N1633269.31 : W2542551.84
										Con	npletion Results
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	ESCRIPTION	Well	No. BW	-5B
-3- -2- -1-											_ Steel Protective Casing
	0.0			CL	100		SILTY CLAY, low,	firm, dry, brown, no odor,			-Concrete Pad 4'x4'x6"
2	0.1			CL	100		SILTY CLAY, SIM odor,	ILAR TO ABOVE (STA), no			
4	0.0			CL	100		SILTY CLAY, STA	, no odor,			
	0.0			СН	40		CLAY, high, very s	stiff, dry, brown, no odor,		2 w	" Sch 40 PVC /Threaded Joints Prout
8	0.1			СН	80		CLAY, STA, no od	lor,			
10	0.0		\square	СН	60		CLAY, STA, no od	lor,			
12-	0.0			CL	60		SILTY CLAY, low, tan to light brown,	very stiff, dry, calcareous, no odor, SAND, very fine, very			
13-	0.1			SP			dense, dry, tan, no gravel,	odor, sandstone and chert			
1010 Tr Houstor 713-955	avis Stre n, Texas i-1230	et 77002	2				DiSorbo Co	onsulting, LLC		850	1 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

D Envir	onme Wes Jo	Sent stern Gal ob No	O al Co Refininç lup Refi b. WEST	nsult g SW, In nery F17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC (ft.r Elev., PAD (ft. r Elev., GL (ft. m Site Coordinate N E	ELL NO. BW-5B (Sheet 2 of 4) nsl) : 6876.82 msl) : 6874.32 sl) : es : : N1633269.31 : W2542551.84
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	SCRIPTION	(Well No.	Completion Results BW-5B
13-	0.1			SP	90					
14	0.0			CL	90		SILTY CLAY, low, f damp, reddish brow and very fine grain	firm to stiff/crumbly, dry to vn and grey, trace gravel sand, no odor,		
- 16 							CLAYEY SILT/SAN	ID, very fine grain, ght brown and grey, no		
17-	0.0			SP	50		odor,	.		
18- - - - - - - - - - -	0.0			SP	50		CLAYEY SILT/SAN brown, no odor,	ID, STA, dry, light reddish		
20-	0.0			CL	60		SANDY SILTY CLA reddish brown and fine grain sand,	Y, low, very stiff, dry, light light grey, no odor, very		
22-	0.0			CL	90		SANDY SILTY CLA	AY, STA, no odor,		— 2" Sch 40 PVC w/Threaded Joints
24	0.0			CL	60		SANDY SILTY CLA	AY, STA, no odor,		
26-	0.0			CL	70		SANDY SILTY CLA	AY, STA, no odor,		
28-	0.0			CL			SANDY SILTY CLA	AY, STA, no odor,		
1010 Tr	avis Stre	et					DiSorbo Cor	nsulting, LLC		8501 N. MoPac Expy, Suite 300 Austin Texas 78759

Houston, Texas 77002 713-955-1230

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D Envir	onme Wes Jo	Senta stern Gall ob No	O al Co Refining lup Refin b. WEST	nsult g SW, In nery F17020	ing Fi	C rm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	WELL NO. BW-5B (Sheet 3 of 4) Elev., TOC (ft.msl) : 6876.82 Elev., PAD (ft.msl) : 6874.32 Elev., GL (ft.msl) : 5874.32 Site Coordinates : N : N1633269.31 E : W2542551.84	
									Completion Results	
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	ESCRIPTION	Well No. BW-5B	
29-	0.0			CL	60					
30	0.0			CL	60		SILTY CLAY, low, brown, no odor, sc	firm to stiff, damp, reddish fter than above,		
32-	0.0			CL	70		SILTY CLAY, STA	a, no odor, trace grey clay,		
34	0.0			CL	70		SILTY CLAY, STA	a, no odor, trace grey clay,		
36-	0.0			CL	60		SILTY CLAY, STA	, no odor,		
38	0.0			CL	70		SILTY CLAY, low, reddish brown, no	stiff to very stiff, damp, odor,		
40	0.0			CL	70		SILTY CLAY, STA	a, stiff, damp, no odor,		
42	0.0			CL	60		SILTY CLAY, STA	۸,		
44	0.0			CL			SILTY CLAY, STA	a, calcareous,	Bentonite Pellets	
1010 Tr Houstor 713-955	DiSorbo Consulting, LLC 8501 N. MoPac Expy, Suite 300 Austin, Texas 77002 13.955-1230 512-693-4190									

	D	PI S	5	0	rk)(C	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"	WELL NO. BW-5B (Sheet 4 of 4)	
	Envir	Onmo Wes Jo	ent stern Gal ob No	al CC Refinin lup Refi o. WES	g SW, Ir nery T17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon Hand Auger to .5' : 58' : Not Encountered : 06/23/2017 : 06/23/2017	Elev., TOC (ft.msl) : 6876.82 Elev., PAD (ft. msl) : 6874.32 Elev., GL (ft. msl) : Site Coordinates : N : N1633269.31 E : W2542551.84	
										Completion Results	
	Depth (ft.)	PID (ppm)	Saturation	Lithology	nscs	Recovery	Sample	DE	SCRIPTION	Well No. BW-5B	
	45-	0.0		V//		60	 				
	46-			$\left\langle \right\rangle$				SILTY CLAY, STA	,		
	47 -	0.1			CL	60					
	48							SILTY CLAY, low,	very stiff, damp, light	2" Sch 40 PVC w/Threaded Joints	
	49	0.0			CL	80		reddish brown, no o at base,	odor, trace pink sandstone		
	- 50-								trace grow alow and		
	- 51	0.0			CL	70		sandstone present	, inde grey clay and ,		
	- - 52-										
lod.		0.0				20		SILTY CLAY, STA	, sandstone present,	- 10/20 Sieve Sand Filter Pack	
s\BW-5B		0.0				20				Screen w/Threaded Joints	
dary Well	54							SILTY CLAY, low, very stiff, damp/dry, reddish brown and grey, bluish grey at base,			
iery∖Boun	55	0.0			CL	80					
tern Refir	56-							SILTY CLAY, STA	, increase in bluish grey		
ples\Wes	57 -	0.0			CL	90					
Tech∖sam	58									2" Flush Threaded	
ments\M-	59-									Sch 40 F VC Cap	
nes\Docu.	60										
sers/choln	- 61 —										
03-29-2018 C:\Us	1010 Tra Houston 713-955	avis Stre n, Texas 5-1230	et 7700	2				DiSorbo Co	nsulting, LLC	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190	

D	onme Wes Jo	5 enta tern Gall ob No	O al Co Refining up Refin wEST	nsult o SW, In hery 17020	ing Fi	D rm	Geologist:Driller:Drilling Rig:Drilling Method:Sampling Method:Comments:Total Depth:Ground Water:Start Date:	Tracy Payne Enviro-Drill Inc/Cohagan CME75 Hollow Stem Auger 7 1/4" 2' Split Spoon 76' 68' 06/19/2017	Elev., TOC (f Elev., PAD (f Elev., GL (ft. Site Coordina N	(ft.msl) : 6876.85 (ft.msl) : 6874.22 . msl) : nates : : N1633279.54
							Saturation	06/21/2017	E	: vv2542553.04
							_▼ Saturation			Completion Results
(ft.)	(mdc	ation	ЛВс	~	/ery	le			Well N	No. BW-5C
Depth	d) OII	Satura	Lithold	nscs	Recov	Samp	DES	CRIPTION		
-3- -2- -1-										Steel Protective Casing
0							SILTY CLAY, low, firr	n, drv, brown, no odor.		Concrete Pad - 4'x4'x6"
1-	0.0			CL	100			n, ary, cromi, no caoi,		
2	0.1			CL	100		SILTY CLAY, SIMILA odor,	R TO ABOVE (STA), no		
4 - - 5 -	0.0			CL	100		SILTY CLAY, STA, n	o odor,		
6- - 7-	0.0			СН	40		CLAY, high, very stiff	, dry, brown, no odor,		
8- - 9-	0.1			СН	80		CLAY, STA, no odor,			
10-			\square	СН	60		CLAY, STA, no odor,			Grout
11-	0.0			CL	60		SILTY CLAY, low, ve	ry stiff, dry, calcareous,		
12-	0.1			SP	90		GRAVELLY SILT/SA dense, dry, tan, no oc gravel,	ND, very fine, very for, sandstone and chert		
14	0.0			CL	90		SILTY CLAY, low, firr damp, reddish brown and very fine grain sa	n to stiff/crumbly, dry to and grey, trace gravel and, no odor,		
16- - - 17-	0.0			SP			CLAYEY SILT/SAND firm/crumbly, dry, ligh odor,	, very fine grain, It brown and grey, no		12 A A A A A A A A A A A A A A A A A A A
1010 Tra Houstor	avis Stre I, Texas	et 77002	2				DiSorbo Cons	sulting, LLC		8501 N. MoPac Expy, Suite 300 Austin, Texas 78759

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	Enviro	onmo Wes	Sent stern Gal ob No	Refining lup Refi b. WES	g SW, In nery T17020	ing Fi	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon : : 76' : 68' : 06/19/2017 : 06/21/2017	Elev., TOC (ft Elev., PAD (ft. Elev., GL (ft. r Site Coordinat N E	ELL NO. BW-5C (Sheet 2 of 4) .msl) : 6876.85 .msl) : 6874.22 nsl) : tes : : N1633279.54 : W2542553.04
								Saturation Saturation			Completion Results
	(ft.)	(md	ttion	Я		ery	е			Well No	b. BW-5C
	Depth	d) OII	Satura	Litholo	nscs	Recov	Sampl	DE	SCRIPTION		
	17-	0.0			SP	50					
	18 - 19 -	0.0			SP	50		CLAYEY SILT/SAI brown, no odor,	ND, STA, dry, light reddish		
	20 21	0.0			CL	60		SANDY SILTY CL reddish brown and fine grain sand,	AY, low, very stiff, dry, light light grey, no odor, very		
	22-	0.0			CL	90		SANDY SILTY CL	AY, STA, no odor,		
	24 25	0.0			CL	60		SANDY SILTY CL	AY, STA, no odor,		
N-5C.boi	26 27	0.0			CL	70		SANDY SILTY CL	AY, STA, no odor,		2" Sch 40 PVC w/Threaded Joints
oundary Wells\B	28 - 29 -	0.0			CL	60		SANDY SILTY CL	AY, STA, no odor,		Grout
stern Refinery\Bo	30 - 31 -	0.0			CL	60		SILTY CLAY, low, brown, no odor, so	firm to stiff, damp, reddish fter than above,		
ch\samples\We	32 - 33 -	0.0			CL	70		SILTY CLAY, STA	, no odor, trace grey clay,		
ocuments/M-Te	34 35	0.0			CL	70		SILTY CLAY, STA	, no odor, trace grey clay,		
sers\cholmes\D	36 37	0.0			CL			SILTY CLAY, STA	, no odor,		
03-29-2018 C:\U	1010 Tra Houston 713-955	avis Stre I, Texas I-1230	et 7700	2				DiSorbo Co	nsulting, LLC		8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

1	Enviro	onmo Wes	Sent stern Gal ob No	Refining lup Refi b. WES	g SW, In nery T17020	ing Fi	C	Geologist: Tracy PayneDriller: Enviro-Drill IrDrilling Rig: CME75Drilling Method: Hollow StemSampling Method: 2' Split SpoorComments:Total Depth: 76'Ground Water: 68'Start Date: 06/19/2017Finish Date: 06/21/2017	nc/Cohagan Auger 7 1/4" - n	WELL Elev., TOC (ft.msl) Elev., PAD (ft. msl) Elev., GL (ft. msl) Site Coordinates N E	NO. BW-5C (Sheet 3 of 4) : 6876.85 : 6874.22 : : : : N1633279.54 : W2542553.04
								Saturation Saturation		Com	oletion Results
	(H.)	(mc	tion	gy		ыy	0			Well No. BW-5	5C
	Depth	piD (pp	Saturat	Litholo	nscs	Recove	Sample	DESCRIPTIO	N		
	37-	0.0			CL	60					
	38 - - - - - - - - - - - -	0.0			CL	70		SILTY CLAY, low, stiff to very stif reddish brown, no odor,	ff, damp,		
	40 - - 41 -	0.0			CL	70		SILTY CLAY, STA, stiff, damp, n	o odor,		
	42 43	0.0			CL	60		SILTY CLAY, STA,			
	44	0.0			CL	60		SILTY CLAY, STA, calcareous,			
5C.boi	46 47	0.1			CL	60		SILTY CLAY, STA,		2"_	Sch 40 PVC
ary Wells\BW-5	48	0.0			CI	60		SILTY CLAY, STA, pink sandstor very dense, dry, no odor,	ne at base,		out
ery\Bounda	⁴³ 50	0.0			0L			SILTY CLAY, low, stiff, calcareou	us, dry,		
estern Refir	51-	0.0			CL	90		reddish brown and grey, no odor,	,		
ch\samples\We	52 53	0.0			CL	60		SILTY CLAY, STA, sandstone lei near base, very dense, white,	nse present		
cuments\M-Te	54 - 55 -	0.0			CL	80		SILTY CLAY, low, very stiff, dry, brown, occasional grey, no odor,	reddish		
56 - 0.0 CL SILTY CLAY, odor,								SILTY CLAY, STA, increase in g odor,	rey clay, no		ntonite Pellets
03-29-2018 C:\Use	1010 Tra Houston 713-955	avis Stre , Texas -1230	et 7700	2				DiSorbo Consulting, L	LC	8501	N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

D	Í	5	0	rk	0	C	Geologist Driller Drilling Rig Drilling Method	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4"		WELL NO. BW-5C (Sheet 4 of 4)
Envir	ONM Wes Jo	ent stern Gal ob No	al Co Refining lup Refi b. WEST	nsult g SW, Ir nery F17020	ing Fi	rm	Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: 2' Split Spoon : : 76' : 68' : 06/19/2017 : 06/21/2017	Elev., T Elev., F Elev., C Site Co N E	., TOC (ft.msl) : 6876.85 ., PAD (ft. msl) : 6874.22 ., GL (ft. msl) : Coordinates : : N1633279.54 : W2542553.04
							Saturation			Completion Results
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery	Sample	DE	ESCRIPTION	W	Well No. BW-5C
57-	0.0			CL	60					11
58-	0.0				60		SHALE, very dens cracks, fissle, light	e, damp to saturated in t brown and grey, no odor,		— Bentonite Pellets
60 61	0.0				50		SHALE, STA, very brown, no odor,	/ fine grain sand, dry,		2" Sch 40 PVC w/Threaded Joints
62 63	0.0				40		SHALE, STA, san interbedded clays,	d increases with dry,		
64 65	0.0			SST	40		SANDSTONE, ver interbedded with c	ry dense, fine grain, lay lenses, dry, brown,		
66 67 67	0.0			SST	40		SANDSTONE, ST damp in fractures, micaceous, light p	A, interbedded with clay, weathered, soft, urple brown,		
68			<u>KLKL</u>	SP	80		SAND, fine to med brown,	dium, loose, saturated,		■ 2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
69-	0.0			SP	80		SILTSTONE, dens	se, dry/damp, brown,		10/20 Sieve Sand Filter Pack
70-				SST	80		SANDSTONE, firm	n/dense, damp to moist, grey	', -]	
71-				SST	20		SANDSTONE, ST	A, moist,	_/	
72-				SST	10		SANDSTONE, ST	A, moist,		
74-				SST	10		SANDSTONE, ST damp, dark grey to	A, moist, shale at base, stiff, b black.		2" Flush Threaded Sch 40 PVC Cap
76					I	L]	
1010 Tr. Houstor 713-955	avis Stre n, Texas 5-1230	et 7700:	2				DiSorbo Co	onsulting, LLC		8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

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Envir	Wes Jo	5 ent tern Gall ob No	O al Co Refining lup Refi b. WEST	g SW, Ir nery T17020	ing Fi	C	Geologist: Tracy PayneDriller: Enviro-Drill Inc/CdDrilling Rig: CME75Drilling Method: Hollow Stem AugSampling Method: 2' Split SpoonComments: Hand Auger to 5 ITotal Depth: 40'Ground Water: 26'Start Date: 06/12/2017Finish Date: 06/12/2017	ohagan er 7 1/4" BGL Ele Sit N E	WELL NO. OW-59 (Sheet 1 of 3) ev., TOC (ft.msl) : 6889.73 ev., PAD (ft.msl) : ev., GL (ft.msl) : 6887.63 e Coordinates : : N1635547.14 : W2544633.00
							Saturation ▲ Saturation		Completion Results
oth (ft.)	(mqq) (uration	ology	cs	covery (%)	nple			Well No. OW-59
Dep	DID	Sat	Lith	NSU	Rec	Sar	DESCRIPTION		
-3									Steel Protective Casing
	0.0			CL	100		SILTY CLAY, low, firm, damp, brown odor,	, no	Concrete Pad - 4'x4'x6"
2	0.0			CL	100		SILTY CLAY, SIMILAR TO ABOVE (STA),	
4	0.0			CL	100		SILTY CLAY, STA,		
	2.0			СН	70		CLAY, high, stiff, damp, brown, no o	dor,	Grout
8_ - 9_	1.0			CL	80		SILTY CLAY, low, stiff, damp, light b odor, sandy at base,	rown, no	
	0.3			ML	70		SILT, low, compact, damp, brown, no	o odor,	
	0.5			CL			SILTY CLAY, low, very stiff, damp, b odor, trace sand,	rown, no	
1010 Tra Houston 713-955	avis Stre , Texas -1230	et 77002	2				DiSorbo Consulting, LLC		8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

D	n s	5	0	rk	0)	Geologist : Tracy Payne Driller : Enviro-Drill Inc/Cohagan Drilling Rig : CME75 Drilling Method : Hollow Stem Auger 7 1/4"	WELL NO. OW-59 (Sheet 2 of 3)			
Envir	Onme Wes Jo	tern Gall b No	al Co Refining lup Refi D. WEST	nsult g SW, Ir nery [17020	ing Fi	rm	Sampling Method: 2' Split SpoonComments: Hand Auger to 5 BGLTotal Depth: 40'Ground Water: 26'Start Date: 06/12/2017Finish Date: 06/12/2017	Elev., TOC (ft.msl) : 6889.73 Elev., PAD (ft.msl) : Elev., GL (ft.msl) : 6887.63 Site Coordinates : N : N1635547.14 E : W2544633.00			
							Saturation Saturation	Completion Results			
oth (ft.)	(mqq) (uration	ology	cs	covery (%)	nple		Well No. OW-59			
Dep	DIA	Sat	Lith	NSU	Rec	Sar	DESCRIPTION				
13	0.5			CL	50						
15	1.3			СН	50		SILTY CLAY, high, very stiff, damp, brown, no odor,	Grout			
16											
10	1.7			СН	60		SILTY CLAY, STA, no odor,				
18-								Bentonite Pellets			
19	1.1			CL	50		SILTY CLAY, low to moderate, stiff, damp, brown, no odor,	2" SCH 40 PVC w/Threaded Joints			
20-	1.2			CL	50		SANDY SILTY CLAY, low, firm to soft, damp, brown, no odor,				
22-	0.2			CL	60		SANDY CLAY, low, soft, damp, brown, no odor,	- 10/20 Sieve Sand Filter Pack			
24-							SILTY CLAY, low, soft, damp, brown, no				
25-	3.3			CL	70		odor,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints			
26-		▼					SANDY SILT very fine very moist brown no				
27-	10.9			ML	80		odor,				
28-	11.6			ML			SANDY SILT, STA, very moist, no odor,				
29-							DiSorbo Consultina. LLC				
1010 Tr Houstor 713-955	1010 Travis Street Houston, Texas 77002 742 055 122-693-4190										

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03-20-2019 C:\Users\cholmes\Desktop\WEST\OW-59.bor

D Envir	onme Wes	Senta stern Gall ob No	O al Co Refining lup Refining WEST	g SW, In nery T17020	ing Fi	C rm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to 5' BGL : 48' : Not Encountered : 6/13/2017 : 6/13/2017	Elev., TOC († Elev., PAD († Elev., GL (ft. Site Coordin: N E	VELL NO. OW-60 (Sheet 1 of 3) ft.msl) : 6893.51 ft.msl) : msl) : 6891.06 ates : : N1635335.02 : W2545018.21
Depth (ft.)	PID (ppm)	Saturation	Lithology	NSCS	Recovery (%)	Sample	DE	SCRIPTION	Well N	Completion Results
-3 -2 -1										
	6.5			CL	100		SILTY CLAY, low, odor,	firm, damp, brown, no		Concrete Pad - 4'x4'x6"
2	5.8			СН	100		CLAY, high, firm to odor,	o stiff, damp, brown, no		
4- 5-	6.3			СН	100		CLAY, SIMILAR T	O ABOVE (STA), no odor,		
6	8.1			СН	90		CLAY, STA, no od	or,		
8 - 9 -	9.6			СН	100		CLAY, STA, no od	or,		2" Sch 40 PVC w/Threaded Joints
10-	9.1			CL	50		SILTY CLAY, mod no odor,	erate, firm, damp, brown,		
12-	8.2			CL	50		SILTY CLAY, STA	., soft, no odor,		
14-	7.9			CL	70		SILTY CLAY, STA	., firm, no odor,		
16 17	8.3			CL			SILTY CLAY, STA	, no odor,		
1010 Tr	avis Stre	et					DiSorbo Co	nsulting, LLC		8501 N. MoPac Expy, Suite 300

Houston, Texas 77002 713-955-1230 3501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

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	Enviro	onme Wes	Sent stern Gal ob No	O al Co Refininç lup Refi b. WEST	nsult o SW, In hery 17020	ing Fi	C rm	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to 5' BGL : 48' : Not Encountered : 6/13/2017 : 6/13/2017	WELL NO. OW-60 (Sheet 2 of 3) Elev., TOC (ft.msl) : 6893.51 Elev., PAD (ft. msl) : Elev., GL (ft. msl) : 6891.06 Site Coordinates : N : N1635335.02 E : W2545018.21
	Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DE	SCRIPTION	Completion Results Well No. OW-60
	17 - - - - - - - - - - - - - - - - - - -	8.3 10.1			CL CL	70 50		SILTY CLAY, STA	, no odor,	Grout
	20 21 22	15.3			CL	60		SILTY CLAY, mod no odor,	erate, soft, damp, brown,	Bentonite Pellets
	23- 24-	12.1			CL	70		SILTY CLAY, STA	, nim, no odor,	2" Sch 40 PVC w/Threaded Joints
	25 26 27	11.6 10.9			CL	80		SILTY CLAY, STA	, tan-silt pockets	
	28-	10.5			ML	80		CLAYEY SILT, Iov brown and grey, no	w, soft/crumbly, damp, light o odor,	
	30 - 31 - 22 -	11.1			CL	70		SILTY CLAY, low, reddish brown with	firm to crumbly, damp, light trace grey, no odor,	2" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints
EST/OW-60.bor	32 - 33 - 34 -	15.0			CL	70		SILTY CLAY, STA	, no odor,	
Imes\Desktop\W	35 36	12.8			CL	80		SILTY CLAY, Iow,	very stiff, crumbly, damp,	
03-20-2019 C:\Users\chc	37 1010 Tra Houston 713-955	avis Stre , Texas -1230	et 77002	2				light reddish browr	n, grey, no odor,	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

Env	viron	West	ern F Gallu	O al Co Refining up Refi . WEST	nsult g SW, In nery f17020	C C	C	Geologist Driller Drilling Rig Drilling Method Sampling Method Comments Total Depth Ground Water Start Date Finish Date	: Tracy Payne : Enviro-Drill Inc/Cohagan : CME75 : Hollow Stem Auger 7 1/4" : 2' Split Spoon Hand Auger to 5' BGL : 48' : Not Encountered : 6/13/2017 : 6/13/2017	WELL NO. OW-60 (Sheet 3 of 3) Elev., TOC (ft.msl) : 6893.51 Elev., PAD (ft.msl) : Elev., GL (ft.msl) : 6891.06 Site Coordinates : N : N1635335.02 E : W2545018.21
Depth (ft.)		(וווקק) טו ד	Saturation	Lithology	USCS	Recovery (%)	Sample	DE	ESCRIPTION	Completion Results Well No. OW-60
37 38 39 40 41	7 - 12 8 - 12 9 - 10 0 - 10 1 - 9	9.7 2.7			CL ML	70 50 60		SILT, Iow, compac damp, light grey, r SILT, STA, no odc	et to dense/stiff crumbly, to odor, or,	2" Sch 40 PVC Slotted 0.01"
42 43 44 44	2 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1	0.7 0.1	-		ML	60 50	-	SILT, STA, trace v	very fine sand, no odor,	
4	6 9 7 9 8	6			ML	50		SILT, STA, trace r grey, no odor.	eddish brown clay with	Sch 40 PVC Cap
sets/cholmes/Desktop/WESTOW-60.bor 25 25 25 25 25 25 25 25 25 25 25 25 25	9 0 1 2 3 4 5 6 7									
301-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 3001-50 300000000000000000000000000000000000	0 Travis ston, Te ·955-123	Stree xas 7 30	t 7002					DiSorbo Co	onsulting, LLC	8501 N. MoPac Expy, Suite 300 Austin, Texas 78759 512-693-4190

Appendix B Waste Analyses and Waste Manifests



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 30, 2017

Cheryl Johnson Western Refining Southwest, Gallup Rt. 3 Box 7 Gallup, NM 87301 TEL: FAX

RE: Soil T-35 Drill Cuttings

OrderNo.: 1708D66

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/23/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109
Lab Order 1708D66 Date Reported: 8/30/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GallupProject: Soil T-35 Drill CuttingsLab ID: 1708D66-001M		SLUDGE	Clien Col Ro	nt Sample llection I eceived I	e ID: T-3: Date: 8/23 Date: 8/23	5 Soil 0 3/2017 9 3/2017 1	Clean Up 9:50:00 AM 3:55:00 PM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE C	ORGANICS						Analyst: TOM	
Diesel Range Organics (DRO)	10000	31	190		mg/Kg	20	8/28/2017 2:56:47 PM	33552
Motor Oil Range Organics (MRO)	4400	960	960		mg/Kg	20	8/28/2017 2:56:47 PM	33552
Surr: DNOP	0	0	70-130	S	%Rec	20	8/28/2017 2:56:47 PM	33552
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	5.0		mg/Kg	1	8/25/2017 11:01:22 AM	33543
Surr: BFB	77.3	0	54-150		%Rec	1	8/25/2017 11:01:22 AM	33543
MERCURY, TCLP							Analyst: pmf	
Mercury	ND	0.00075	0.020		mg/L	1	8/28/2017 1:59:07 PM	33583
EPA METHOD 6010B: TCLP METALS							Analyst: MED	
Arsenic	0.040	0.013	5.0	J	mg/L	1	8/28/2017 1:57:50 PM	33562
Barium	0.68	0.00062	100	J	mg/L	1	8/28/2017 1:57:50 PM	33562
Cadmium	ND	0.00063	1.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Chromium	ND	0.0017	5.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Lead	ND	0.0053	5.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Selenium	ND	0.032	1.0		mg/L	1	8/28/2017 1:57:50 PM	33562
Silver	ND	0.0018	5.0		mg/L	1	8/28/2017 1:57:50 PM	33562
EPA METHOD 8260B: TCLP COMPOUNDS	6						Analyst: DJF	
Benzene	ND	0.049	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Toluene	ND	0.040	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Ethylbenzene	ND	0.035	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
1,2-Dichloroethane (EDC)	ND	0.052	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
2-Butanone	ND	0.30	200		ppm	10	8/25/2017 11:59:53 AM	33543
Carbon tetrachloride	ND	0.049	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Chlorobenzene	ND	0.030	100		ppm	10	8/25/2017 11:59:53 AM	33543
Chloroform	ND	0.030	6.0		ppm	10	8/25/2017 11:59:53 AM	33543
1,4-Dichlorobenzene	ND	0.056	7.5		ppm	10	8/25/2017 11:59:53 AM	33543
1,1-Dichloroethene	ND	0.20	0.70		ppm	10	8/25/2017 11:59:53 AM	33543
Tetrachloroethene (PCE)	ND	0.040	0.70		ppm	10	8/25/2017 11:59:53 AM	33543
	ND	0.061	0.50		ppm	10	8/25/2017 11:59:53 AM	33543
Vinyi chioride	ND	0.042	0.20		ppm	10	8/25/2017 11:59:53 AM	33543
Ayienes, 10tal	ND 106	0.16	0.50		ppm % Paa	10	0/20/2017 11:59:53 AM	33543
Surr: 1,2-Dichloroethane-04	106		70-130		%ReC	10	0/20/2017 11:59:53 AM	33543
Sun: 4-Biomofluoromethene	94.0 104		70-130			10	0/20/2017 11.09.03 AM	33543
Surr: Toluene-d8	96.0		70-130		%Rec	10	8/25/2017 11:59:55 AM	33543
	30.0		10-130		/01/00	10	0/20/2011 11.09.00 AM	33343

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as sp

- Page 1 of 8
- s specified

Lab Order **1708D66**

Date Reported: 8/30/2017

Page 2 of 8

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GallupProject: Soil T-35 Drill CuttingsLab ID: 1708D66-002Matrix: 3		SLUDGE	Clier Co R	nt Sampl llection 1 eceived 1	e ID: Dril Date: 8/23 Date: 8/23	ll Cuttii 3/2017 3/2017	ngs 10:32:00 AM 3:55:00 PM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RA		6					Analyst: TOM	
Diesel Range Organics (DRO)	2.3	1.6	10	J	mg/Kg	1	8/28/2017 3:41:24 PM	33552
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	8/28/2017 3:41:24 PM	33552
Surr: DNOP	93.6	0	70-130		%Rec	1	8/28/2017 3:41:24 PM	33552
EPA METHOD 8015D: GASOLINE RA	ANGE						Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	5.0		mg/Kg	1	8/25/2017 10:37:23 AM	33543
Surr: BFB	77.5	0	54-150		%Rec	1	8/25/2017 10:37:23 AM	33543
MERCURY. TCLP							Analyst: pmf	
Mercury	ND	0.00075	0.020		mg/L	1	8/28/2017 2:00:51 PM	33583
EPA METHOD 6010B: TCLP METAL	_S				-		Analyst: MED	
Arsenic	0.031	0.013	50	.1	ma/l	1	8/28/2017 1:59:04 PM	33562
Barium	1.9	0.00062	100	J	ma/l	1	8/28/2017 1:59:04 PM	33562
Cadmium	ND	0.00063	1.0	°,	ma/l	1	8/28/2017 1:59:04 PM	33562
Chromium	ND	0.0017	5.0		ma/L	1	8/28/2017 1:59:04 PM	33562
Lead	ND	0.0053	5.0		ma/L	1	8/28/2017 1:59:04 PM	33562
Selenium	ND	0.032	1.0		mg/L	1	8/28/2017 1:59:04 PM	33562
Silver	ND	0.0018	5.0		mg/L	1	8/28/2017 1:59:04 PM	33562
EPA METHOD 8260B: TCLP COMPO	DUNDS						Analyst: DJF	
Benzene	ND	0.049	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Toluene	ND	0.040	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Ethylbenzene	ND	0.035	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
1,2-Dichloroethane (EDC)	ND	0.052	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
2-Butanone	ND	0.30	200		ppm	10	8/25/2017 12:28:45 PM	33543
Carbon tetrachloride	ND	0.049	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Chlorobenzene	ND	0.030	100		ppm	10	8/25/2017 12:28:45 PM	33543
Chloroform	ND	0.030	6.0		ppm	10	8/25/2017 12:28:45 PM	33543
1,4-Dichlorobenzene	ND	0.055	7.5		ppm	10	8/25/2017 12:28:45 PM	33543
1,1-Dichloroethene	ND	0.20	0.70		ppm	10	8/25/2017 12:28:45 PM	33543
Tetrachloroethene (PCE)	ND	0.040	0.70		ppm	10	8/25/2017 12:28:45 PM	33543
Trichloroethene (TCE)	ND	0.060	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Vinyl chloride	ND	0.042	0.20		ppm	10	8/25/2017 12:28:45 PM	33543
Xylenes, Total	ND	0.16	0.50		ppm	10	8/25/2017 12:28:45 PM	33543
Surr: 1,2-Dichloroethane-d4	106		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543
Surr: 4-Bromofluorobenzene	91.1		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543
Surr: Dibromofluoromethane	104		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543
Surr: Toluene-d8	97.5		70-130		%Rec	10	8/25/2017 12:28:45 PM	33543

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

1708D66-001B T-35 SOIL CLEAN UP Collected date/time: 08/23/17 09:50

SAMPLE RESULTS - 01

Wet Chemistry by Method 9012 B

Wet Chemistry by	Method 9012	3					1
	Result	<u>Qualifier</u>	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		
Reactive Cyanide	ND		0.250	1	08/25/2017 22:23	<u>WG1013530</u>	Ťτ
Wet Chemistry by	Method 9034-	9030B					3
***********	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		4
Reactive Sulfide	ND		25.0	1	08/25/2017 16:05	<u>WG1013568</u>	
Wet Chemistry by	Method 9045)					s Sr
	Result	Qualifier	Dilution	Analysis	Batch	######################################	
Analyte	su			date / time			[°] Qc
Corrosivity by pH	8.51	<u>T8</u>	1	08/29/2017 10:3	37 <u>WG1014298</u>		- 900 (FF)
Sample Narrative:							΄GΙ
L931847-01 WG1014298: 8.	51 at 20.5c						δ
Wet Chemistry by	Method D93/10	D10A					
	Result	Qualifier	Dilution	Analysis	Batch		°Sc
Analyte	Deg. F			date / time			L]
lgnitability	DNI at 170		1	08/28/2017 13:0	0 WG1014260		

1708D66-002B DRILL CUTTINGS Collected date/time: 08/23/17 10:32

SAMPLE RESULTS - 02

Wet Chemistry by Method 9012 B

	Result	Qualifier	RDL	Dilution	Analysis	Batch	icρ
Analyte	mg/kg		mg/kg		date / time	—	
Reactive Cyanide	ND		0.250	1	08/25/2017 22:26	<u>WG1013530</u>	² Tc
Wet Chemistry by	Method 9034-	9030B					3
	Result	<u>Qualifier</u>	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		4
Reactive Sulfide	ND		25.0	1	08/25/2017 16:05	<u>WG1013568</u>	Cn
Wet Chemistry by	Method 9045E)					Sr
	Result	Qualifier	Dilution	Analysis	Batch	анан на	
Analyte	SU			date / time			^в Ос
Corrosivity by pH	10.0	<u>T8</u>	1	08/29/2017 10:3	7 <u>WG1014298</u>	a 1996 finan odorozani kandina 1996 ya 10 kura na maka kada kunda sa kata kunda makana kata 1999 ya 1999 ya 19	
Sample Narrative:							⁷ Gl
L931847-02 WG1014298: 10).03 at 20.1c						
							^e Al
Wet Chemistry by	Method D93/10	10A					
	Result	Qualifier	Dilution	Analysis	Batch		°Sc
Analyte	Deg. F			date / time			
Ignitability	DNI at 170		1	08/28/2017 13:00	D WG1014260	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	······

WG10135 Wet Chemistry b	.30 39 Method 9012 B			Ø	UALITY	CONTF 1931847-(ROL SU	JMMAF	≻		NO	E LAB. NATIONWIDE.	¥,
Method Blank	< (MB)												
(MB) R3244658-1	08/25/17 22:01					name and a second and an an an a line of the Add and the Ad		TATING AND	NV/KANA) ANA ANA ANA ANA ANA ANA ANA ANA ANA			and an address of the first of the second	0
Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg									
Reactive Cyanide	D		0.039	0.250									<u> </u>
L931815-01 Or	riginal Sample ((os) • Dupli	cate (DUP)										S .
(OS) L931815-01 08	8/25/17 22:20 • (DUP)	R3244658-6	08/25/17 22:2	1	A CONTRACTOR AND A						*****		្រ
	Original Result	t DUP Result	Dilution D(D RPD D	UP Qualifier	DUP RPD Limits							
Analyte	mg/kg	mg/kg	%			26							Ś
Reactive Cyanide	ND Como D	0.0532	1 0		-	20							C
		Coj • Lauc				(IC (LUSU)					YN DYN GAN GAN GANNAR AN AM		ص ت
2-90044725X (CJJ)	08/22/1/22:02 • (LC Spike Amount	LCS Result	3-3 08/25/1/ 2 LCSD Result	22:03 LCS Rec.	I CSD Rec	Rec Limits	l CS Qualifi	er I CSD Qu	alifiar PDD	DDD Limite			
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			2
Reactive Cyanide	2.50	2.57	2.47	103	66	50-150			4	20			
L931767-05 C	Driginal Sample ((OS) • Matr	ix Spike (N	(IS) • Matrix	x Spike Du	Iplicate (MS)					na n		
	Spike Amount	Original Resul	t MS Result	MSD Result	+036-3 UG/23 MS.Rec.	/1/ 22:18 MSD Rec.	Dilution	Roc Limits	MS Qualifier	MSD Oualifier D	nai Anna Mai		
Analyte	mg/kg	mg/kg	тд/кд	mg/kg	88	3e				- *	در ا		
Reactive Cyanide	1.67	QN	1.55	1.57	89	60	· · ·	75-125	· · · ·	L	20	n, ng∂r kanganganganganan kankek a mag	
	- - - - - - -		:		:								
Hall Free	ACCOUNT:	oratory		ЯЧ	QJECT:		S	ö		DATE/TIN	Ē		
	לוו הזווו ובנו זרמו שוומוא אוס רמוזיי						E6.1	1847		08/29/17 1/	212		

	9034-90308
WG1013568	Wet Chemistry by Method

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

¥

Michinon algulk (M	10				SCHOOLS AND
(MB) WG1013568-1 08/.	25/17 16:05			ANALY MALE AND AN ANY ANY ANY ANY ANY ANY ANY ANY ANY	Ô
	MB Result	MB Qualifier	MB MDL	MB RDL	107.12 10 107.12 10 107.12 10 10 10 10 10 10 10 10 10 10 10 10 10
Analyte	mg/kg		mg/kg	Jug/kg	2 2
Reactive Sulfide	n		7.63	25.0	
					Ss
1 931847-01 Orioin	nal Samola (((al IO) ate-		
		1.454 · 1.00			4
(OS) L931847-01 08/25	5/17 16:05 • (DUP)	WG1013568-4	08/25/17 16:05	1994 STATUS (1997) Advances of the maximum and an and an and an and the status of the status of the status of t	Б С
	Original Result	t DUP Result	Dilution DUP	PD DUP Qualifier DUP RPD Limits	<u>,</u>

%	0.000 20	
mg/kg	QN	
mg/kg	QN	

Sr

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SC

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1

		SD Qualifier RPD Limits	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	0.000 20
	******	LCS Qualifier L		
e (LCSD)		Rec. Limits	%	70.0-130
le Duplicaté		LCSD Rec.	8	73.1
trol Samp	16:05	LCS Rec.	%	73.1
ratory Con	58-3 08/25/17	LCSD Result	mg/kg	73.1
.CS) • Labo	CSD) WG10135(LCS Result	mg/kg	73.1
rol Sample (L	8/25/17 16:05 • (LC	Spike Amount	mg/kg	100
Laboratory Cont	(LCS) WG1013568-2 0.		Analyte	Reactive Sulfide

	itory
ACCOUNT:	Hall Environmental Analysis Labora

SDG: L931847

PROJECT:

Date/TIME: 08/29/17 14:15

WG1014298 Wet Chemistry by Md	s Iethod 9045D		QUALITY	Y CONTR 1931847-0	OL SUM	MARY		ONE LAB, NATIONWIDE.	¥
L931847-02 Origi	iinal Sample (OS) • Du	uplicate (DUP)							
(OS) L931847-02 08/25	9/17 10:37 • (DUP) WG1014295 Original Result DUP Result	8-3 08/29/17 10:37 It Dilution DUP RP1	D DUP Qualifier	DUP RPD			na mana na mang mang mang mang mang mang		
Analyte	ns ns	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Limits %					, L C
Corrosivity by pH	10.0 10.0	1 0.399	18	2					3 2 2
 Sample Narrative: 05: 10.03 at 20.1c DUP: 10.04 at 20.2c 									
Laboratory Contro	rol Sample (LCS) • Lat	boratory Control	l Sample Duplice	ate (LCSD)					λ
(LCS) WG1014298-1 08/	V29/17 10:37 • (LCSD) WG1014	1298-2 08/29/17 10:37	L	Normal an an one of the Andrew Andrew Andrew and a line of the Andrew Andrew Andrew Andrew Andrew Andrew Andrew	Non-Book of the set of			NAMANANA MANJARAWANA NA KATATATATATATATATATATATATATATATATATATA	o Oc
Analyte	Spike Amount LCS Result su su	t LCSD Result L(su %	CS Rec. LCSD Rec. %	. Rec. Limits %	LCS Qualifier	LCSD Qualifier RPD %	RPD Limits %		<u> </u>
Corrosivity by pH	10.0	10.1	M 101	98.4-102		0.000			ō
Sample Narrative: LCS: 10.06 at 20.0c LCSD: 10.06 at 20.1c									
	ACCOUNT:		PROJECT:		SDG.		DATE/TIME:		
Hall Environm	mental Analysis Laboratory				L931847		08/29/17 14:15		

WG10142 Wet Chemistry t	.60 by Method D93/10	AON		Q	UALITY	CONTR 1931847-0	OL SUN	1 MARY		ONE LAB. NATIONWIDE.	₿¥́
L931842-01 C	Jriginal Sample	dnd • (SO)	licate (DUP)								
(OS) L931842-01 (08/28/17 13:00 • (DUF	o) R3244961-3	08/28/17 13:00	STATISTICS AND A DOWN TO A DOWN		THE REAL PROPERTY AND AND AND AND AND AND AND AND A PROPERTY AND AND A PROPERTY	*****		a da a su a da a da a da a da a da a da		0
	Original Resi	ult DUP Result	Dilution DUF	, RPD	UP Qualifier L	NUP RPD mits					2+2
Analyte	Deg. F	Deg. F	98		8<						<u>0</u>
Ignitability	131	135	1 3.00	_	Ť	0					SS
L931859-01 C	Driginal Sample	dna • (SO)	licate (DUP)								L L L
(OS) L931859-01 (08/28/17 13:00 • (DUF	^o) R3244961-4	08/28/17 13:00			*****	****		a mana mana mana mana mana kata na kata kata kata kata kata kat	n de anna an fha an ann ann ann ann ann ann ann ann an	
	Original Rest	ult DUP Result	Dilution DUF	RPD D	UP Qualifier D	UP RPD mits					ئې دې
Analyte	Deg. F	Deg. F	%	I	, 34	6					5
Ignitability	148	142	1 4.00	6	+	C					O O
Laboratory C	ontrol Sample (LCS) • Lab(oratory Cont	rol Samp	le Duplicat	e (LCSD)					Ğ
(LCS) R3244961-1	08/28/17 13:00 • (FC	SD) R3244961-:	2 08/28/17 13:00			~				o de la compañía de l	
	Spike Amour	nt LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier RPD	RPD Limits		2
Analyte	Deg. F	Deg. F	Deg. F	8 ⁸	*	8		%	%		
Ignitability	82.0	6.6/	80.3	0.76	98.0	96.0-104		0.000	10		°S S
							·		,		
								:			
	ACCOUNT:			Чd	(OJECT:		SDG:		DATE/TIME:		

GLOSSARY OF TERMS

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
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.
Rec.	Recovery.
Qualifier	Description
Т8	Sample(s) received past/too close to holding time expiration.



ACCOUNT: Hall Environmental Analysis Laboratory

DATE/TIME: 08/29/17 14:15

Client: Wester Project: Soil T	ern Refining S -35 Drill Cut	outhwe	st, Gallup							
Sample ID LCS-33552	Samp1 Batcl	ype: LC	:S 552	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Prep Date: 8/25/2017	Analysis D	Date: 8/	28/2017	S	SeqNo: 1	432934	Units: mg/ł	٨g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.0	73.2	114			
Surr: DNOP	4.8		5.000		95.7	70	130			
Sample ID MB-33552	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batcl	h ID: 33	552	F	RunNo: 4	5247				
Prep Date: 8/25/2017	Analysis E	Date: 8/	28/2017	5	SeqNo: 1	432935	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.4	10								J
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		97.7	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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 3 of 8

24

940

5.0

24.90

996.0

Client: Project:	Western Soil T-35	Refining So 5 Drill Cutt	outhwe ings	st, Gallup							
Sample ID	MB-33543	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBS	Batch	ı ID: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8 /	/25/2017	٤	SeqNo: 1	432593	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang Surr: BFB	je Organics (GRO)	ND 790	5.0	1000		78.6	54	150			
Sample ID	LCS-33543	SampT	ype: L(Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	LCSS	Batch	ID: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8/	/25/2017	S	eqNo: 1	432594	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Ranç	je Organics (GRO)	24	5.0	25.00	0	95.0	76.4	125			
Surr: BFB		880		1000		88.1	54	150			
Sample ID	1708D66-001AMS	SampT ⁻	ype: M:	S	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	T-35 Soil Clean U	p Batch	ID: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8/	/25/2017	S	eqNo: 1	432598	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Ranç	je Organics (GRO)	24	5.0	24.95	0	95.0	77.8	128			
Surr: BFB		930		998.0		92.9	54	150			
Sample ID	1708D66-001AMS	D SampT	ype: M	SD	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	T-35 Soil Clean U	p Batch	1D: 33	543	F	tunNo: 4	5235				
Prep Date:	8/24/2017	Analysis D	ate: 8/	/25/2017	S	eqNo: 1	432599	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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

Gasoline Range Organics (GRO)

Surr: BFB

- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range

94.9

94.7

0

77.8

54

128

150

0.326

0

20

0

Page 4 of 8

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#: 1708D66 30-Aug-17

Client:WesternProject:Soil T-35	Refining S 5 Drill Cutt	outhwe	st, Gallup							
Sample ID mb-33543	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: PBS	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	ate: 8/	25/2017	S	SeqNo: 1	432746	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050					-			
1,2-Dichloroethane (EDC)	ND	0.050								
2-Butanone	ND	20								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	10								
Chloroform	ND	0.60								
I,4-Dichlorobenzene	ND	0.75								
I,1-Dichloroethene	ND	0.070								
Fetrachloroethene (PCE)	ND	0.070								
Trichloroethene (TCE)	ND	0.050								
/invl chloride	ND	0.020								
Surr: 1.2-Dichloroethane-d4	0.52		0.5000		104	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.8	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.66		0.5000		96.3	70	130			
	0110		0.0000		0010					
Sample ID Ics-33543	SampT	ype: LC	S.	Tes	tCode: El	PA Method	8260B: TCLP	Compou	nds	
Client ID: LCSS	Batch	ו ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	ate: 8/	25/2017	S	SeqNo: 1	432747	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.050	1.000	0	111	70	130			
Chlorobenzene	0.94	0.050	1.000	0	93.9	70	130			
1,1-Dichloroethene	1.2	0.050	1.000	0	120	68.8	161			
Trichloroethene (TCE)	1.0	0.050	1.000	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	0.55		0.5000		109	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.2	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		104	70	130			
Surr: Toluene-d8	0.49		0.5000		98.3	70	130			
Sample ID 1708d66-002ams	SampT	уре: М	3	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: Drill Cuttings	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	ate: 8/	25/2017	5	SeqNo: 1	432750	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.3	0.50	0.9990	0	127	61.9	146			
Chlorobenzene	1.0	0.50	0.9990	0	103	70	130			
1,1-Dichloroethene	1.3	0.50	0.9990	0	125	37.1	170			
Trichloroethene (TCE)	1.2	0.50	0.9990	0	116	49.8	150			
Surr: 1,2-Dichloroethane-d4	5.5		4.995		109	70	130			
Duolifiors										

* 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 Detection Limit
- W Sample container temperature is out of limit as specified

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montai			50-Aug-17
Western Re Soil T-35 I	efining Southwest, Gallup Drill Cuttings		
6-002ams	SampType: MS	TestCode: EPA Method 8260B: TCLP Compounds	

Sample ID 1708d66-002ams	SampT	туре: МS	3	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: Drill Cuttings	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	Date: 8/	25/2017	S	SeqNo: 1	432750	Units: ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	4.8		4.995		95.8	70	130			
Surr: Dibromofluoromethane	5.3		4.995		106	70	130			
Surr: Toluene-d8	4.9		4.995		98.0	70	130			
Sample ID 1708d66-002amsc	I SampT	- уре: М	SD	Tes	tCode: E	PA Method	8260B: TCLP	Compou	nds	
Client ID: Drill Cuttings	Batch	n ID: 33	543	F	RunNo: 4	5237				
Prep Date: 8/24/2017	Analysis D	Date: 8/	25/2017	S	SeqNo: 1	432751	Units: ppm			
Prep Date: 8/24/2017 Analyte	Analysis D Result	0ate: 8/ PQL	25/2017 SPK value	SPK Ref Val	SeqNo: 1 %REC	432751 LowLimit	Units: ppm HighLimit	%RPD	RPDLimit	Qual
Prep Date: 8/24/2017 Analyte Benzene	Analysis D Result 1.1	Date: 8/ PQL 0.50	25/2017 SPK value 0.9980	SPK Ref Val	SeqNo: 1 %REC 115	432751 LowLimit 61.9	Units: ppm HighLimit 146	%RPD 10.2	RPDLimit 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene	Analysis D Result 1.1 0.95	Date: 8/ PQL 0.50 0.50	25/2017 SPK value 0.9980 0.9980	SPK Ref Val 0 0	SeqNo: 1 %REC 115 94.8	432751 LowLimit 61.9 70	Units: ppm HighLimit 146 130	%RPD 10.2 8.41	RPDLimit 20 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene	Analysis D Result 1.1 0.95 1.2	Date: 8/ PQL 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980	SPK Ref Val 0 0 0	SeqNo: 1 %REC 115 94.8 119	432751 LowLimit 61.9 70 37.1	Units: ppm HighLimit 146 130 170	%RPD 10.2 8.41 5.29	RPDLimit 20 20 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE)	Analysis D Result 1.1 0.95 1.2 1.1	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980	SPK Ref Val 0 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106	432751 LowLimit 61.9 70 37.1 49.8	Units: ppm HighLimit 146 130 170 150	%RPD 10.2 8.41 5.29 8.97	RPDLimit 20 20 20 20 20	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4	Analysis D Result 1.1 0.95 1.2 1.1 5.6	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980 4.990	SPK Ref Val 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106 111	432751 LowLimit 61.9 70 37.1 49.8 70	Units: ppm HighLimit 146 130 170 150 130	%RPD 10.2 8.41 5.29 8.97 0	RPDLimit 20 20 20 20 20 0	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	Analysis E Result 1.1 0.95 1.2 1.1 5.6 4.7	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980 4.990 4.990	SPK Ref Val 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106 111 95.1	432751 LowLimit 61.9 70 37.1 49.8 70 70	Units: ppm HighLimit 146 130 170 150 130 130	%RPD 10.2 8.41 5.29 8.97 0 0	RPDLimit 20 20 20 20 0 0	Qual
Prep Date: 8/24/2017 Analyte Benzene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane	Analysis E Result 1.1 0.95 1.2 1.1 5.6 4.7 5.3	Date: 8/ PQL 0.50 0.50 0.50 0.50	25/2017 SPK value 0.9980 0.9980 0.9980 0.9980 4.990 4.990 4.990	SPK Ref Val 0 0 0 0	SeqNo: 1 %REC 115 94.8 119 106 111 95.1 105	432751 LowLimit 61.9 70 37.1 49.8 70 70 70 70	Units: ppm HighLimit 146 130 170 150 130 130 130	%RPD 10.2 8.41 5.29 8.97 0 0 0	RPDLimit 20 20 20 20 0 0 0	Qual

Qualifiers:

Client: Project:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Practical Quanitative Limit PQL
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 8

Result

PQL

Wester Soil T-	rn Refining Southwest, Gallup 35 Drill Cuttings	
83	SampType: MBLK	TestCode: MERCURY, TCLP
	Batch ID: 33583	RunNo: 45252
017	Analysis Date: 8/28/2017	SeqNo: 1433185 Units: mg/L

HighLimit

%RPD

RPDLimit

Mercury		ND	0.020								
Sample ID LC	S-33583	SampTy	/pe: LC	S	Test	Code: M	ERCURY, T	CLP			
Client ID: LC	SW	Batch	ID: 33	583	R	unNo: 4	5252				
Prep Date: 8/	/28/2017	Analysis Da	ate: 8/ 2	28/2017	S	eqNo: 1	433186	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0050	0.020	0.005000	0	101	80	120			J

SPK value SPK Ref Val %REC LowLimit

Qualifiers:

Client:

Project:

Client ID:

Prep Date:

Analyte

Sample ID MB-33583

PBW

8/28/2017

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Qual

WO#: **1708D66**

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30-Aug-17

Client: Project:	Wester Soil 7	ern Refining S Γ-35 Drill Cutt	outhwe	st, Gallup							
Sample ID	MB-33562	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	6010B: TCLI	P Metals		
Client ID:	PBW	Batch	h ID: 33	562	F	RunNo: 4	5251				
Prep Date:	8/25/2017	Analysis D	Date: 8/	28/2017	S	SeqNo: 1	433165	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		ND	5.0								
Barium		ND	100								
Cadmium		ND	1.0								
Chromium		ND	5.0								
Lead		ND	5.0								
Selenium		ND	1.0								
Silver		ND	5.0								
Sample ID	LCS-33562	SampT	ype: LC	s	Tes	tCode: El	PA Method	6010B: TCLI	P Metals		
Client ID:	LCSW	Batch	h ID: 33	562	F	RunNo: 4	5251				
Prep Date:	8/25/2017	Analysis D	Date: 8/	28/2017	5	SeqNo: 1	433166	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.56	5.0	0.5000	0	112	80	120			J
Barium		0.49	100	0.5000	0	97.6	80	120			J
Cadmium		0.50	1.0	0.5000	0	100	80	120			J
Chromium		0.50	5.0	0.5000	0	99.4	80	120			J
Lead		0.48	5.0	0.5000	0	95.1	80	120			J
Selenium		0.55	1.0	0.5000	0	111	80	120			J
Silver		0.10	5.0	0.1000	0	103	80	120			J

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 Detection Limit
- W Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental Albu TEL: 505-345-3975 Website: www.hal	Analysis Labora 4901 Hawkin querque, NM 8 FAX: 505-345 lenvironmental	atory s NE 7109 Sam 4107 .com	ple Log-In Check List
Client Name: Western Refining Gallup	Work Order Number:	1708D66		RoptNo: 1
Received By: Isaiah Ortiz	8/23/2017 3:55:00 PM		Iat	-
Completed By: Ashley Gallegos	8/23/2017 4:40:39 PM		AF	
Reviewed By: SKC 08/24/17			U	
Chain of Custody				
1. Custody seals intact on sample bottles?		Yes 🗌	No 🗌	Not Present 🗹
2. Is Chain of Custody complete?		Yes 🗹	No 🗌	Not Present
3. How was the sample delivered?		<u>Courier</u>		
<u>Log In</u>				
4. Was an attempt made to cool the samples	?	Yes 🗸	No 🗌	
5. Were all samples received at a temperature	e of >0° C to 6.0°C	Yes 🔽	No 🗌	NA 🗀
6. Sample(s) in proper container(s)?		Yes 🔽	No 🗍	
7. Sufficient sample volume for indicated test(s)?	Yes 🗹	No 🗌	
8. Are samples (except VOA and ONG) prope	rly preserved?	Yes 🗹	No 🗌	
9. Was preservative added to bottles?		Yes 🗋	No 🔽	NA 🗆
10.VOA vials have zero headspace?		Yes 🗌	No 🗌	No VOA Vials 🗹
11. Were any sample containers received brok	en?	Yes 🗋	No 🗹	# of preserved
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes 🗹	No 🗌	for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain or	f Custody?	Yes 🗹	No 🗆	Adjusted?
14. Is it clear what analyses were requested?		Yes 🗹	No 🗌	
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes 🗹	No 🗌	Checked by:

Special Handling (if applicable)

16.V	Vas client notified of all d	iscrepancies with this order?	Yes 🛄	No 🗌	NA 🗹
	Person Notified:		Date		
	By Whom:		Via: 🗌 eMail 🔲 P	hone 🗌 Fax 📋	In Person
	Regarding:				101.011.010.010.000.000.000.000.000.000
	Client Instructions:	n an		**************************************	

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.4	Good	Yes			

								I	IALL FN	NIMNCOLV	
Client	WESTR	ERN REF	INING	Standard	Rush x	~			NALYS	IS LABORAT	rory
	GALLI	P REFIN	ERY	Project Name					www.haile	nvironmental com	
Mailing Ad	dress;	52 Giant	Crossing Road	Soil - T-35/Dr	ill Cuttings		49	NOT Haw	k ns NE - 1	Albuquerque, NM 87	7105
		Gallup,	NM 87301	Project #:			Ĕ	el. 505-	345-3975	Fax 505-345-4107	7
Phone #		506-722	-3833						Analy	sis Request	
Email or F	ax#:	505-863	-0830	Project Mana	ger						
X Standar	*age;		E Level 4 (Full Validation)	Cheroliohnso	n@wnr com		(0)		d):		
Accreditati	00			Sampler C J(NOSNHO		-	сгь)) -		
L NELAP		o one		On Ice	XYes	D No)BC	10	ŚT		
L) DOB. T	(edi			Sample Temp	perature: 1,4	J	1/01	X3T	/13		
Date	Time	Mattix	Sample RequestID	Container Type and #	Preservativ e Type	HEAL NO. 1708 D.W.	8015D (GR	82608 - (8	RCRA 8 M		
61-62-5	9:50	anos .	T-35 soil clearrup	2-302 (at	None	100 -	X	X	XX		
6-23-17	Lo:32	SOUD	DRILL CUTINGS -	2-302 jar	None	-002	X	X	XX		
Date.	Time:	REFORMER	ite pa	Received by		Date Time	Remark	1			
740 23-17	Time:	Reinquish	ed by	AD'T	4	Bate Time	- 1-				

1 10	FORM HAZARDOUS	1. Generator ID Number		2. Page 1 of	3. Emergency Respor	nse Phone	4. Manifes	t Tracking N	lumber	0 .	-1
5. Ge	enerator's Name and Mailin	g Address		2	Generator's Site Addre	ss (if different t	han mailing addre	300	190	U	
M	VESTERN REFT	NING SOUTHWEST	GALLUP RETINK	NG			and the second second				
0	ALLUP, NM 87.	301									
Gene	erator's Phone:	0			Sec. and				_		
Δ.	dwarced Chemie	on humanet in 180					U.S. EPA ID	Number	-		
7. Tra	ansporter 2 Company Name	9	1				U.S. EPA ID	Number	CAPUIO	097054	0
8. De	signated Facility Name and	d Site Address					U.S. EPA ID	Number			-
8	133 Edith Bive N	ST 107							MADOO	220882	2
Facili	ty's Phone: 505-340-	5220					1				
9a.	9b. U.S. DOT Descriptio	n (including Proper Shipping Name,	Hazard Class, ID Number,		10. Cont	lainers	11 Total	12 1101		N. C. MAR	-
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14 5	pecial Handling Instructions	and Additional Information			~						
5. (GENERATOR'S/OFFEROR	"S CERTIFICATION: I hereby decla led, and are in all respects in proper	are that the contents of this co condition for transport accord	onsignment an	e fully and accurately d	escribed above	by the proper sh tental regulations	ipping name If export shi	, and are clas	ssified, pack	iged,
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ſ.	WESTERN REFINING SOUTHWEST GALLUP REFINING 92 GIAN I CROSSING ROAD							
2	5. Transporter Company Name			U.S. EPA ID N	lumber			
2	6. Transporter Company Name	-		U.S. EPA ID N	lumber			
2' H	 27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) 	28. Contain No.	ners Type	29. Total Quantity	30. Unit Wt./Vol.	31. \	Waste Code	s
	5) Non-RCRANon-DOT Regulated Material Solid (SCIL - DRILL CUTTINGS)	28	DM	16,380	p	NONE		
	(5) UN3077, Environmentally trazerdous substances, solid, n.o.s. (refactory solids), 9, PGII	01	DM	407	P			
	7) Non-RCRA/Non-DOT Regulated Material Solid (USED	03	CF	510	р			
VERATOR	3) Non-DOT Regulated Material Solid (TPH SOIL)	04	OAA	1,000	Li I	NONE		
GE	9) Non-DOT Regulated Material Solid (OIL, PPE, RAGS, DEBRIS)	17	OM	5,404	p	NONE		
	10) Non-DOT Regulated Material Solid (OIL CONTAMINATED DERAMIC SUPPORT MEDIA)	01	-DIA	186	p	NONE	•	
	11) Non-RCRAINon-DOT Regulated Material Solid (spent carbon)	32	DM	11,564	P	NONE		
	12) RQ UN1325, Waste Flammable solids, organic, n.o.s. (cans	01	DM	53	р	10001	0035	FC
	13) Non-DOT Regulated Material Solid (RESIN BEADS)	01	DM	213	p	F005 NONE		-
ł	5) ERG#; ACT14825 WEA(28)55 Dn15) ERG#171; ACT58435 WE ERG#; RC7145 WEA(9)55 Dn15) ERG#171; ACT58435 WE ERG#; RC7145 WEA(9)55 Dn19) ERG#, RC7334 WEA(17)55	A(1)255 D	017) EF 3#; RCI	RG#; AC15	0624 V	(VEA	3)CY	3 ;
SPORTER	X3. Transporter Acknowledgment of Receipt of Materials Signature Signature Acknowledgment of Receipt of Materials Signature Si	0	_	47		M	onth Da	iy L
TRAN	Printed/Typed Name Signature	6				M	onth Da	iy L
ILITY	5. Discrepancy							

Appendix C Field Methods

Field Methods

Pursuant to the Work Plan for the SMW-2 Area Investigation and Boundary Well Installations, additional groundwater monitoring wells were installed downgradient of evaporation ponds EP-6 and EP-9 and in the SMW-2 area. The field methods are described below and individual discussions are presented for the following activities:

- Drilling procedures;
- Soil screening;
- Decontamination procedures;
- Monitor well development;
- Fluid level measurements;
- Purging of wells/groundwater sample collection;
- Sample collection and handling procedures;
- Equipment calibration; and
- Management of investigation derived waste.

Drilling Procedures

The soil borings were drilled using the hollow-stem auger (HSA) method. Soil samples were collected continuously and logged by a qualified geologist in accordance with the Unified Soil Classification System (USCS) nomenclature. As shown on the boring logs, the data recorded included the lithologic interval, symbol, percent recovery, field screening results, and a sample description of the cuttings and core samples.

Soil Screening

Samples obtained from the borings were screened in the field on 2-foot intervals for evidence of contaminants. Field screening results were recorded on the soil boring logs. Field screening results were used to aid in the selection of soil samples for laboratory analysis. The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds.

Visual screening included examining the soil samples for evidence of staining caused by petroleumrelated compounds or other substances that may have caused staining of soils such as elemental sulfur or cyanide compounds. Headspace vapor screening was conducted and involved placing a soil sample in a plastic sealable bag allowing space for ambient air. The bag was sealed, labeled and then shaken gently to expose the soil to the air trapped in the container. The sealed bag was allowed to rest for a minimum of 5 minutes while the vapors equilibrated. Vapors present within the sample bag's headspace were then measured by inserting the probe of a MiniRae 3000 portable volatile organic constituent (VOC) monitor in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs.

Decontamination Procedures

The drilling equipment (e.g., hollow-stem augers) was decontaminated between each borehole using a high pressure potable water wash. The sampling equipment coming in direct contact with the samples (e.g., hand augers and split-spoon samplers) were decontaminated using a brush, as necessary, to remove larger particulate matter followed by a rinse with potable water, wash with nonphosphate detergent, rinse with potable water, and double rinse with deionized water.

Fluid Level Measurements

The depth to separate phase hydrocarbon, if present, and groundwater was measured prior to purging the wells of potentially stagnant groundwater. A Geotech Interface Probe was used to measure fluid levels to 0.01 foot. Fluid level measurements collected during the field activities are presented in Table 6.

Well Development/Purging

All wells were developed/purged using a new disposable bailer attached to the end of the clean rope. The groundwater and sediment removed from the wells were transported to the bundle cleaning pad in sealed 5-gallon buckets or in a plastic tote.

The purge volumes are calculated as follows:

Volume (gallons) = water column thickness (ft) x 3.14 x radius of well casing² (ft) x 7.48 (gals/ft). The calculated purge volumes and actual volumes removed from each well are presented below.

Well (Date)	Water Column Thickness (ft)	Calculated Purge Volume (gallons) – 3 well volumes	Actual Purge Volume (gallons)
BW-4A	Dry	NA	NA
BW-4B	33.43	16	Bailed down at 12

BW-5A	0.07	NA	NA
BW-5B	48.18	24	Bailed down at 16
BW-5C	75.36	37	45
OW-59	13.50	7	Bailed down at 8
OW-60	34.65	18	Bailed down at 12

NA – not applicable

Field measurements of groundwater stabilization parameters included pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature and the readings are presented in Table 5.

Sample Collection and Handling Procedures

Soil samples were collected using split-spoon samplers. The selected portion of the sample interval was placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. Three soil samples were collected for VOC analysis in the following manner:

- Two sample aliquots were collected using a syringe for low-level VOC analysis pursuant to EPA method 5035. For the sodium bisulfate preserved kits, 4-5 grams (4cc) of soil was injected into each vial using the syringe. The syringes were disposed after soil collection.
- Two sample aliquots were collected using a syringe for preservation with methanol. For the methanol preserved kits, 10 grams (10 cc) of soil was injected into each methanol vial using the syringe. The syringes were disposed after soil collection.
- The third sample aliquot was placed in an 8-ounce glass jar, which was filled to the top to minimize any head space.

Two additional soil samples were collected in 8-ounce glass jars for semivolatile and metals analyses.

Groundwater samples were collected using clean disposable bailers and clean rope. Surface water samples were collected using a decontaminated polypropylene dipper attached to an extendable handle. The water was immediately poured directly into clean laboratory supplied sample containers with the exception of samples collected for dissolved metals analyses. Samples specified for dissolved metals analyses were filtered in the field using a disposable 0.45 micron filter. A new filter and syringe were used for each sample. All samples were immediately placed into an ice chest with

ice. The samples were maintained in the custody of the sampler until the chain-of-custody form was completed and the ice chest was sealed for delivery to the laboratory.

Equipment Calibration

Soil vapor screening was conducted using a MiniRae 3000 portable VOC monitor. The instrument was calibrated at the beginning of each work day to a concentration of 100 ppm isobutylene.

The instruments used to measure groundwater stabilization parameters included an YSI Professional Series Data Logger and YSI Quatro Sonde. The calibration solutions used at the beginning of each day are as follows:

- 4.0 pH solution;
- 7.0 pH solution;
- 10.0 pH solution; and
- 1.413 mS/cm conductivity solution.

Management of Investigation Derived Waste

The drilling rig and drilling equipment were decontaminated on the bundle cleaning pad. The water is diverted to the Refinery's wastewater treatment system up-stream of the API Separator. The decontamination water generated from sampling equipment was collected in buckets and disposed at the bundle cleaning pad at the end of each day of sampling. All development/purge water was collected in five gallon buckets and disposed at the bundle cleaning pad.

Soil cuttings were placed into open top 55-gallon drums and were sealed when not in use. Each drum of soils was labeled and temporarily stored in a concrete curbed area pending waste characterization and disposal.

Appendix D Soil Analytical Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

July 11, 2017

Cheryl Johnson Western Refining Company Rt. 3 Box 7 Gallup, NM 87301 TEL: (505) 722-0231 FAX

RE: SMW-2 AND BOUNDARY WELLS

OrderNo.: 1706910

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 6/15/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

andis

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Client Sample ID: EB01 Collection Date: 6/12/2017 6:10:00 PM **Project:** SMW-2 AND BOUNDARY WELLS Lab ID: 1706910-001 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM Diesel Range Organics (DRO) ND 0.36 1.0 mg/L 1 6/20/2017 4:35:45 PM 32351 Motor Oil Range Organics (MRO) ND 5.0 5.0 mg/L 1 6/20/2017 4:35:45 PM 32351 Surr: DNOP 121 72.4-157 %Rec 6/20/2017 4:35:45 PM 32351 0 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 6/19/2017 4:33:28 PM G43605 Surr: BFB 114 0 52.3-138 %Rec 1 6/19/2017 4:33:28 PM G43605 **EPA METHOD 200.7: METALS** Analyst: pmf Barium 6/20/2017 3:40:02 PM ND 0.00093 0.0020 mg/L 1 A43653 Beryllium ND 0.00029 0.0020 6/20/2017 3:40:02 PM A43653 mg/L 1 Cadmium ND 0.0010 0.0020 mg/L 1 6/20/2017 3:40:02 PM A43653 Chromium ND 0.0011 0.0060 mg/L 1 6/20/2017 3:40:02 PM A43653 Cobalt ND 0.0016 0.0060 mg/L 1 6/20/2017 3:40:02 PM A43653 ND 0.016 1 A43653 Iron 0.020 mg/L 6/20/2017 3:40:02 PM ND 0.0011 Manganese 0.0020 mg/L 1 6/20/2017 3:40:02 PM A43653 ND A43653 Nickel 0.0036 0.010 mg/L 1 6/20/2017 3:40:02 PM Silver ND 0.00088 0.0050 mg/L 1 6/20/2017 3:40:02 PM A43653 Vanadium ND 0.0019 0.050 mg/L 1 6/20/2017 3:40:02 PM A43653 Zinc ND 0.0028 0.010 1 6/20/2017 3:40:02 PM A43653 mg/L EPA 200.8: METALS Analyst: JLF ND 6/26/2017 4:37:29 PM Antimony 0.00037 0.0010 mg/L 1 B43799 Arsenic ND 0.00030 0.0010 mg/L 1 6/26/2017 4:37:29 PM B43799 6/26/2017 4:37:29 PM B43799 Lead ND 0.00017 0.00050 mg/L 1 Selenium ND 0.00071 0.0010 mg/L 1 6/26/2017 4:37:29 PM B43799 **EPA METHOD 245.1: MERCURY** Analyst: MED ND 0.000037 0.00020 6/27/2017 1:47:23 PM 32504 Mercury mg/L 1 Analyst: JDC **EPA METHOD 8270C: SEMIVOLATILES** Acenaphthene ND 3.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 3.5 6/21/2017 4:02:29 PM Acenaphthylene 10 µg/L 32356 1 6/21/2017 4:02:29 PM Aniline ND 3.1 10 µg/L 1 32356 ND 3.5 6/21/2017 4:02:29 PM Anthracene 10 µg/L 1 32356 Azobenzene ND 4.5 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Benz(a)anthracene ND 3.9 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.0 10 6/21/2017 4:02:29 PM 32356 Benzo(a)pyrene µg/L 1 Benzo(b)fluoranthene ND 4.0 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 6/21/2017 4:02:29 PM 32356 Benzo(g,h,i)perylene 4.0 10 µg/L 1 Benzo(k)fluoranthene ND 4.4 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Benzoic acid 7.2 3.9 20 J µg/L 1 6/21/2017 4:02:29 PM 32356

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 Detection Limit

W Sample container temperature is out of limit as specified

Page 1 of 48

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc. **CLIENT:** Western Refining Company Client Sample ID: EB01 **Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/12/2017 6:10:00 PM Lab ID: 1706910-001 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC Benzyl alcohol ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Bis(2-chloroethoxy)methane ND 4.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Bis(2-chloroethyl)ether ND 4.3 10 6/21/2017 4:02:29 PM µg/L 1 32356 Bis(2-chloroisopropyl)ether ND 3.9 10 6/21/2017 4:02:29 PM µg/L 1 32356 ND Bis(2-ethylhexyl)phthalate 4.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4-Bromophenyl phenyl ether ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Butyl benzyl phthalate ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Carbazole ND 4.6 10 1 6/21/2017 4:02:29 PM 32356 µg/L 4-Chloro-3-methylphenol ND 6.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4-Chloroaniline ND 3.5 10 6/21/2017 4:02:29 PM µg/L 1 32356 2-Chloronaphthalene ND 3.7 10 µg/L 1 6/21/2017 4:02:29 PM 32356 2-Chlorophenol ND 7.5 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 3.8 10 1 6/21/2017 4:02:29 PM Chrysene µg/L 32356 Di-n-butyl phthalate ND 5.0 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.7 Di-n-octyl phthalate 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.1 Dibenzofuran 10 µg/L 1 6/21/2017 4:02:29 PM 32356 1.2-Dichlorobenzene ND 2.0 10 1 6/21/2017 4:02:29 PM 32356 µg/L 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 2.1 6/21/2017 4:02:29 PM 1.4-Dichlorobenzene 10 µg/L 1 32356 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Diethyl phthalate ND 4.0 10 1 6/21/2017 4:02:29 PM 32356 µg/L ND 3.6 6/21/2017 4:02:29 PM 32356 Dimethyl phthalate 10 µg/L 1 ND 5.7 2,4-Dichlorophenol 20 µg/L 1 6/21/2017 4:02:29 PM 32356 2.4-Dimethylphenol ND 2.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 4,6-Dinitro-2-methylphenol ND 20 6/21/2017 4:02:29 PM 32356 3.9 µg/L 1 2,4-Dinitrophenol ND 2.6 20 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.0 2,4-Dinitrotoluene 10 µg/L 1 6/21/2017 4:02:29 PM 32356 2.6-Dinitrotoluene ND 4.5 10 1 6/21/2017 4:02:29 PM 32356 µg/L Fluoranthene ND 4.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Fluorene ND 4.0 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Hexachlorobenzene ND 3.8 10 µg/L 1 6/21/2017 4:02:29 PM 32356 Hexachlorobutadiene ND 1.3 10 µg/L 6/21/2017 4:02:29 PM 32356 1 Hexachlorocyclopentadiene ND 1.3 6/21/2017 4:02:29 PM 32356 10 µg/L 1 6/21/2017 4:02:29 PM ND 1.2 Hexachloroethane 10 µg/L 1 32356 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 6/21/2017 4:02:29 PM 32356 ND 4.4 10 Isophorone µg/L 1 6/21/2017 4:02:29 PM 32356 1-Methylnaphthalene ND 3.3 10 µg/L 1 6/21/2017 4:02:29 PM 32356

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

Oualifiers:

S % Recovery outside of range due to dilution or matrix

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 2 of 48

Lab Order 1706910 Date Reported: 7/11/2017

CLIENT: Western Refining Company			Clier	nt Sampl	e ID: EB()1		
Project: SMW-2 AND BOUNDARY WE	ELLS		Col	llection l	Date: 6/12	2/2017	6:10:00 PM	
Lab ID: 1706910-001	Matrix:	AQUEOU	S R	eceived l	Date: 6/15	5/2017	11:15:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
2-Methylnaphthalene	ND	3.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2-Methylphenol	ND	3.3	10		μg/L	1	6/21/2017 4:02:29 PM	32356
3+4-Methylphenol	ND	3.2	10		μg/L	1	6/21/2017 4:02:29 PM	32356
N-Nitrosodi-n-propylamine	ND	4.6	10		µg/L	1	6/21/2017 4:02:29 PM	32356
N-Nitrosodimethylamine	ND	3.5	10		µg/L	1	6/21/2017 4:02:29 PM	32356
N-Nitrosodiphenylamine	ND	3.9	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Naphthalene	ND	2.9	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2-Nitroaniline	ND	4.9	10		µg/L	1	6/21/2017 4:02:29 PM	32356
3-Nitroaniline	ND	4.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
4-Nitroaniline	ND	4.0	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Nitrobenzene	ND	3.6	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2-Nitrophenol	ND	5.2	10		µg/L	1	6/21/2017 4:02:29 PM	32356
4-Nitrophenol	ND	5.5	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Pentachlorophenol	ND	4.9	20		µg/L	1	6/21/2017 4:02:29 PM	32356
Phenanthrene	ND	4.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Phenol	ND	3.1	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Pyrene	ND	4.4	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Pyridine	ND	2.3	10		µg/L	1	6/21/2017 4:02:29 PM	32356
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	6/21/2017 4:02:29 PM	32356
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	6/21/2017 4:02:29 PM	32356
Surr: 2-Fluorophenol	46.0	0	15-98.1		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: Phenol-d5	36.5	0	15-80.7		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: 2,4,6-Tribromophenol	74.5	0	15-112		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: Nitrobenzene-d5	82.4	0 2	27.2-90.7		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: 2-Fluorobiphenyl	69.5	0 2	23.3-85.6		%Rec	1	6/21/2017 4:02:29 PM	32356
Surr: 4-Terphenyl-d14	65.7	0	27.6-107		%Rec	1	6/21/2017 4:02:29 PM	32356
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.062	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Toluene	0.072	0.064	1.0	J	μg/L	1	6/16/2017 11:04:36 PM	B43587
Ethylbenzene	ND	0.093	1.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
Methyl tert-butyl ether (MTBE)	ND	0.24	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,4-Trimethylbenzene	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,3,5-Trimethylbenzene	ND	0.087	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Naphthalene	ND	0.11	2.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
1-Methylnaphthalene	ND	0.16	4.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
2-Methylnaphthalene	ND	0.15	4.0		ua/L	1	6/16/2017 11:04:36 PM	B43587

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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 3 of 48

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 7/11/2017

CLIENT: Project:	Western Refining Company	FUS		Clier	nt Sampl	e ID: EB()1 2/2017	6·10·00 PM	
Lab ID:	1706910-001	Matrix:	AOUEOUS	R	eceived]	Date: 6/12	5/2017	11:15:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	IOD 8260B: VOLATILES							Analyst: DJF	
Acetone		ND	0.82	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromobenz	zene	ND	0.14	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromodich	loromethane	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromoform	1	ND	0.21	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Bromometh	hane	ND	0.26	3.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
2-Butanone	e	ND	1.1	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Carbon dis	sulfide	ND	0.40	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Carbon Tet	trachloride	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chlorobenz	zene	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chloroetha	ane	ND	0.23	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chloroform	1	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Chlorometh	hane	ND	0.29	3.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
2-Chlorotol	luene	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
4-Chlorotol	luene	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
cis-1,2-DC	E	ND	0.20	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
cis-1,3-Dicl	hloropropene	ND	0.082	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dibrom	no-3-chloropropane	ND	1.4	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Dibromoch	loromethane	ND	0.072	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Dibromome	ethane	ND	0.091	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dichlor	robenzene	ND	0.090	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,3-Dichlor	robenzene	ND	0.15	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,4-Dichlor	robenzene	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Dichlorodif	luoromethane	ND	1.0	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1-Dichlor	roethane	ND	0.40	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1-Dichlor	roethene	ND	0.081	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2-Dichlor	ropropane	ND	0.10	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,3-Dichlor	ropropane	ND	0.17	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
2,2-Dichlor	ropropane	ND	0.16	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1-Dichlor	ropropene	ND	0.093	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Hexachlorc	obutadiene	ND	0.80	1.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
2-Hexanon	1e	ND	0.66	10		μg/L	1	6/16/2017 11:04:36 PM	B43587
Isopropylbe	enzene	ND	0.051	1.0		μg/L	1	6/16/2017 11:04:36 PM	B43587
4-Isopropvl	Itoluene	ND	0.096	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
4-Methvl-2	pentanone	ND	0.71	10		µg/L	1	6/16/2017 11:04:36 PM	B43587
Methvlene	Chloride	ND	0.11	3.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
n-Butvlben	izene	ND	0.13	3.0		ua/L	1	6/16/2017 11:04:36 PM	B43587
n-Propylbe	enzene	ND	0.074	1.0		ua/L	1	6/16/2017 11:04:36 PM	B43587
sec-Butvlbr	enzene	ND	0.11	1.0		ua/l	1	6/16/2017 11:04:36 PM	B43587
eee Bacylot			0.16	1.0		rs, ⊏ ua/l	1	6/16/2017 11:04:36 PM	D 42507

Hall Environmental Analysis Laboratory, Inc.

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

* 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

Qualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Hall Environmental Analys	sis Labora	tory, Inc	2.				Date Reported	7/11/2017
CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY	WELLS Matrix:	AQUEQUS	Clier Co B	nt Sampl llection 1	le ID: EB(Date: 6/12	01 2/2017 5/2017	6:10:00 PM	
Analyses	Result	MDL	POL	Oual	Units	DF	Date Analyzed	Batch ID
				2			Analyst: DIE	
EFA METHOD 8200B. VOLATILES	ND	0.40	4.0					D 40507
	ND	0.10	1.0		µg/∟	1	6/16/2017 11:04:36 PM	B43587
1,1,1,2-1 etrachloroethane	ND	0.10	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1,2,2-l etrachloroethane	ND	0.14	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
letrachloroethene (PCE)	ND	0.13	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
trans-1,3-Dichloropropene	ND	0.22	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,3-Trichlorobenzene	ND	0.12	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,4-Trichlorobenzene	ND	0.14	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1,1-Trichloroethane	ND	0.073	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Vinyl chloride	ND	0.18	1.0		µg/L	1	6/16/2017 11:04:36 PM	B43587
Xylenes, Total	ND	0.32	1.5		µg/L	1	6/16/2017 11:04:36 PM	B43587
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587
Surr: 4-Bromofluorobenzene	96.7	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587
Surr: Toluene-d8	98.6	0	70-130		%Rec	1	6/16/2017 11:04:36 PM	B43587

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte o
	D	Sample Diluted Due to Matrix	Е	Value ab

- 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
- detected in the associated Method Blank
- ove quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY WE	Client Sample ID: EB02 VELLS Collection Date: 6/13/2017 5:15:00 PM							
Lab ID: 1706910-002 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: TOM	
Diesel Range Organics (DRO)	ND	0.36	1.0		mg/L	1	6/20/2017 5:43:20 PM	32351
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	6/20/2017 5:43:20 PM	32351
Surr: DNOP	122	0	72.4-157		%Rec	1	6/20/2017 5:43:20 PM	32351
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	6/19/2017 4:57:21 PM	G43605
Surr: BFB	116	0	52.3-138		%Rec	1	6/19/2017 4:57:21 PM	G43605
EPA METHOD 200.7: METALS							Analyst: pmf	
Barium	ND	0.00093	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653
Beryllium	ND	0.00029	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653
Cadmium	ND	0.0010	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653
Chromium	ND	0.0011	0.0060		mg/L	1	6/20/2017 3:44:25 PM	A43653
Cobalt	ND	0.0016	0.0060		mg/L	1	6/20/2017 3:44:25 PM	A43653
Iron	ND	0.016	0.020		mg/L	1	6/20/2017 3:44:25 PM	A43653
Manganese	ND	0.0011	0.0020		mg/L	1	6/20/2017 3:44:25 PM	A43653
Nickel	ND	0.0036	0.010		mg/L	1	6/20/2017 3:44:25 PM	A43653
Silver	ND	0.00088	0.0050		mg/L	1	6/20/2017 3:44:25 PM	A43653
Vanadium	ND	0.0019	0.050		mg/L	1	6/20/2017 3:44:25 PM	A43653
Zinc	ND	0.0028	0.010		mg/L	1	6/20/2017 3:44:25 PM	A43653
EPA 200.8: METALS							Analyst: JLF	
Antimony	ND	0.00037	0.0010		mg/L	1	6/26/2017 4:42:37 PM	B43799
Arsenic	ND	0.00030	0.0010		mg/L	1	6/26/2017 4:42:37 PM	B43799
Lead	ND	0.00017	0.00050		mg/L	1	6/26/2017 4:42:37 PM	B43799
Selenium	ND	0.00071	0.0010		mg/L	1	6/26/2017 4:42:37 PM	B43799
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	ND	0.000037	0.00020		mg/L	1	6/27/2017 1:49:21 PM	32504
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	3.6	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Acenaphthylene	ND	3.5	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Aniline	ND	3.1	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Anthracene	ND	3.5	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Azobenzene	ND	4.5	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Benz(a)anthracene	ND	3.9	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Benzo(a)pyrene	ND	4.0	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Benzo(k)fluoranthene	ND	4.4	10		µg/L	1	6/21/2017 4:30:48 PM	32356
Benzoic acid	7.1	3.9	20	J	µg/L	1	6/21/2017 4:30:48 PM	32356

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

Н 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 В Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 6 of 48

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company **Client Sample ID: EB02 Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/13/2017 5:15:00 PM Lab ID: 1706910-002 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 6/21/2017 4:30:48 PM Benzyl alcohol ND 4.6 10 µg/L 1 32356 Bis(2-chloroethoxy)methane ND 4.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Bis(2-chloroethyl)ether ND 4.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 3.9 10 Bis(2-chloroisopropyl)ether µg/L 1 6/21/2017 4:30:48 PM 32356 J Bis(2-ethylhexyl)phthalate 5.0 4.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Bromophenyl phenyl ether ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Butyl benzyl phthalate ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Carbazole ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Chloro-3-methylphenol ND 6.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Chloroaniline ND 3.5 10 6/21/2017 4:30:48 PM µg/L 1 32356 2-Chloronaphthalene ND 3.7 10 µg/L 1 6/21/2017 4:30:48 PM 32356 2-Chlorophenol ND 7.5 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 3.8 10 1 Chrysene µg/L 6/21/2017 4:30:48 PM 32356 ND 5.0 Di-n-butyl phthalate 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4.7 Di-n-octyl phthalate ND 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 4.1 Dibenzofuran 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 2.0 10 1 6/21/2017 4:30:48 PM 32356 1,2-Dichlorobenzene µg/L 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 2.1 1.4-Dichlorobenzene 10 µg/L 1 6/21/2017 4:30:48 PM 32356 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 4.0 10 1 32356 Diethyl phthalate µg/L 6/21/2017 4:30:48 PM ND 3.6 6/21/2017 4:30:48 PM 32356 Dimethyl phthalate 10 µg/L 1 ND 5.7 2,4-Dichlorophenol 20 µg/L 1 6/21/2017 4:30:48 PM 32356 2.4-Dimethylphenol ND 2.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 4,6-Dinitro-2-methylphenol ND 20 6/21/2017 4:30:48 PM 32356 3.9 µg/L 1 2,4-Dinitrophenol ND 2.6 20 µg/L 1 6/21/2017 4:30:48 PM 32356 4.0 2,4-Dinitrotoluene ND 10 µg/L 1 6/21/2017 4:30:48 PM 32356 2.6-Dinitrotoluene ND 4.5 10 1 6/21/2017 4:30:48 PM 32356 µg/L Fluoranthene ND 4.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Fluorene ND 4.0 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Hexachlorobenzene ND 3.8 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Hexachlorobutadiene ND 1.3 10 µg/L 6/21/2017 4:30:48 PM 32356 1 ND 1.3 6/21/2017 4:30:48 PM Hexachlorocyclopentadiene 10 µg/L 1 32356 ND 1.2 Hexachloroethane 10 µg/L 1 6/21/2017 4:30:48 PM 32356 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 6/21/2017 4:30:48 PM 32356 ND 4.4 10 Isophorone µg/L 1 6/21/2017 4:30:48 PM 32356 1-Methylnaphthalene ND 3.3 10 µg/L 1 6/21/2017 4:30:48 PM 32356

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

CLIENT: Western Refining Company			Clier	nt Sampl	e ID: EB()2		
Project: SMW-2 AND BOUNDARY W	WELLS Collection Date: 6/13/2017 5:15:00 PM							
Lab ID: 1706910-002	Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
2-Methylnaphthalene	ND	3.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356
2-Methylphenol	ND	3.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356
3+4-Methylphenol	ND	3.2	10		ua/L	1	6/21/2017 4:30:48 PM	32356
N-Nitrosodi-n-propylamine	ND	4.6	10		ua/L	1	6/21/2017 4:30:48 PM	32356
N-Nitrosodimethylamine	ND	3.5	10		ua/L	1	6/21/2017 4:30:48 PM	32356
N-Nitrosodiphenylamine	ND	3.9	10		ua/L	1	6/21/2017 4:30:48 PM	32356
Naphthalene	ND	2.9	10		ua/L	1	6/21/2017 4:30:48 PM	32356
2-Nitroaniline	ND	4.9	10		ua/L	1	6/21/2017 4:30:48 PM	32356
3-Nitroaniline	ND	4.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356
4-Nitroaniline	ND	4.0	10		ua/L	1	6/21/2017 4:30:48 PM	32356
Nitrobenzene	ND	3.6	10		ua/L	1	6/21/2017 4:30:48 PM	32356
2-Nitrophenol	ND	5.2	10		ua/L	1	6/21/2017 4:30:48 PM	32356
4-Nitrophenol	ND	5.5	10		ua/L	1	6/21/2017 4:30:48 PM	32356
Pentachlorophenol	ND	4.9	20		ua/L	1	6/21/2017 4:30:48 PM	32356
Phenanthrene	ND	4.3	10		ua/L	1	6/21/2017 4:30:48 PM	32356
Phenol	ND	3.1	10		ua/L	1	6/21/2017 4:30:48 PM	32356
Pyrene	ND	4.4	10		µg/=	1	6/21/2017 4:30:48 PM	32356
Pyridine	ND	2.3	10		µg/=	1	6/21/2017 4:30:48 PM	32356
1 2 4-Trichlorobenzene	ND	21	10		на/I	1	6/21/2017 4:30:48 PM	32356
2 4 5-Trichlorophenol	ND	5.1	10		μg/L	1	6/21/2017 4:30:48 PM	32356
2 4 6-Trichlorophenol	ND	5.5	10		μg/L	1	6/21/2017 4:30:48 PM	32356
Surr: 2-Eluorophenol	45.9	0.0	15-98 1		%Rec	1	6/21/2017 4:30:48 PM	32356
Surr: Phenol-d5	34.4	0	15-80.7		%Rec	1	6/21/2017 4:30:48 PM	32356
Surr: 2.4.6-Tribromophenol	76.8	0	15-112		%Rec	1	6/21/2017 4:30:48 PM	32356
Surr: Nitrobenzene-d5	80.1	0	27 2-90 7		%Rec	1	6/21/2017 4:30:48 PM	32356
Surr: 2-Eluorobiohenvl	68.9	0	23.3-85.6		%Rec	1	6/21/2017 4:30:48 PM	32356
Surr: 4-Terobenyl-d14	67.6	0	27 6-107		%Rec	1	6/21/2017 4:30:48 PM	32356
EPA METHOD 8260B: VOLATILES	0110	Ũ	21.0 101		,01100	·	Analyst: DJF	02000
Bonzono		0.062	1.0		ua/l	1	6/16/2017 11:22:50 DM	B12597
	0.085	0.002	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587
Ethylbonzono	0.005	0.004	1.0	J	µg/L	1	6/16/2017 11:32:59 FW	D43307
Methyl tert-butyl ether (MTRE)		0.035	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587
1.2.4 Trimothylbonzono		0.24	1.0		µg/L	1	6/16/2017 11:32:59 FW	D43307
1 3 5-Trimethylbenzene		0.11	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587
1.2-Dichloroethane (EDC)		0.007	1.0		µg/∟ ug/l	1	6/16/2017 11:32:59 PM	B43587
1 2-Dibromoethane (EDB)		0.40	1.0		μg/L μα/Ι	1	6/16/2017 11:32:39 FIVI	B43587
Nanhthalene		0.13	1.0 2.0		μg/L μα/Ι	1	6/16/2017 11:32:39 FW	B/3587
1-Methylpenhthelene		0.11	2.U		μg/L μg/l	1	6/16/2017 11.32.39 PW	B/3587
		0.10	4.0		μg/L μg/l	1	6/16/2017 11.32.39 PM	B43507
z-memyinaphmaiene	ND	0.15	4.0		µg/∟	1	0/10/2017 11:32:59 PM	040001

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

Hall Environmental Analysis Laboratory, Inc.

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

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W Sample container temperature is out of limit as specified

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Date Reported: 7/11/2017

CLIENT: Western Refining Company **Client Sample ID: EB02 Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/13/2017 5:15:00 PM Lab ID: 1706910-002 Matrix: AQUEOUS Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8260B: VOLATILES** Analyst: DJF Acetone ND 0.82 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Bromobenzene ND 0.14 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Bromodichloromethane ND 0.18 1.0 6/16/2017 11:32:59 PM µg/L 1 B43587 ND 6/16/2017 11:32:59 PM Bromoform 0.21 1.0 µg/L 1 B43587 ND Bromomethane 0.26 3.0 µg/L 1 6/16/2017 11:32:59 PM B43587 2-Butanone ND 1.1 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Carbon disulfide ND 0.40 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Chlorobenzene ND 0.11 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Chloroethane ND 0.23 2.0 6/16/2017 11:32:59 PM µg/L 1 B43587 Chloroform ND 0.40 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Chloromethane ND 0.29 3.0 µg/L 1 6/16/2017 11:32:59 PM B43587 2-Chlorotoluene ND 0.40 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.40 1.0 1 4-Chlorotoluene µg/L 6/16/2017 11:32:59 PM B43587 ND 0.20 cis-1,2-DCE 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND cis-1,3-Dichloropropene 0.082 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.072 6/16/2017 11:32:59 PM Dibromochloromethane 1.0 µg/L 1 B43587 Dibromomethane ND 0.091 1.0 1 6/16/2017 11:32:59 PM B43587 µg/L 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.15 1.0 B43587 1,3-Dichlorobenzene µg/L 1 6/16/2017 11:32:59 PM 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Dichlorodifluoromethane ND 1.0 1.0 1 6/16/2017 11:32:59 PM B43587 µg/L 1,1-Dichloroethane ND 0.40 6/16/2017 11:32:59 PM B43587 1.0 µg/L 1 ND 0.081 6/16/2017 11:32:59 PM 1,1-Dichloroethene 1.0 µg/L 1 B43587 1.2-Dichloropropane ND 0.10 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.17 6/16/2017 11:32:59 PM B43587 1,3-Dichloropropane 1.0 µg/L 1 2,2-Dichloropropane ND 0.16 2.0 µg/L 1 6/16/2017 11:32:59 PM B43587 ND 0.093 1,1-Dichloropropene 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 Hexachlorobutadiene ND 0.80 1.0 1 6/16/2017 11:32:59 PM B43587 µg/L 2-Hexanone ND 0.66 10 µg/L 1 6/16/2017 11:32:59 PM B43587 Isopropylbenzene ND 0.051 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 4-Isopropyltoluene ND 0.096 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 4-Methyl-2-pentanone ND 0.71 10 µg/L 6/16/2017 11:32:59 PM B43587 1 Methylene Chloride ND 0.11 3.0 6/16/2017 11:32:59 PM B43587 µg/L 1 ND 0.13 3.0 B43587 n-Butylbenzene µg/L 1 6/16/2017 11:32:59 PM n-Propylbenzene ND 0.074 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587 sec-Butylbenzene ND 1.0 0.11 µg/L 1 6/16/2017 11:32:59 PM B43587 Stvrene ND 0.16 1.0 µg/L 1 6/16/2017 11:32:59 PM B43587

Hall Environmental Analysis Laboratory, Inc.

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

* 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

Oualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 7/11/2017

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY	WELLS		Clier Col	nt Sampl llection I	e ID: EB Date: 6/11	02 3/2017	5:15:00 PM	
Lab ID: 1706910-002	Matrix:	AQUEOUS	Received Date: 6/15/2017 11:15:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
tert-Butylbenzene	ND	0.10	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
1,1,1,2-Tetrachloroethane	ND	0.10	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
1,1,2,2-Tetrachloroethane	ND	0.14	2.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
Tetrachloroethene (PCE)	ND	0.13	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
trans-1,3-Dichloropropene	ND	0.22	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
1,2,3-Trichlorobenzene	ND	0.12	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
1,2,4-Trichlorobenzene	ND	0.14	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
1,1,1-Trichloroethane	ND	0.073	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
Vinyl chloride	ND	0.18	1.0		µg/L	1	6/16/2017 11:32:59 PM	B43587
Xylenes, Total	ND	0.32	1.5		µg/L	1	6/16/2017 11:32:59 PM	B43587
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587
Surr: 4-Bromofluorobenzene	98.0	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587
Surr: Toluene-d8	102	0	70-130		%Rec	1	6/16/2017 11:32:59 PM	B43587

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in t
	D	Sample Diluted Due to Matrix	Е	Value above quantitation

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- the associated Method Blank
- ation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Analytical Report
Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY V Lab ID: 1706910-003	VELLS Matrix:	Collection Date: 6/12/2017 5:00:00 PM Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8015M/D: DIESEL RANGI	E ORGANICS						Analyst: TOM				
Diesel Range Organics (DRO)	ND	1.5	9.5		ma/Ka	1	6/20/2017 11:00:19 AM	32362			
Motor Oil Range Organics (MRO)	ND	47	47		mg/Kg	1	6/20/2017 11:00:19 AM	32362			
Surr: DNOP	89.5	0	70-130		%Rec	1	6/20/2017 11:00:19 AM	32362			
EPA METHOD 8015D: GASOLINE RANG	θE						Analyst: NSB				
Gasoline Range Organics (GRO)	ND	1.1	5.0		ma/Ka	1	6/19/2017 4:40:03 PM	32325			
Surr: BFB	102	0	54-150		%Rec	1	6/19/2017 4:40:03 PM	32325			
EPA METHOD 7471: MERCURY							Analyst: ELS				
Mercury	ND	0.0063	0.031		mg/Kg	1	6/20/2017 11:30:58 AM	32380			
EPA METHOD 6010B: SOIL METALS					0		Analyst: MED				
Antimony	ND	1.0	2.5		mg/Ka	1	6/26/2017 8:40:45 AM	32349			
Arsenic	ND	0.88	2.5		ma/Ka	1	6/20/2017 12:32:04 PM	32349			
Barium	130	0.070	0.099		mg/Kg	1	6/26/2017 8:40:45 AM	32349			
Beryllium	0.34	0.034	0.15		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Cadmium	ND	0.063	0.099		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Chromium	4.6	0.093	0.30		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Cobalt	2.1	0.11	0.30		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Iron	6400	37	120		mg/Kg	50	6/26/2017 8:58:04 AM	32349			
Lead	0.72	0.17	0.25		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Manganese	180	0.053	0.099		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Nickel	3.5	0.15	0.49		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Selenium	ND	1.8	2.5		mg/Kg	1	6/26/2017 8:40:45 AM	32349			
Silver	ND	0.062	0.25		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Vanadium	11	0.17	2.5		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
Zinc	7.5	0.34	2.5		mg/Kg	1	6/20/2017 12:32:04 PM	32349			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM				
Acenaphthene	ND	0.16	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Acenaphthylene	ND	0.18	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Aniline	ND	0.11	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Anthracene	ND	0.18	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Azobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benz(a)anthracene	ND	0.17	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(a)pyrene	ND	0.16	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(b)fluoranthene	ND	0.19	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzo(k)fluoranthene	ND	0.15	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzoic acid	ND	0.15	0.50		mg/Kg	1	6/28/2017 11:41:38 AM	32411			
Benzyl alcohol	ND	0.17	0.20		mg/Kg	1	6/28/2017 11:41:38 AM	32411			

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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 11 of 48

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Client Sample ID: OW-59 (33-34') **Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/12/2017 5:00:00 PM Lab ID: 1706910-003 Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: DAM Bis(2-chloroethoxy)methane ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Bis(2-chloroethyl)ether ND 0.13 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Bis(2-chloroisopropyl)ether ND 0.20 0.20 6/28/2017 11:41:38 AM mg/Kg 1 32411 Bis(2-ethylhexyl)phthalate 0.21 J 0.19 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 6/28/2017 11:41:38 AM 4-Bromophenyl phenyl ether 0.16 0.20 mg/Kg 32411 1 Butyl benzyl phthalate ND 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Carbazole ND 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Chloro-3-methylphenol ND 0.18 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Chloroaniline ND 0.15 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 2-Chloronaphthalene ND 0.18 0.25 6/28/2017 11:41:38 AM 32411 mg/Kg 1 2-Chlorophenol ND 0.14 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Chlorophenyl phenyl ether ND 0.15 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.15 0.20 1 6/28/2017 11:41:38 AM 32411 Chrysene mg/Kg 0.17 0.11 0.40 J 1 Di-n-butyl phthalate mg/Kg 6/28/2017 11:41:38 AM 32411 ND Di-n-octyl phthalate 0.15 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Dibenz(a,h)anthracene 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Dibenzofuran ND 0.17 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.15 1,2-Dichlorobenzene 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 1,3-Dichlorobenzene ND 0.14 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 1,4-Dichlorobenzene ND 0.16 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 3.3'-Dichlorobenzidine ND 0.15 0.25 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Diethyl phthalate 0.19 0.17 0.20 J mg/Kg 1 6/28/2017 11:41:38 AM 32411 Dimethyl phthalate ND 0.19 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 2,4-Dichlorophenol ND 0.16 0.40 6/28/2017 11:41:38 AM mg/Kg 1 32411 ND 0.088 0.30 2,4-Dimethylphenol mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 4.6-Dinitro-2-methylphenol 0.15 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 2,4-Dinitrophenol ND 0.12 0.50 6/28/2017 11:41:38 AM 32411 mg/Kg 1 2.4-Dinitrotoluene ND 0.19 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.17 2,6-Dinitrotoluene 0.50 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Fluoranthene ND 0.17 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 Fluorene ND 0.15 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Hexachlorobenzene ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Hexachlorobutadiene ND 0.17 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Hexachlorocyclopentadiene ND 0.16 0.20 6/28/2017 11:41:38 AM 32411 mg/Kg 1 ND 0.14 0.20 6/28/2017 11:41:38 AM Hexachloroethane mg/Kg 1 32411 ND 0.16 Indeno(1,2,3-cd)pyrene 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Isophorone ND 0.19 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 1-Methylnaphthalene ND 0.19 0.20 32411 mg/Kg 1 6/28/2017 11:41:38 AM 2-Methylnaphthalene ND 0.17 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411

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

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 12 of 48

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Client Sample ID: OW-59 (33-34') **Project:** SMW-2 AND BOUNDARY WELLS Collection Date: 6/12/2017 5:00:00 PM Lab ID: 1706910-003 Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: DAM 2-Methylphenol ND 0.15 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 3+4-Methylphenol ND 0.13 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 N-Nitrosodi-n-propylamine ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 N-Nitrosodiphenylamine ND 0.19 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Naphthalene 0.18 0.20 mg/Kg 32411 1 6/28/2017 11:41:38 AM 2-Nitroaniline ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 3-Nitroaniline ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 4-Nitroaniline ND 0.17 0.40 1 6/28/2017 11:41:38 AM 32411 mg/Kg Nitrobenzene ND 0.17 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 6/28/2017 11:41:38 AM ND 0.19 0.20 32411 2-Nitrophenol mg/Kg 1 4-Nitrophenol ND 0.15 0.25 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Pentachlorophenol ND 0 17 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 Phenanthrene ND 0.18 0.20 1 6/28/2017 11:41:38 AM 32411 mg/Kg ND 0.14 0.20 Phenol mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Pyrene 0.15 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND Pyridine 0.13 0.40 mg/Kg 1 6/28/2017 11:41:38 AM 32411 1,2,4-Trichlorobenzene ND 0.18 0.20 mg/Kg 1 6/28/2017 11:41:38 AM 32411 ND 0.15 0.20 2,4,5-Trichlorophenol mg/Kg 1 6/28/2017 11:41:38 AM 32411 2,4,6-Trichlorophenol ND 0.16 0.20 6/28/2017 11:41:38 AM mg/Kg 1 32411 Surr: 2-Fluorophenol 52.0 0 21.4-101 %Rec 1 6/28/2017 11:41:38 AM 32411 Surr: Phenol-d5 55.4 0 32-110 %Rec 1 6/28/2017 11:41:38 AM 32411 Surr: 2,4,6-Tribromophenol 64.4 Λ 38.7-115 %Rec 1 6/28/2017 11:41:38 AM 32411 Surr: Nitrobenzene-d5 63.6 26.2-120 %Rec 1 32411 6/28/2017 11:41:38 AM Surr: 2-Fluorobiphenyl 61.0 36.2-124 %Rec 6/28/2017 11:41:38 AM 32411 1 45.0 15-114 %Rec 6/28/2017 11:41:38 AM Surr: 4-Terphenyl-d14 1 32411 METHOD 8260B/5035LOW: VOLATILES Analyst: RAA Benzene 1.86 0.113 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Toluene 0.833 0.116 0.801 6/19/2017 3:57:00 PM 32370 µg/Kg 1 Ethylbenzene 0.264 0.132 0.801 J µg/Kg 1 6/19/2017 3:57:00 PM 32370 0.657 0.340 J Methyl tert-butyl ether (MTBE) 0.801 1 6/19/2017 3:57:00 PM 32370 µg/Kg 1.2.4-Trimethylbenzene ND 0.241 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370 1,3,5-Trimethylbenzene ND 0.219 0.801 6/19/2017 3:57:00 PM µg/Kg 1 32370 1,2-Dichloroethane (EDC) ND 0.162 0.801 1 6/19/2017 3:57:00 PM 32370 µg/Kg 1,2-Dibromoethane (EDB) ND 0.151 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Naphthalene 0.336 0.167 1.60 J 6/19/2017 3:57:00 PM 32370 µg/Kg 1 1-Methylnaphthalene 0.336 0.206 3.20 J µg/Kg 1 6/19/2017 3:57:00 PM 32370 2-Methylnaphthalene 0.368 J 0.168 3.20 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Acetone 11.9 0.485 8.01 µg/Kg 1 6/19/2017 3:57:00 PM 32370 Bromobenzene ND 0.195 0.801 µg/Kg 1 6/19/2017 3:57:00 PM 32370

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY W	Client Sample ID: OW-59 (33-34') WELLS Collection Date: 6/12/2017 5:00:00 PM									
Lab ID: 1706910-003	Matrix:	SOIL	R	eceived I	Date: 6/15	5/2017	11:15:00 AM			
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA			
Bromodichloromethane	ND	0.184	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Bromoform	ND	0.170	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Bromomethane	ND	0.386	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
2-Butanone	ND	0.600	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Carbon disulfide	ND	0.321	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Carbon tetrachloride	ND	0.148	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Chlorobenzene	ND	0.122	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Chloroethane	ND	0.158	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Chloroform	ND	0.172	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Chloromethane	ND	0.202	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
2-Chlorotoluene	ND	0.170	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
4-Chlorotoluene	ND	0.175	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
cis-1,2-DCE	ND	0.165	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
cis-1,3-Dichloropropene	ND	0.128	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,2-Dibromo-3-chloropropane	ND	0.214	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Dibromochloromethane	ND	0.113	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Dibromomethane	ND	0.129	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,2-Dichlorobenzene	ND	0.172	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,3-Dichlorobenzene	ND	0.164	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,4-Dichlorobenzene	ND	0.169	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Dichlorodifluoromethane	ND	0.164	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,1-Dichloroethane	ND	0.138	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,1-Dichloroethene	ND	0.133	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,2-Dichloropropane	ND	0.160	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,3-Dichloropropane	ND	0.143	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
2,2-Dichloropropane	ND	0.129	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,1-Dichloropropene	ND	0.159	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Hexachlorobutadiene	ND	0.227	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
2-Hexanone	ND	0.281	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Isopropylbenzene	ND	0.195	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
4-Isopropyltoluene	ND	0.234	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
4-Methyl-2-pentanone	ND	0.474	8.01		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Methylene chloride	ND	0.319	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
n-Butylbenzene	ND	0.186	2.40		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
n-Propylbenzene	ND	0.228	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
sec-Butylbenzene	ND	0.234	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
Styrene	ND	0.147	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
tert-Butylbenzene	ND	0.250	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		
1,1,1,2-Tetrachloroethane	ND	0.133	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370		

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order **1706910** Date Reported: **7/11/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company			Clier	nt Sampl	le ID: OW	/-59 (33	3-34')					
Project: SMW-2 AND BOUNDARY W	ELLS	Collection Date: 6/12/2017 5:00:00 PM										
Lab ID: 1706910-003	Matrix:	Matrix: SOIL Received Date: 6/15/2017 11:15:00 AM										
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA					
1,1,2,2-Tetrachloroethane	ND	0.164	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
Tetrachloroethene (PCE)	ND	0.102	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
trans-1,2-DCE	ND	0.164	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
trans-1,3-Dichloropropene	ND	0.117	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
1,2,3-Trichlorobenzene	ND	0.141	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
1,2,4-Trichlorobenzene	ND	0.165	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
1,1,1-Trichloroethane	ND	0.139	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
1,1,2-Trichloroethane	ND	0.113	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
Trichloroethene (TCE)	ND	0.130	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
Trichlorofluoromethane	ND	0.114	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
1,2,3-Trichloropropane	ND	0.326	1.60		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
Vinyl chloride	ND	0.146	0.801		µg/Kg	1	6/19/2017 3:57:00 PM	32370				
Xylenes, Total	1.00	0.439	1.60	J	µg/Kg	1	6/19/2017 3:57:00 PM	32370				
Surr: 1,2-Dichloroethane-d4	147	0	70-130	S	%Rec	1	6/19/2017 3:57:00 PM	32370				
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	6/19/2017 3:57:00 PM	32370				
Surr: Dibromofluoromethane	129	0	70-130		%Rec	1	6/19/2017 3:57:00 PM	32370				
Surr: Toluene-d8	96.5	0	70-130		%Rec	1	6/19/2017 3:57:00 PM	32370				

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В
	D	Sample Diluted Due to Matrix	Е

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Analytical Report
Lab Order 1706910

Date Reported: 7/11/2017

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY V Lab ID: 1706910-004	WELLS Matrix:	SOIL	Clier Co R	nt Sampl llection l eceived l	e ID: OW Date: 6/13 Date: 6/15	7-60 (20 3/2017 5/2017)-22') 4:05:00 PM 11:15:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS						Analyst: TOM	
Diesel Range Organics (DRO)	ND	1.5	9.5		ma/Ka	1	6/20/2017 11:28:46 AM	32362
Motor Oil Range Organics (MRO)	ND	47	47		ma/Ka	1	6/20/2017 11:28:46 AM	32362
Surr: DNOP	90.7	0	70-130		%Rec	1	6/20/2017 11:28:46 AM	32362
EPA METHOD 8015D: GASOLINE RANG	ЭE						Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.1	5.0		ma/Ka	1	6/19/2017 5:04:24 PM	32325
Surr: BFB	95.7	0	54-150		%Rec	1	6/19/2017 5:04:24 PM	32325
		-			,	-	Analyst: FI S	
	ND	0.0063	0.031		ma/Ka	1	6/20/2017 11:32:38 AM	32380
		0.0000	0.001		iiig/itg		Analyst: MED	02000
		1.0	25		ma/Ka	1	6/20/2017 12:26:26 DM	22240
Arsenic	13	0.88	2.5		mg/Kg	1	6/20/2017 12:30:20 PM	32349
Barium	1.0	0.00	0.099	5	ma/Ka	1	6/20/2017 12:36:26 PM	32349
Bervllium	0.52	0.071	0.000		ma/Ka	1	6/20/2017 12:36:26 PM	32349
Cadmium	ND	0.063	0.099		ma/Ka	1	6/20/2017 12:36:26 PM	32349
Chromium	6.4	0.094	0.30		ma/Ka	1	6/20/2017 12:36:26 PM	32349
Cobalt	3.1	0.11	0.30		ma/Ka	1	6/20/2017 12:36:26 PM	32349
Iron	10000	38	120		ma/Ka	50	6/26/2017 9:01:24 AM	32349
Lead	1.6	0.17	0.25		mg/Kg	1	6/20/2017 12:36:26 PM	32349
Manganese	470	0.27	0.50		mg/Kg	5	6/26/2017 8:59:45 AM	32349
Nickel	4.9	0.15	0.50		mg/Kg	1	6/20/2017 12:36:26 PM	32349
Selenium	ND	1.8	2.5		mg/Kg	1	6/20/2017 12:36:26 PM	32349
Silver	ND	0.062	0.25		mg/Kg	1	6/20/2017 12:36:26 PM	32349
Vanadium	14	0.17	2.5		mg/Kg	1	6/20/2017 12:36:26 PM	32349
Zinc	10	0.35	2.5		mg/Kg	1	6/20/2017 12:36:26 PM	32349
EPA METHOD 8270C: SEMIVOLATILES	i						Analyst: DAM	
Acenaphthene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Acenaphthylene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Aniline	ND	0.11	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Anthracene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Azobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Benz(a)anthracene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Benzo(a)pyrene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Benzo(b)fluoranthene	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Benzo(k)fluoranthene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Benzoic acid	ND	0.15	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411
Benzyl alcohol	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411

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

Hall Environmental Analysis Laboratory, Inc.

- 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 Page 16 of 48
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company			Clien	t Sampl	e ID: OW	(-60 (20)-22')			
Project: SMW-2 AND BOUNDARY WI		COL		Deceived Date: 6/15/2017 4.05.00 FM						
Lab ID: 1706910-004	Matrix:	SOIL	R							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM			
Bis(2-chloroethoxy)methane	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Bis(2-chloroethyl)ether	ND	0.13	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Bis(2-chloroisopropyl)ether	ND	0.20	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Bis(2-ethylhexyl)phthalate	0.25	0.19	0.50	J	mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Bromophenyl phenyl ether	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Butyl benzyl phthalate	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Carbazole	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Chloro-3-methylphenol	ND	0.18	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Chloroaniline	ND	0.15	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2-Chloronaphthalene	ND	0.18	0.25		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2-Chlorophenol	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4-Chlorophenyl phenyl ether	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Chrysene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Di-n-butyl phthalate	0.34	0.11	0.40	J	mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Di-n-octyl phthalate	ND	0.15	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Dibenz(a,h)anthracene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Dibenzofuran	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1,2-Dichlorobenzene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1,3-Dichlorobenzene	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1,4-Dichlorobenzene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
3,3´-Dichlorobenzidine	ND	0.15	0.25		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Diethyl phthalate	0.26	0.17	0.20	В	mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Dimethyl phthalate	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dichlorophenol	ND	0.16	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dimethylphenol	ND	0.089	0.30		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
4,6-Dinitro-2-methylphenol	ND	0.15	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dinitrophenol	ND	0.12	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,4-Dinitrotoluene	ND	0.19	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2,6-Dinitrotoluene	ND	0.18	0.50		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Fluoranthene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Fluorene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachlorobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachlorobutadiene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachlorocyclopentadiene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Hexachloroethane	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Indeno(1,2,3-cd)pyrene	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
Isophorone	ND	0.19	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
1-Methylnaphthalene	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		
2-Methylnaphthalene	ND	0.17	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411		

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY W	Client Sample ID: OW-60 (20-22') ELLS Collection Date: 6/13/2017 4:05:00 PM										
Lab ID: 1706910-004	Matrix:	SOIL	R	Received Date: 6/15/2017 11:15:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM				
2-Methylphenol	ND	0.15	0.40		ma/Ka	1	6/28/2017 1:04:56 PM	32411			
3+4-Methylphenol	ND	0.13	0.20		ma/Ka	1	6/28/2017 1:04:56 PM	32411			
N-Nitrosodi-n-propylamine	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
N-Nitrosodiphenylamine	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Naphthalene	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2-Nitroaniline	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
3-Nitroaniline	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
4-Nitroaniline	ND	0.17	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Nitrobenzene	ND	0.17	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2-Nitrophenol	ND	0.19	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
4-Nitrophenol	ND	0.15	0.25		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Pentachlorophenol	ND	0.17	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Phenanthrene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Phenol	ND	0.14	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Pyrene	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Pyridine	ND	0.13	0.40		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
1,2,4-Trichlorobenzene	ND	0.18	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2,4,5-Trichlorophenol	ND	0.15	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
2.4.6-Trichlorophenol	ND	0.16	0.20		mg/Kg	1	6/28/2017 1:04:56 PM	32411			
Surr: 2-Fluorophenol	61.6	0	21.4-101		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: Phenol-d5	66.8	0	32-110		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: 2,4,6-Tribromophenol	76.3	0	38.7-115		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: Nitrobenzene-d5	70.3		26.2-120		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: 2-Fluorobiphenyl	73.0		36.2-124		%Rec	1	6/28/2017 1:04:56 PM	32411			
Surr: 4-Terphenyl-d14	66.5		15-114		%Rec	1	6/28/2017 1:04:56 PM	32411			
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA				
Benzene	0 728	0 0973	0.687		ua/Ka	1	6/19/2017 4·23·00 PM	32370			
Toluene	0.440	0.0997	0.687	.1	ua/Ka	1	6/19/2017 4·23·00 PM	32370			
Ethylbenzene	0 151	0 113	0.687	.1	ua/Ka	1	6/19/2017 4·23·00 PM	32370			
Methyl tert-butyl ether (MTBE)	ND	0 292	0.687	0	ua/Ka	1	6/19/2017 4·23·00 PM	32370			
1 2 4-Trimethylbenzene	ND	0.207	0.687		ua/Ka	1	6/19/2017 4·23·00 PM	32370			
1 3 5-Trimethylbenzene	ND	0.188	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370			
1 2-Dichloroethane (EDC)	ND	0.100	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370			
1 2-Dibromoethane (EDB)	ND	0.100	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370			
Nanhthalene		0.123	1 37		µg/Kg µg/Kg	1	6/19/2017 4:23:00 PM	32370			
1-Methylnaphthalene	0 261	0.177	2 75	.1	на/Ка	1	6/19/2017 4·23·00 PM	32370			
2-Methylnaphthalene	0.201	0 144	2.75	Т	на/Ка	1	6/19/2017 4·23·00 PM	32370			
Acetone	11 0	0.144	6.87	0	на/Ка	1	6/19/2017 4·23·00 PM	32370			
Bromobenzene		0.167	0.687		на/Ка	1	6/19/2017 1.23.00 PM	32370			
DIOMODELIZENE		0.107	0.007		pg/rtg	1	0/13/2017 4.23.00 FM	32370			

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706910

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Company Project: SMW-2 AND BOUNDARY WE Lab ID: 1706910-004	ELLS Matrix:	SOIL	Client Sample ID: OW-60 (20-22') Collection Date: 6/13/2017 4:05:00 PM Received Date: 6/15/2017 11:15:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA			
Bromodichloromethane	ND	0.158	0.687		ua/Ka	1	6/19/2017 4:23:00 PM	32370		
Bromoform	ND	0.146	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Bromomethane	ND	0.331	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
2-Butanone	ND	0.515	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Carbon disulfide	ND	0.275	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Carbon tetrachloride	ND	0.127	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Chlorobenzene	ND	0.105	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Chloroethane	ND	0.135	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Chloroform	ND	0.147	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Chloromethane	ND	0.173	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
2-Chlorotoluene	ND	0.146	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
4-Chlorotoluene	ND	0.150	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
cis-1,2-DCE	ND	0.142	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
cis-1,3-Dichloropropene	ND	0.110	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,2-Dibromo-3-chloropropane	ND	0.184	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Dibromochloromethane	ND	0.0974	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Dibromomethane	ND	0.111	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,2-Dichlorobenzene	ND	0.147	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,3-Dichlorobenzene	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,4-Dichlorobenzene	ND	0.145	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Dichlorodifluoromethane	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,1-Dichloroethane	ND	0.118	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,1-Dichloroethene	ND	0.114	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,2-Dichloropropane	ND	0.137	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,3-Dichloropropane	ND	0.123	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
2,2-Dichloropropane	ND	0.111	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,1-Dichloropropene	ND	0.136	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Hexachlorobutadiene	ND	0.195	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
2-Hexanone	ND	0.241	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Isopropylbenzene	ND	0.167	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
4-Isopropyltoluene	ND	0.201	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
4-Methyl-2-pentanone	ND	0.406	6.87		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Methylene chloride	ND	0.273	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
n-Butylbenzene	ND	0.160	2.06		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
n-Propylbenzene	ND	0.196	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
sec-Butylbenzene	ND	0.201	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
Styrene	ND	0.126	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
tert-Butylbenzene	ND	0.214	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		
1,1,1,2-Tetrachloroethane	ND	0.114	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370		

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order **1706910**

Date Reported: 7/11/2017

CLIENT: Western Refining Company			Clier	nt Sampl	e ID: OW	7-60 (20)-22')		
Project: SMW-2 AND BOUNDARY W	ELLS Collection Date: 6/13/2017 4:05:00 PM								
Lab ID: 1706910-004	Matrix:	SOIL	R	eceived l	Date: 6/15	5/2017	11:15:00 AM		
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
METHOD 8260B/5035LOW: VOLATILES							Analyst: RAA		
1,1,2,2-Tetrachloroethane	ND	0.141	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
Tetrachloroethene (PCE)	ND	0.0879	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
trans-1,2-DCE	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
trans-1,3-Dichloropropene	ND	0.101	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
1,2,3-Trichlorobenzene	ND	0.121	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
1,2,4-Trichlorobenzene	ND	0.141	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
1,1,1-Trichloroethane	ND	0.119	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
1,1,2-Trichloroethane	ND	0.0971	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
Trichloroethene (TCE)	ND	0.111	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
Trichlorofluoromethane	ND	0.0981	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
1,2,3-Trichloropropane	ND	0.280	1.37		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
Vinyl chloride	ND	0.125	0.687		µg/Kg	1	6/19/2017 4:23:00 PM	32370	
Xylenes, Total	0.708	0.376	1.37	J	µg/Kg	1	6/19/2017 4:23:00 PM	32370	
Surr: 1,2-Dichloroethane-d4	153	0	70-130	S	%Rec	1	6/19/2017 4:23:00 PM	32370	
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	6/19/2017 4:23:00 PM	32370	
Surr: Dibromofluoromethane	137	0	70-130	S	%Rec	1	6/19/2017 4:23:00 PM	32370	
Surr: Toluene-d8	98.8	0	70-130		%Rec	1	6/19/2017 4:23:00 PM	32370	

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В
	D	Sample Diluted Due to Matrix	Е

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	06/22/2017 17:26	<u>WG991209</u>



ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	06/22/2017 17:27	WG991209

Ϊc	
³ Ss	
^⁴ Cn	
^₅ Sr	
4Qc	
⁷ GI	
Â	Number of Street
⁹ Sc	

*

Wet Chemistry by Method 9012B

•••••••••••••••••••••••••••••••••••••••	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/kg		mg/kg		date / time		0
Cyanide	ND		0.250	1	06/23/2017 20:37	WG991279	ΪC



3

Wet Chemistry by Method 9012B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	06/23/2017 20:39	WG991279



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WG991209

QUALITY CONTROL SUMMARY

Wet Chemistry by Met	hod 4500CN	E-2011			L917105-01.02
Method Blank (MB)					
(MB) R3227997-1 06/22/1	7 17:07				
	MB Result	MB Qualifier	MB MOL	MB RDL	
Analyte	l/gm		l/gm	mg/l	
Cyanide	N		0.0018	0.00500	

L917084-01 Original Sample (OS) • Duplicate (DUP)

(OS) L917084-01 06/22/1	17 17:20 • (DUP) R	3227997-4 06	3/22/17 17:2	21		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	l/ɓɯ		%		8
Cyanide	0.00197	0.00245	-	22	67	20

S S S S S

L917108-01 Original Sample (OS) • Duplicate (DUP)

	Original Res	ult DUP Result	Dilution DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	l/Gm	l/ɓɯ	96		88
Syanide	QN	0.000	1		20

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Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3227997-2 06/22/	17 17:08 • (LCSE	C) R3227997-3	06/22/17 17:0	6						
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	Шg/I	l/gm	l∕bm	ж	%	%			%	%
Cyanide	0.100	0.0985	0.105	66	105	85-115			6	20

L917102-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L917102-04 06/22/	17 17:23 • (MS) R3	227997-5 06/2	22/17 17:24 • (N	1SD) R322799.	7-6 06/22/171	7:25						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	l/gm	l∕ɓш	l/gm	l/gm	8	86		~			%	86
Cyanide	0.100	QN	0.0435	0.0896	44	06	-	75-125	<u>9</u>	55	69	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L917105

WG991279 Wet Chemistry by Method 9012B

QUALITY CONTROL SUMMARY

Method Blank (MB)

	MB RDL	mg/kg	0.250	
	MB MDL	mg/kg	0.039	
	MB Qualifier			
06/23/1/ 20:22	MB Result	mg/kg	n	
(MB) K3228418M)		Analyte	Cyanide	

L917105-03 Original Sample (OS) • Duplicate (DUP)

021 L31/ 102-03 00/ 23/1/	20:37 • (DUP) F	V3ZZ8415-4 0	6/23/1/ 20:5	ω		
	Original Result	DUP Result	Dilution L	UP RPD DL	JP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg	8			8
Cyanide	QN	0.0472	1			20

5

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Ss

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

Spike Atmontin ELS Result ELS V RESULT ELS REC. ELS V REC.	LCSD Result L	CS Rec. LCSD Re	c. Rec. Limits	LCS Qualifier	LCSD Qualifier RPD	RPD Limits
Analyte mg/kg mg/kg % %	mg/kg %	%	%		ð ^ç	%
Cyanide 2.50 2.52 2.62 101 105	2.62 10	01 105	50-150		4	20

Sc. Sc. Al

L917238-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L917238-03 06/23/17	7 20:48 • (MS) R.	3228415-6 06/	23/17 20:49 • ((MSD) R32284	15-7 06/23/17	20:50						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	тд/кд	mg/kg	mg/kg	8	%		%			%	%
Cyanide	3.33	QN	1.47	1.68	42	49	-	75-125	21	<u> 16</u>	14	20

GLOSSARY OF TERMS

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
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.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



34

WO#:	1706910
	11 7 1 17

Client: Project:	Western SMW-2	n Refining (2 AND BOU	Company UNDAR	y Y WELLS							
Sample ID	MB-A	Samp	Туре: МЕ	BLK	Test	tCode: El	PA Method	200.7: Metals			
Client ID:	PBW	Bato	h ID: A4	3653	R	unNo: 4	3653				
Prep Date:		Analysis I	Date: 6/	20/2017	S	eqNo: 1	375201	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		ND	0.0020	0111110100	0	, <u>-</u> e	201121111		, o. u. 2		
Beryllium		ND	0.0020								
Cadmium		ND	0.0020								
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Iron		ND	0.020								
Manganese		ND	0.0020								
Nickel		ND	0.010								
Silver		ND	0.0050								
Vanadium		ND	0.050								
Zinc		ND	0.010								
Sample ID	LCSLL-A	Samp	Туре: LC	SLL	Test	tCode: El	PA Method	200.7: Metals			
Client ID:	BatchQC	Bato	h ID: A4	3653	R	unNo: 4 :	3653				
Prep Date:		Analysis I	Date: 6/	20/2017	S	eqNo: 1	375202	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.0018	0.0020	0.002000	0	90.0	50	150			J
Beryllium		0.0019	0.0020	0.002000	0	96.0	50	150			J
Cadmium		0.0019	0.0020	0.002000	0	96.0	50	150			J
Chromium		0.0059	0.0060	0.006000	0	97.7	50	150			J
Cobalt		0.0064	0.0060	0.006000	0	107	50	150			
Iron		0.024	0.020	0.02000	0	121	50	150			
Manganese		0.0020	0.0020	0.002000	0	102	50	150			
Nickel		0.0056	0.010	0.005000	0	113	50	150			J
Silver		0.0052	0.0050	0.005000	0	105	50	150			
Vanadium		0.0098	0.050	0.01000	0	98.2	50	150			J
Zinc		0.0055	0.010	0.005000	0	109	50	150			J
Sample ID	LCS-A	Samp	Type: LC	s	Test	tCode: El	PA Method	200.7: Metals			
Client ID:	LCSW	Batc	h ID: A4	3653	R	unNo: 4	3653				
Prep Date:		Analysis I	Date: 6/	20/2017	S	eqNo: 1	375203	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.49	0.0020	0.5000	0	97.0	85	115			
Beryllium		0.50	0.0020	0.5000	0	100	85	115			
Cadmium		0.49	0.0020	0.5000	0	97.7	85	115			
				0 5000	0	070	05	115			
Chromium		0.49	0.0060	0.5000	0	97.0	60	115			
Chromium Cobalt		0.49 0.46	0.0060 0.0060	0.5000 0.5000	0	97.0 91.7	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 Detection Limit
- W Sample container temperature is out of limit as specified

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11-Jul-17

Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID LCS-A	Samp	Туре: LC	LCS TestCode: EPA Method 20							
Client ID: LCSW	Bato	h ID: A4	3653	R	RunNo: 4	3653				
Prep Date:	Analysis I	Date: 6/	20/2017	S	SeqNo: 1	375203	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.47	0.0020	0.5000	0	93.6	85	115			
Nickel	0.46	0.010	0.5000	0	91.8	85	115			
Silver	0.099	0.0050	0.1000	0	99.3	85	115			
Vanadium	0.51	0.050	0.5000	0	102	85	115			
Zinc	0.48	0.010	0.5000	0	95.5	85	115			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 22 of 48

Qual

Units: mg/L

HighLimit

115

%RPD

RPDLimit

Client: Western Refining Company **Project:** SMW-2 AND BOUNDARY WELLS Sample ID LCS SampType: LCS TestCode: EPA 200.8: Metals LCSW Client ID: Batch ID: B43799 RunNo: 43799 SeqNo: 1379729 Prep Date: Analysis Date: 6/26/2017 Analyte Result PQL SPK value SPK Ref Val Antimony 0.023 0.0010 0.02500 0

Arsenic		0.024	0.0010	0.02500	0	94.4	85	115			
Lead		0.011	0.00050	0.01250	0	90.6	85	115			
Selenium		0.023	0.0010	0.02500	0	93.4	85	115			
Sample ID	LLLCS	Samp	Type: LC	SLL	Tes	tCode: El	PA 200.8: N	letals			
Client ID:	BatchQC	Bat	ch ID: B4	3799	F	RunNo: 4	3799				
Prep Date:		Analysis	Date: 6/	26/2017	S	SeqNo: 1	379730	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.00094	0.0010	0.001000	0	94.4	50	150			J
Arsenic		0.0011	0.0010	0.001000	0	107	50	150			
Lead		0.00047	0.00050	0.0005000	0	94.9	50	150			J
Selenium		0.0013	0.0010	0.001000	0	134	50	150			
Sample ID	MB	Samp	Type: MI	BLK	Tes	tCode: El	PA 200.8: N	letals			
Client ID:	PBW	Bat	ch ID: B4	3799	F	RunNo: 4	3799				
Prep Date:		Analysis	Date: 6/	/26/2017	S	SeqNo: 1	379732	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		ND	0.0010								
Arsenic		ND	0.0010								
Lead		ND	0.00050								
Selenium		ND	0.0010								

%REC

91.1

LowLimit

85

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 23 of 48

Client: Western Refining Company Project: SMW-2 AND BOUNDARY WELLS

Sample ID MB-32504	SampType: MBLK	TestCode: EPA Method	245.1: Mercury	
Client ID: PBW	Batch ID: 32504	RunNo: 43819		
Prep Date: 6/27/2017	Analysis Date: 6/27/2017	SeqNo: 1380679	Units: mg/L	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Mercury	ND 0.00020			
Sample ID LCS-32504	SampType: LCS	TestCode: EPA Method	245.1: Mercury	
Sample ID LCS-32504 Client ID: LCSW	SampType: LCS Batch ID: 32504	TestCode: EPA Method RunNo: 43819	245.1: Mercury	
Sample ID LCS-32504 Client ID: LCSW Prep Date: 6/27/2017	SampType: LCS Batch ID: 32504 Analysis Date: 6/27/2017	TestCode: EPA Method RunNo: 43819 SeqNo: 1380680	245.1: Mercury Units: mg/L	
Sample ID LCS-32504 Client ID: LCSW Prep Date: 6/27/2017 Analyte	SampType: LCS Batch ID: 32504 Analysis Date: 6/27/2017 Result PQL SPK value	TestCode: EPA Method RunNo: 43819 SeqNo: 1380680 SPK Ref Val %REC LowLimit	245.1: Mercury Units: mg/L HighLimit %RPD	RPDLimit Qual

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client: W Project: S	Vestern Refining MW-2 AND BO	Compan <u>y</u> UNDAR	y Y WELLS							
Sample ID LCS-3236	2 Samp	Type: LC	s	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Bate	ch ID: 32	362	R	anNo: 4	3629				
Prep Date: 6/19/201	7 Analysis	Date: 6/	20/2017	S	SeqNo: 1	374617	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DR	0) 46	10	50.00	0	91.4	73.2	114			
Surr: DNOP	4.9		5.000		97.7	70	130			
Sample ID MB-32362	samp	Туре: М	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Bate	ch ID: 32	362	R	unNo: 4	3629				
Prep Date: 6/19/201	7 Analysis	Date: 6/	20/2017	S	SeqNo: 1	374618	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DR	0) ND	10								
Motor Oil Range Organics (1	MRO) ND	50								
Surr: DNOP	10		10.00		100	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1706910
	11-Jul-17

Client:WesternProject:SMW-2	Refining C AND BOU	Company NDAR	y Y WELLS							
Sample ID 1706910-001CMS	S SampT	ype: MS	S	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: EB01	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	ate: 6/	/20/2017	S	SeqNo: 1	375391	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.9	1.0	5.000	0	119	87.2	145			
Surr: DNOP	0.60		0.5000		121	72.4	157			
Sample ID 1706910-001CM	SD SampT	уре: М	SD	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: EB01	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	oate: 6/	/20/2017	S	SeqNo: 1	375392	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	116	87.2	145	2.61	20	
Surr: DNOP	0.60		0.5000		121	72.4	157	0	0	
Sample ID LCS-32351	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: LCSW	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	oate: 6/	/20/2017	S	SeqNo: 1	375408	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	114	82.8	146			
Surr: DNOP	0.59		0.5000		118	72.4	157			
Sample ID MB-32351	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e	
Client ID: PBW	Batch	n ID: 32	351	F	RunNo: 4	3629				
Prep Date: 6/19/2017	Analysis D	oate: 6/	/20/2017	S	SeqNo: 1	375409	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.2		1.000		121	72.4	157			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client: Western Project: SMW-2	n Refining C 2 AND BOU	Company NDAR	y Y WELLS							
Sample ID MB-32325	SampT	ype: ME	BLK	Tes	tCode: EF	PA Method	8015D: Gasc	line Rang	e	
Client ID: PBS	Batch	n ID: 32	325	F	unNo: 4	3604				
Prep Date: 6/16/2017	Analysis D	ate: 6/	19/2017	S	SeqNo: 1	374087	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.9	54	150			
Sample ID LCS-32325	SampT	ype: LC	s	Tes	tCode: EF	PA Method	8015D: Gasc	line Rang	е	
Client ID: LCSS	Batch	n ID: 32	325	F	unNo: 4	3604				
Prep Date: 6/16/2017	Analysis D	ate: 6/	19/2017	5	SeqNo: 1	374088	Units: mg/k	ίg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.6	76.4	125			
Surr: BFB	1100		1000		108	54	150			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client: Western Project: SMW-2	Refining C	Compan JNDAR	y Y WELLS								
Sample ID RB	SampT	Гуре: МІ	BLK	Tes	TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBW	Batc	Batch ID: G43605			RunNo: 43605						
Prep Date:	Analysis E	Date: 6/	/19/2017	S	SeqNo: 1	374131	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	ND	0.050									
Surr: BFB	24		20.00		118	52.3	138				
Sample ID 2.5UG GRO LCS	B Samp	Гуре: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e		
Client ID: LCSW	Batc	h ID: G 4	13605	F	RunNo: 4	3605					
Prep Date:	Analysis E	Date: 6/	/19/2017	S	SeqNo: 1	374132	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	0.42	0.050	0.5000	0	84.4	79.1	123				
Surr: BFB	26		20.00		128	52.3	138				

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1706910 11-Jul-17

Client: Western Refining Company **Project:**

SMW-2 AND BOUNDARY WELLS

Sample ID Ics-32370	SampType: LCS4			TestCode: Method 8260B/5035LOW: VOLATILES						
Client ID: BatchQC	Batch	ID: 32	370	R	unNo: 43	3615				
Prep Date: 6/19/2017	Analysis Da	ate: 6/	19/2017	S	SeqNo: 13	373913	Units: µg/Kg	I		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	10.8	1.00	10.00	0	108	70	130			
Toluene	9.91	1.00	10.00	0	99.1	70	130			
Ethylbenzene	9.83	1.00	10.00	0	98.3	70	130			
Methyl tert-butyl ether (MTBE)	21.6	1.00	20.00	0	108	70	130			
1,2,4-Trimethylbenzene	10.1	1.00	10.00	0	101	70	130			
1,3,5-Trimethylbenzene	9.91	1.00	10.00	0	99.1	70	130			
1,2-Dichloroethane (EDC)	11.5	1.00	10.00	0	115	70	130			
1,2-Dibromoethane (EDB)	10.1	1.00	10.00	0	101	70	130			
Naphthalene	10.1	2.00	10.00	0	101	73.3	147			
1-Methylnaphthalene	11.2	4.00	10.00	0	112	69.6	154			
2-Methylnaphthalene	9.00	4.00	10.00	0	90.0	67.7	155			
Acetone	22.9	10.0	20.00	0	115	60	140			
Bromobenzene	10.2	1.00	10.00	0	102	70	130			
Bromodichloromethane	11.5	1.00	10.00	0	115	70	130			
Bromoform	9.88	1.00	10.00	0	98.8	70	130			
Bromomethane	8.35	3.00	10.00	0	83.5	70	130			
2-Butanone	24.3	10.0	20.00	0	121	60	140			
Carbon disulfide	21.2	10.0	20.00	0	106	60	140			
Carbon tetrachloride	10.8	1.00	10.00	0	108	70	130			
Chlorobenzene	9.97	1.00	10.00	0	99.7	70	130			
Chloroethane	10.9	2.00	10.00	0	109	70	130			
Chloroform	11.2	1.00	10.00	0	112	70	130			
Chloromethane	9.34	3.00	10.00	0	93.4	66.4	132			
2-Chlorotoluene	10.0	1.00	10.00	0	100	70	130			
4-Chlorotoluene	10.2	1.00	10.00	0	102	70	130			
cis-1,2-DCE	11.3	1.00	10.00	0	113	70	130			
cis-1,3-Dichloropropene	10.1	1.00	10.00	0	101	70	130			
1,2-Dibromo-3-chloropropane	8.90	2.00	10.00	0	89.0	70	130			
Dibromochloromethane	9.57	1.00	10.00	0	95.7	70	130			
Dibromomethane	11.5	1.00	10.00	0	115	70	130			
1,2-Dichlorobenzene	10.1	1.00	10.00	0	101	70	130			
1,3-Dichlorobenzene	10.2	1.00	10.00	0	102	70	130			
1,4-Dichlorobenzene	10.3	1.00	10.00	0	103	70	130			
Dichlorodifluoromethane	11.8	1.00	10.00	0	118	35.6	131			
1,1-Dichloroethane	10.7	1.00	10.00	0	107	63.7	129			
1,1-Dichloroethene	10.6	1.00	10.00	0	106	70	130			
1,2-Dichloropropane	10.6	1.00	10.00	0	106	70	130			
1,3-Dichloropropane	10.1	1.00	10.00	0	101	70	130			
2,2-Dichloropropane	10.4	2.00	10.00	0	104	70	130			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Practical Quanitative Limit PQL
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: **1706910** *11-Jul-17*

Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID Ics-32370	SampType: LCS4			Tes	TestCode: Method 8260B/5035LOW: VOLATILES					
Client ID: BatchQC	Batch	ID: 32	370	F	RunNo: 4	3615				
Prep Date: 6/19/2017	Analysis D	ate: 6/	19/2017	S	SeqNo: 1	373913	Units: µg/Kg	9		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	11.0	1.00	10.00	0	110	70	130			
Hexachlorobutadiene	9.23	2.00	10.00	0	92.3	70	130			
2-Hexanone	19.4	10.0	20.00	0	96.8	60	140			
Isopropylbenzene	9.68	1.00	10.00	0	96.8	70	130			
4-Isopropyltoluene	10.2	1.00	10.00	0	102	70	130			
4-Methyl-2-pentanone	21.6	10.0	20.00	0	108	60	140			
Methylene chloride	10.6	3.00	10.00	0	106	70	130			
n-Butylbenzene	9.98	3.00	10.00	0	99.8	70	130			
n-Propylbenzene	9.98	1.00	10.00	0	99.8	70	130			
sec-Butylbenzene	9.62	1.00	10.00	0	96.2	70	130			
Styrene	10.0	1.00	10.00	0	101	70	130			
tert-Butylbenzene	9.54	1.00	10.00	0	95.4	70	130			
1,1,1,2-Tetrachloroethane	9.54	1.00	10.00	0	95.4	70	130			
1,1,2,2-Tetrachloroethane	10.4	2.00	10.00	0	104	70	130			
Tetrachloroethene (PCE)	9.91	1.00	10.00	0	99.1	70	130			
trans-1,2-DCE	10.6	1.00	10.00	0	106	70	130			
trans-1,3-Dichloropropene	8.98	1.00	10.00	0	89.8	70	130			
1,2,3-Trichlorobenzene	10.3	1.00	10.00	0	103	70	130			
1,2,4-Trichlorobenzene	10.4	1.00	10.00	0	104	70	130			
1,1,1-Trichloroethane	10.7	1.00	10.00	0	107	70	130			
1,1,2-Trichloroethane	10.2	1.00	10.00	0	103	70	130			
Trichloroethene (TCE)	10.9	1.00	10.00	0	109	70	130			
Trichlorofluoromethane	11.1	1.00	10.00	0	111	70	130			
1,2,3-Trichloropropane	10.9	2.00	10.00	0	109	70	130			
Vinyl chloride	10.1	1.00	10.00	0	101	70	130			
Xylenes, Total	30.0	2.00	30.00	0	99.9	70	130			
Surr: 1,2-Dichloroethane-d4	11.9		10.00		119	70	130			
Surr: 4-Bromofluorobenzene	10.4		10.00		104	70	130			
Surr: Dibromofluoromethane	11.8		10.00		118	70	130			
Surr: Toluene-d8	10.2		10.00		103	70	130			
Sample ID mb-32370	SampT	ype: ME	BLK	Tes	tCode: M	ethod 8260	B/5035LOW:	VOLATIL	ES	
Client ID: PBS	Batch	ID: 32	370	F	RunNo: 4	3615				
Prep Date: 6/19/2017	Analysis D	ate: 6/	19/2017	S	SeqNo: 1	373982	Units: µg/Kg	9		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.00								
Toluene	ND	1.00								
Ethylbenzene	ND	1.00								

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#: 1706910 11-Jul-17

Qual

J J J J

Western Refining Company **Client: Project:** SMW-2 AND BOUNDARY WELLS Sample ID mb-32370 SampType: MBLK PBS Client ID: Batch ID: 32370 Prep Date: 6/19/2017 Analysis Date: 6/19/2017 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit Acthyl tert-butyl ether (MTRE) 1 00

weary tert-buly ether (WIBE)	ND	1.00
1,2,4-Trimethylbenzene	ND	1.00
1,3,5-Trimethylbenzene	ND	1.00
1,2-Dichloroethane (EDC)	ND	1.00
1,2-Dibromoethane (EDB)	ND	1.00
Naphthalene	0.420	2.00
1-Methylnaphthalene	0.630	4.00
2-Methylnaphthalene	0.620	4.00
Acetone	0.980	10.0
Bromobenzene	ND	1.00
Bromodichloromethane	ND	1.00
Bromoform	ND	1.00
Bromomethane	ND	3.00
2-Butanone	ND	10.0
Carbon disulfide	ND	10.0
Carbon tetrachloride	ND	1.00
Chlorobenzene	ND	1.00
Chloroethane	ND	2.00
Chloroform	ND	1.00
Chloromethane	ND	3.00
2-Chlorotoluene	ND	1.00
4-Chlorotoluene	ND	1.00
cis-1,2-DCE	ND	1.00
cis-1,3-Dichloropropene	ND	1.00
1,2-Dibromo-3-chloropropane	ND	2.00
Dibromochloromethane	ND	1.00
Dibromomethane	ND	1.00
1,2-Dichlorobenzene	ND	1.00
1,3-Dichlorobenzene	ND	1.00
1,4-Dichlorobenzene	ND	1.00
Dichlorodifluoromethane	ND	1.00
1,1-Dichloroethane	ND	1.00
1,1-Dichloroethene	ND	1.00
1,2-Dichloropropane	ND	1.00
1,3-Dichloropropane	ND	1.00
2,2-Dichloropropane	ND	2.00
1,1-Dichloropropene	ND	1.00
Hexachlorobutadiene	ND	2.00

Qualifiers:

2-Hexanone

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded

ND

10.0

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

TestCode: Method 8260B/5035LOW: VOLATILES

Units: µg/Kg

%RPD

RPDLimit

HighLimit

RunNo: 43615

SeqNo: 1373982

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WO#: **1706910** *11-Jul-17*

Client: Project:	Western R SMW-2 A	efining C ND BOU	ompany NDAR	y Y WELLS							
Sample ID mb-323	370	SampT	ype: ME	BLK	Tes	tCode: M	ethod 8260	B/5035LOW:	VOLATILE	ES	
Client ID: PBS		Batch	D: 32	370	F	unNo: 4	3615				
Bron Data: 6/10/2	017			40/2017	c		272092	Unite: ua/Ka			
Fiep Date. 0/19/2		Analysis D	ale. 0	19/2017			57 5902				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Isopropylbenzene		ND	1.00								
4-Isopropyltoluene		ND	1.00								
4-Methyl-2-pentanone		ND	10.0								
Methylene chloride		ND	3.00								
n-Butylbenzene		ND	3.00								
n-Propylbenzene		ND	1.00								
sec-Butylbenzene		ND	1.00								
Styrene		ND	1.00								
tert-Butylbenzene		ND	1.00								
1,1,1,2-Tetrachloroethan	е	ND	1.00								
1,1,2,2-Tetrachloroethan	е	ND	2.00								
Tetrachloroethene (PCE)		ND	1.00								
trans-1,2-DCE		ND	1.00								
trans-1,3-Dichloropropen	e	ND	1.00								
1,2,3-Trichlorobenzene		ND	1.00								
1,2,4-Trichlorobenzene		ND	1.00								
1,1,1-Trichloroethane		ND	1.00								
1,1,2-Trichloroethane		ND	1.00								
Trichloroethene (TCE)		ND	1.00								
Trichlorofluoromethane		ND	1.00								
1.2.3-Trichloropropane		ND	2.00								
Vinvl chloride		ND	1.00								
Xvlenes. Total		ND	2.00								
Surr: 1.2-Dichloroetha	ne-d4	13.1	0	10.00		131	70	130			s
Surr: 4-Bromofluorobe	nzene	10.2		10.00		102	70	130			Ŭ
Surr: Dibromofluorome	thane	12.6		10.00		126	70	130			
Surr: Toluene-d8		9.94		10.00		99.4	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#: **1706910** *11-Jul-17*

Client:	Western Refini	ng Compa	iny							
Project:	SMW-2 AND I	BOUNDA	RY WELLS							
Sample ID rb1	Sa	ampType:	MBLK	Те	estCode: I	EPA Method	8260B: VOL	ATILES		
Client ID: PBW	I	Batch ID:	B43587		RunNo:	43587				
Prep Date:	Analy	sis Date:	6/16/2017		SeqNo:	1373146	Units: µg/L			
Analyte	Res	ult PQI	_ SPK value	SPK Ref Va	I %REC	CowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	Ν	ND 1	0							
Toluene	Ν	ND 1	.0							
Ethylbenzene	Ν	ND 1	.0							
Methyl tert-butyl ether (M	TBE) N	ND 1	.0							
1,2,4-Trimethylbenzene	Ν	ND 1	.0							
1,3,5-Trimethylbenzene	Ν	ND 1	.0							
1,2-Dichloroethane (EDC)) N	ND 1	.0							
1,2-Dibromoethane (EDB) N	ND 1	.0							
Naphthalene	Ν	ND 2	.0							
1-Methylnaphthalene	Ν	ND 4	0							
2-Methylnaphthalene	Ν	ND 4	0							
Acetone	Ν	ND 1	0							
Bromobenzene	Ν	ND 1	0							
Bromodichloromethane	Ν	ND 1	0							
Bromoform	Ν	ND 1	0							
Bromomethane	Ν	ND 3	0							
2-Butanone	Ν	ND 1	0							
Carbon disulfide	Ν	ND 1	0							
Carbon Tetrachloride	Ν	ND 1	0							
Chlorobenzene	Ν	ND 1	0							
Chloroethane	Ν	ND 2	0							
Chloroform	Ν	ND 1	0							
Chloromethane	Ν	ND 3	0							
2-Chlorotoluene	Ν	ND 1	0							
4-Chlorotoluene	Ν	ND 1	.0							
cis-1.2-DCE	Ν	ND 1	.0							
cis-1.3-Dichloropropene	Ν	ND 1	.0							
1.2-Dibromo-3-chloropror	oane N	ND 2	.0							
Dibromochloromethane	N	ND 1	.0							
Dibromomethane	N	ND 1	.0							
1.2-Dichlorobenzene	N	ND 1	.0							
1.3-Dichlorobenzene	N	ND 1	0							
1.4-Dichlorobenzene	N	ND 1	0							
Dichlorodifluoromethane	N	ND 1	.0							
1.1-Dichloroethane		11	0							
1.1-Dichloroethene		11	0							
1.2-Dichloropropane		11	0							
1 3-Dichloropropane		11	0							
2,2-Dichloropropane	N	ND 2	0							

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 33 of 48

WO#: **1706910** *11-Jul-17*

Client: V Project: S	Western Refining SMW-2 AND BC	Compan OUNDAR	y Y WELLS							
Sample ID rb1	Sam	рТуре: М	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Ba	tch ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis	B Date: 6/	16/2017	Ş	SeqNo: 1	373146	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								
Vinvl chloride	ND	1.0								
Xvlenes, Total	ND	1.5								
Surr: 1.2-Dichloroethane	e-d4 11	-	10.00		107	70	130			
Surr: 4-Bromofluorobenz	zene 10		10.00		101	70	130			
Surr: Dibromofluorometh	nane 11		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			
Sample ID 100ng Ic	s2 Sam	рТуре: LC	S	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Ba	tch ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis	a Date: 6/	16/2017	S	SeqNo: 1	373147	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	19	1.0	20.00	0	95.1	70	130			

Qualifiers:

Chlorobenzene

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

20

1.0

20.00

- 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

101

- J Analyte detected below quantitation limits
- P Sample pH Not In Range

0

- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

70

130

Page 34 of 48

Client:WesterProject:SMW-2	n Refining C 2 AND BOU	ompany NDAR	y Y WELLS							
Sample ID 100ng lcs2	SampT	ype: LC	s	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	n ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis D	ate: 6/	16/2017	S	SeqNo: 1	373147	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21	1.0	20.00	0	103	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.9	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.7	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			
Sample ID 1706910-001a n	ns2 SampT	ype: M	3	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: EB01	Batch	n ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis D	ate: 6/	17/2017	S	SeqNo: 1	373151	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	0.07200	96.4	70	130			
Chlorobenzene	20	1.0	20.00	0	101	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	90.1	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.1	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			
Sample ID 1706910-001a n	nsd2 SampT	ype: MS	SD	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: EB01	Batch	n ID: B4	3587	F	RunNo: 4	3587				
Prep Date:	Analysis D	ate: 6/	17/2017	S	SeqNo: 1	373152	Units: µg/L			
Apolyto	Booult		SDK volve			Loud imit	Llight insit	0/ חחח		Quel

Prep Date:	Analysis D	0ate: 6/	17/2017	S	SeqNo: 1	373152	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130	2.31	20	
Toluene	18	1.0	20.00	0.07200	91.7	70	130	5.02	20	
Chlorobenzene	19	1.0	20.00	0	96.4	70	130	4.50	20	
1,1-Dichloroethene	19	1.0	20.00	0	96.9	70	130	4.98	20	
Trichloroethene (TCE)	18	1.0	20.00	0	88.5	70	130	1.74	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.4		10.00		94.3	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		104	70	130	0	0	
Surr: Toluene-d8	10		10.00		102	70	130	0	0	

Qualifiers:

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

Р

- W Sample container temperature is out of limit as specified
- Page 35 of 48

Client: Wester Project: SMW-	rn Refining C 2 AND BOU	Compan JNDAR	y RY WELLS							
Sample ID rb	SampT	уре: М	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	Batch ID: W43599			RunNo: 4					
Prep Date:	Analysis D	ate: 6	/19/2017	S	SeqNo: 1	374263	Units: %Re	C		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.3		10.00		93.0	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.1	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.8	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			
Sample ID 100ng Ics	SampT	ype: LC	cs	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	n ID: W	43599	F	RunNo: 4	3599				
Prep Date:	Analysis D	Date: 6	/19/2017	5	SeqNo: 1	374264	Units: %Re	C		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.1	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.6	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 36 of 48

Client: Project:

Western Refining Company SMW-2 AND BOUNDARY WELLS

Sample ID 1706910-003ams	SampType: MS			Tes	tCode: El					
Client ID: OW-59 (33-34')	Batc	h ID: 324	411	F	RunNo: 4	3869				
Prep Date: 6/21/2017	Analysis E	Date: 6/	28/2017	S	SeqNo: 1	382769	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.667	0	64.3	24.7	111			
4-Chloro-3-methylphenol	2.3	0.50	3.323	0	70.3	21.7	108			
2-Chlorophenol	1.9	0.20	3.323	0	58.5	21.9	103			
1,4-Dichlorobenzene	0.99	0.20	1.667	0	59.5	15.8	93.9			
2,4-Dinitrotoluene	0.91	0.50	1.667	0	54.5	19.9	101			
N-Nitrosodi-n-propylamine	1.0	0.20	1.667	0	62.4	17.7	100			
4-Nitrophenol	2.1	0.25	3.323	0	61.7	19.3	112			
Pentachlorophenol	2.0	0.40	3.323	0	60.5	20.5	105			
Phenol	2.2	0.20	3.323	0	65.1	23.1	101			
Pyrene	1.2	0.20	1.667	0	70.8	18.3	113			
1,2,4-Trichlorobenzene	1.2	0.20	1.667	0	70.0	21.8	108			
Surr: 2-Fluorophenol	1.9		3.323		57.9	21.4	101			
Surr: Phenol-d5	2.3		3.323		68.6	32	110			
Surr: 2,4,6-Tribromophenol	2.4		3.323		72.8	38.7	115			
Surr: Nitrobenzene-d5	1.2		1.667		74.2	26.2	120			
Surr: 2-Fluorobiphenyl	1.2		1.667		72.9	36.2	124			
Surr: 4-Terphenyl-d14	0.98		1.667		58.9	15	114			
Sample ID 1706910-003amsd	Samp	Гуре: МS	SD	Tes	tCode: El	PA Method	8270C: Sem	ivolatiles		
Client ID: OW-59 (33-34')	Batc	h ID: 324	411	F	RunNo: 4					
Prep Date: 6/21/2017	Analysis E	Date: 6/	28/2017	5	SeqNo: 1	382770	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.0	0.20	1.664	0	61.7	24.7	111	4.25	30.2	
4-Chloro-3-methylphenol	2.0	0.50	3.319	0	61.3	21.7	108	13.8	37.2	
2-Chlorophenol	1.9	0.20	3.319	0	57.4	21.9	103	2.14	48	
1,4-Dichlorobenzene	1.0	0.20	1.664	0	60.0	15.8	93.9	0.736	40.6	
2,4-Dinitrotoluene	0.86	0.50	1.664	0	51.5	19.9	101	5.90	47.7	
N-Nitrosodi-n-propylamine	0.95	0.20	1.664	0	57.0	17.7	100	9.26	52.5	
4-Nitrophenol	2.0	0.25	3.319	0	61.7	19.3	112	0.0843	36.6	
Pentachlorophenol	1.9	0.40	3.319	0	57.6	20.5	105	4.98	65.5	
Phenol	2.0	0.20	3.319	0	60.7	23.1	101	7.15	44	
Pyrene	1.2	0.20	1.664	0	73.1	18.3	113	2.97	42.1	
1,2,4-Trichlorobenzene	1.2	0.20	1.664	0	73.5	21.8	108	4.68	31.5	
Surr: 2-Fluorophenol	1.8		3.319		54.3	21.4	101	0	0	
Surr: Phenol-d5	2.1		3.319		62.2	32	110	0	0	
Surr: 2,4,6-Tribromophenol	2.3		3.319		67.9	38.7	115	0	0	
Surr: Nitrobenzene-d5	1.2		1.664		72.9	26.2	120	0	0	
Surry 2 Elugraphinhanul	11		1 664		67 9	36.2	124	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
 - Sample pH Not In Range
- RL Reporting Detection Limit

Р

W Sample container temperature is out of limit as specified

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WO#: **1706910** *11-Jul-17*

WO#:	1706910
	11-Jul-17

Client: Western Refining Company Project: SMW-2 AND BOUNDARY WELLS										
Sample ID 1706910-003ams	d SampType: MSD			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: OW-59 (33-34')	Batch ID: 32411			RunNo: 43869						
Pren Date: 6/21/2017	Analvsis Date: 6/28/2017			SeaNo: 1382770			Units: ma/Ka			
		uio. 0	_0/_0/1			002110	onno. mg/i	-9		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.97		1.664		58.3	15	114	0	0	
Sample ID Ics-32411	-32411 SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: LCSS	Batch ID: 32411			RunNo: 43869						
Pren Date: 6/21/2017				SegNo: 1382772			Unite: malka			
	Analysis L	ale. 0/	20/2017			302113	onits. mg/r	Ŋ		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.0	0.20	1.670	0	61.7	39.4	110			
4-Chloro-3-methylphenol	1.9	0.50	3.330	0	56.2	41.6	108			
2-Chlorophenol	1.8	0.20	3.330	0	55.1	35	107			
1,4-Dichlorobenzene	0.96	0.20	1.670	0	57.7	31	105			
2,4-Dinitrotoluene	0.86	0.50	1.670	0	51.7	35.6	101			
N-Nitrosodi-n-propylamine	0.86	0.20	1.670	0	51.2	26	100			
4-Nitrophenol	1.6	0.25	3.330	0	48.6	34.1	106			
Pentachlorophenol	1.7	0.40	3.330	0	51.9	35.3	95.4			
Phenol	1.9	0.20	3.330	0	55.6	39.3	96.5			
Pyrene	1.2	0.20	1.670	0	70.3	47.8	95.7			
1,2,4-Trichlorobenzene	1.2	0.20	1.670	0	69.5	36.6	117			
Surr: 2-Fluorophenol	1.7		3.330		49.8	21.4	101			
Surr: Phenol-d5	1.9		3.330		58.1	32	110			
Surr: 2,4,6-Tribromophenol	2.1		3.330		64.4	38.7	115			
Surr: Nitrobenzene-d5	1.1		1.670		67.2	26.2	120			
Surr: 2-Fluorobiphenyl	1.2		1.670		70.9	36.2	124			
Surr: 4-Terphenyl-d14	0.96		1.670		57.3	15	114			
Sample ID mb-32411	SampType: MBLK			TestCode: EPA Method 8270C: Semivolatiles						
Client ID: PBS	Batch ID: 32411			RunNo: 43869						
Prep Date: 6/21/2017	Analysis Date: 6/28/2017			SeqNo: 1382774			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(a.h.i)pervlene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
		0.20								

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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: **1706910** *11-Jul-17*

Qual

J

Client: Western Refining Company SMW-2 AND BOUNDARY WELLS **Project:** Sample ID mb-32411 SampType: MBLK PBS Client ID: Batch ID: 32411 Analysis Date: 6/28/2017 Prep Date: 6/21/2017 Analyte Result PQL SPK value SPK Ref Val Benzoic acid ND 0.50 Benzyl alcohol ND 0.20 ND 0.20 Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether ND 0.20

ND

0.27

ND

ND

ND

ND

ND

ND

ND

ND

ND

0.32

ND

ND

ND

ND

ND

ND

ND

0.23

ND

0.20

0.50

0.20

0.20

0.20

0.50

0.50

0.25

0.20

0.20

0.20

0.40

0.40

0.20

0.20

0.20

0.20

0.20

0.25

0.20

0.20

0.40

0.30

0.40

0.50

0.50

0.50

0.20

0.20

0.20

0.20

0.20

0.20

0.20

0.40

Bis(2-chloroisopropyl)ether

Bis(2-ethylhexyl)phthalate

Butyl benzyl phthalate

4-Chloro-3-methylphenol

4-Chlorophenyl phenyl ether

2-Chloronaphthalene 2-Chlorophenol

Di-n-octyl phthalate

Dibenzofuran

Dibenz(a,h)anthracene

1,2-Dichlorobenzene 1,3-Dichlorobenzene

1.4-Dichlorobenzene

3,3⁻Dichlorobenzidine

Diethyl phthalate

Dimethyl phthalate

2,4-Dichlorophenol

2,4-Dimethylphenol

2,4-Dinitrophenol

2,4-Dinitrotoluene

2.6-Dinitrotoluene

Hexachlorobenzene

Hexachlorobutadiene

Hexachloroethane

Indeno(1,2,3-cd)pyrene

Hexachlorocyclopentadiene

Fluoranthene Fluorene

4,6-Dinitro-2-methylphenol

Carbazole

Chrysene Di-n-butyl phthalate

4-Chloroaniline

4-Bromophenyl phenyl ether

J

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Qualifiers:

Isophorone

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

TestCode: EPA Method 8270C: Semivolatiles

LowLimit

Units: mg/Kg

%RPD

RPDLimit

HighLimit

RunNo: 43869

%REC

SeqNo: 1382774
WO#: **1706910** *11-Jul-17*

Client:WesterProject:SMW-	rn Refining C 2 AND BOU	Company	Y WELLS							
Sample ID mb-32411	SampT	уре: МВ	LK	Test	tCode: El	PA Method	8270C: Semi	ivolatiles		
Client ID: PBS	Batch	n ID: 324	11	R	RunNo: 4	3869				
Prep Date: 6/21/2017	Analysis D	ate: 6/2	28/2017	s	SeaNo: 1	382774	Units: ma/k	Ka		
Analista	Desult				N DEO	L avril insit		- J		Qual
1 Methylpanbthalene	Result	PQL	SPK value	SPK Ref Val	%REC	LOWLIMIT	HighLimit	%RPD	RPDLIMIt	Quai
2-Methylnaphthalene	ND	0.20								
2-Methylnhenol	ND	0.20								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.0		3.330		59.6	21.4	101			
Surr: Phenol-d5	2.1		3.330		64.2	32	110			
Surr: 2,4,6-Tribromophenol	2.3		3.330		68.5	38.7	115			
Surr: Nitrobenzene-d5	1.3		1.670		77.5	26.2	120			
Surr: 2-Fluorobiphenyl	1.3		1.670		77.5	36.2	124			
Surr: 4-Terphenyl-d14	1.0		1.670		60.9	15	114			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 40 of 48

WO#: **1706910** *11-Jul-17*

Client: Project:

Western Refining Company SMW-2 AND BOUNDARY WELLS

Sample ID mb-32356	SampT	уре: М	BLK	Tes	tCode: El	PA Method	8270C: Semi	volatiles		
Client ID: PBW	Batch	ID: 32	356	F	RunNo: 4	3713				
Prep Date: 6/19/2017	Analysis D	ate: 6	21/2017	S	SeqNo: 1	376917	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	12	20								J
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	5.2	10								J
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								
3,3 ⁻ Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 41 of 48

WO#: **1706910** *11-Jul-17*

Client:WesterProject:SMW-	rn Refining C -2 AND BOU	ompany NDAR`	/ Y WELLS							
Sample ID mb-32356	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8270C: Semiv	volatiles		
Client ID: PBW	Batch	ID: 323	356	F	RunNo: 4	3713				
Prep Date: 6/19/2017	Analysis D	ate: 6/2	21/2017	S	SeqNo: 1	376917	Units: µg/L			
Analvte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HiahLimit	%RPD	RPDLimit	Qual
2.4-Dinitrotoluene	ND	10			,		· · · g· · _ · · · ·			-,
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	110		200.0		53.6	15	98.1			
Surr: Phenol-d5	80		200.0		39.9	15	80.7			
Surr: 2,4,6-Tribromophenol	170		200.0		84.0	15	112			
Surr: Nitrobenzene-d5	87		100.0		87.3	27.2	90.7			
Surr: 2-Fluorobiphenyl	71		100.0		70.6	23.3	85.6			
Surr: 4-Terphenyl-d14	71		100.0		70.8	27.6	107			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 42 of 48

WO#: 1706910 11-Jul-17

Client: Western Refining Company **Project:**

SMW-2 AND BOUNDARY WELLS

Sample ID Ics-32356	SampType: LCS TestCode: EPA Method 8270C: Semivolatiles									
Client ID: LCSW	Batc	h ID: 32:	356	R	anNo: 4	3713				
Prep Date: 6/19/2017	Analysis [Date: 6/	21/2017	S	SeqNo: 1	376918	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	70	10	100.0	0	70.2	41.2	98.9			
4-Chloro-3-methylphenol	150	10	200.0	0	75.0	29.1	111			
2-Chlorophenol	150	10	200.0	0	73.2	23.3	108			
1,4-Dichlorobenzene	49	10	100.0	0	48.6	29.4	84.5			
2,4-Dinitrotoluene	71	10	100.0	0	70.9	36.6	88.7			
N-Nitrosodi-n-propylamine	79	10	100.0	0	79.1	46.9	106			
4-Nitrophenol	90	10	200.0	0	44.8	15	74.7			
Pentachlorophenol	150	20	200.0	0	72.8	28.1	85.4			
Phenol	91	10	200.0	0	45.4	15	78.2			
Pyrene	80	10	100.0	0	80.1	44.4	96.8			
1,2,4-Trichlorobenzene	63	10	100.0	0	63.2	34.3	89			
Surr: 2-Fluorophenol	94		200.0		47.2	15	98.1			
Surr: Phenol-d5	72		200.0		35.8	15	80.7			
Surr: 2,4,6-Tribromophenol	160		200.0		77.8	15	112			
Surr: Nitrobenzene-d5	80		100.0		80.1	27.2	90.7			
Surr: 2-Fluorobiphenyl	67		100.0		67.2	23.3	85.6			
Surr: 4-Terphenyl-d14	65		100.0		64 7	27.6	107			
					0	21.0	107			
Sample ID Icsd-32356	Samp	Гуре: LC	SD	Tes	tCode: El	PA Method	8270C: Semi	volatiles		
Sample ID Icsd-32356 Client ID: LCSS02	Samp [¬] Batc	Гуре: LC h ID: 32 :	SD 356	Tes	tCode: El	PA Method 3713	8270C: Semi	volatiles		
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017	Samp Batc Analysis [Гуре: LC h ID: 32: Date: 6/	SD 356 21/2017	Tes R S	tCode: El RunNo: 4 SeqNo: 1	PA Method 3713 376919	8270C: Semi Units: μg/L	volatiles		
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte	Samp ⁻ Batc Analysis I Result	Type: LC h ID: 32: Date: 6 / PQL	SD 356 21/2017 SPK value	Tes R S SPK Ref Val	tCode: El RunNo: 4 SeqNo: 1 %REC	PA Method 3713 376919 LowLimit	8270C: Semi Units: µg/L HighLimit	volatiles %RPD	RPDLimit	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene	Samp Batc Analysis I Result 56	Type: LC h ID: 32 Date: 6 / PQL 10	SD 356 21/2017 SPK value 100.0	Tes R S SPK Ref Val 0	tCode: El RunNo: 4: GeqNo: 1: <u>%REC</u> 56.1	PA Method 3713 376919 LowLimit 41.2	8270C: Semi Units: µg/L HighLimit 98.9	volatiles %RPD 22.2	RPDLimit 37.4	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol	Samp Batc Analysis I Result 56 120	Type: LC h ID: 32 Date: 6 / PQL 10 10	SD 356 21/2017 SPK value 100.0 200.0	Tes F S SPK Ref Val 0 0	tCode: El RunNo: 4 SeqNo: 1: <u>%REC</u> 56.1 59.2	PA Method 3713 376919 LowLimit 41.2 29.1	8270C: Semi Units: µg/L HighLimit 98.9 111	volatiles %RPD 22.2 23.5	RPDLimit 37.4 26.8	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol	Samp Batc Analysis I Result 56 120 110	Гуре: LC h ID: 32 : Date: 6/ PQL 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0	Tes F SPK Ref Val 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9	PA Method 3713 376919 LowLimit 41.2 29.1 23.3	8270C: Semi Units: µg/L HighLimit 98.9 111 108	volatiles %RPD 22.2 23.5 26.8	RPDLimit 37.4 26.8 30.3	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene	Samp Batc Analysis I Result 56 120 110 35	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0	Tes R SPK Ref Val 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5	volatiles %RPD 22.2 23.5 26.8 32.2	RPDLimit 37.4 26.8 30.3 32	Qual
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene	Samp Batc Analysis I Result 56 120 110 35 54	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7	<pre>volatiles %RPD 22.2 23.5 26.8 32.2 27.9</pre>	RPDLimit 37.4 26.8 30.3 32 36.7	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine	Samp Batc Analysis I Result 56 120 110 35 54 63	Type: LC h ID: 32 Date: 6 PQL 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0	Tes: F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5 62.7	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1	RPDLimit 37.4 26.8 30.3 32 36.7 29.9	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0	Tes: F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7	%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110	Type: LC h ID: 32 : Date: 6 /2 10 10 10 10 10 10 10 20	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 200.0	Tes: F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4	%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol	Samp ⁻ Batc Analysis I Result 56 120 110 35 54 63 70 110 62	Type: LC h ID: 32 : Date: 6 /2 10 10 10 10 10 10 10 20 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0	Tes: R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene	Samp ⁻ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : SeqNo: 1 : 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8	<pre>%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene	Samp ⁻ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0 100.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4: SeqNo: 1: 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89	wolatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Sur: 2-Fluorophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81	Type: LC h ID: 32 Date: 6 10 10 10 10 10 10 10 20 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 200.0 100.0 200.0	Tes R SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4: SeqNo: 1: 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1	<pre>%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8 0	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81 63	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 20 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0	Tes SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4: SeqNo: 1: %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6 31.5	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 44.4 34.3 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7	%RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8 0 0 0	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81 63 130	Type: LC h ID: 32: Date: 6/ PQL 10 10 10 10 10 10 10 20 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0	Tes:	tCode: EI RunNo: 4: SeqNo: 1: %REC 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6 31.5 65.0	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 44.4 34.3 15 15	8270C: Semi Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0	Qual R
Sample ID Icsd-32356 Client ID: LCSS02 Prep Date: 6/19/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5	Samp ⁷ Batc Analysis I Result 56 120 110 35 54 63 70 110 62 64 44 81 63 130 70	Type: LC h ID: 32 : Date: 6 / PQL 10 10 10 10 10 10 10 10 10 10 10	SD 356 21/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0	Tes R S SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 : SeqNo: 1 : <u>%REC</u> 56.1 59.2 55.9 35.1 53.5 62.7 34.9 54.0 31.2 64.0 44.2 40.6 31.5 65.0 70.2	PA Method 3713 376919 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 44.4 34.3 15 15 15 15	8270C: Semi Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112 90.7	volatiles %RPD 22.2 23.5 26.8 32.2 27.9 23.1 24.7 29.7 36.9 22.3 35.4 0 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0 0 0	Qual R

Qualifiers:

Value exceeds Maximum Contaminant Level. *

Sample Diluted Due to Matrix D

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

- Practical Quanitative Limit PQL
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank

Е Value above quantitation range

- J Analyte detected below quantitation limits
 - Sample pH Not In Range

Р

W Sample container temperature is out of limit as specified Page 43 of 48

RL Reporting Detection Limit

Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID Icsd-32356	SampTyp	pe: LC	SD	Test	tCode: El	PA Method	8270C: Semi	volatiles		
Client ID: LCSS02	Batch I	D: 32	356	R	anNo: 4	3713				
Prep Date: 6/19/2017	Analysis Dat	te: 6/	21/2017	S	SeqNo: 1	376919	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	56		100.0		56.3	27.6	107	0	0	

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 44 of 48

Client: Western Refining Company Project: SMW-2 AND BOUNDARY WELLS

Sample ID MB-32380	SampType	MBLK	Tes	tCode: EP	A Method	7471: Mercu	ry		
Client ID: PBS	Batch ID:	32380	F	RunNo: 43	637				
Prep Date: 6/20/2017	Analysis Date:	6/20/2017	S	SeqNo: 13	74889	Units: mg/K	g		
Analyte	Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND 0.	033							
Sample ID LCS-32380	SampType	LCS	Tes	tCode: EP	A Method	7471: Mercu	гy		
Sample ID LCS-32380 Client ID: LCSS	SampType Batch ID:	LCS 32380	Tes	tCode: EP	A Method 637	7471: Mercu	гу		
Sample ID LCS-32380 Client ID: LCSS Prep Date: 6/20/2017	SampType Batch ID: Analysis Date:	LCS 32380 6/20/2017	Tes F S	tCode: EP RunNo: 43 SeqNo: 13	A Method 637 74890	7471: Mercui Units: mg/K	ry g		
Sample ID LCS-32380 Client ID: LCSS Prep Date: 6/20/2017 Analyte	SampType Batch ID: Analysis Date: Result P	: LCS 32380 6/20/2017 QL SPK value	Tes F S SPK Ref Val	tCode: EP RunNo: 43 SeqNo: 13 %REC	A Method 637 74890 LowLimit	7471: Mercur Units: mg/K HighLimit	ry g %RPD	RPDLimit	Qual

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 45 of 48

Hall Environ	mental Ana	lysis I	Laborat	ory, Inc.					WO#:	1706910 11-Jul-17
Client: Project:	Western Refining SMW-2 AND BO	Compan UNDAR	y Y WELLS							
Sample ID MB-3234	19 Samp	Туре: М	BLK	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID: PBS	Bate	ch ID: 32	349	F	RunNo: 4	3643				
Prep Date: 6/19/20	17 Analysis	Date: 6/	/20/2017	S	SeqNo: 1	374994	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Iron	0.91	2.5								J
Lead	ND	0.25								
Manganese	0.065	0.10								J
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.51	2.5								J
Sample ID LCS-323	349 Samp	Type: LC	s	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID: LCSS	Bate	ch ID: 32	349	F	RunNo: 4	3643				
Prep Date: 6/19/20	17 Analysis	Date: 6/	/20/2017	S	SeqNo: 1	374995	Units: mg/ł	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	24	2.5	25.00	0	97.7	80	120			
Arsenic	25	2.5	25.00	0	102	80	120			
Barium	25	0.10	25.00	0	99.7	80	120			
Beryllium	26	0.15	25.00	0	103	80	120			
Cadmium	25	0.10	25.00	0	99.2	80	120			
Chromium	25	0.30	25.00	0	98.5	80	120			
Cobalt	23	0.30	25.00	0	93.9	80	120			
Iron	29	2.5	25.00	0	117	80	120			
Lead	23	0.25	25.00	0	93.7	80	120			
Manganese	24	0.10	25.00	0	97.8	80	120			
Nickel	24	0.50	25.00	0	94.3	80	120			
Selenium	24	2.5	25.00	0	96.6	80	120			
Silver	5.0	0.25	5.000	0	101	80	120			
Vanadium	26	2.5	25.00	0	103	80	120			

Qualifiers:

Zinc

* Value exceeds Maximum Contaminant Level.

OC SUMMARY REPORT

- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded

24

2.5

25.00

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range

95.6

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range

0

- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

80

120

Page 46 of 48

Client: Western Refining Company

Project: SMW-2 AND BOUNDARY WELLS

Sample ID	1706910-003BMS	SampT	ype: M \$	3 3	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	OW-59 (33-34')	Batch	ו ID: 32 :	349	F	≀unNo: 4 :	3643				
Prep Date:	6/19/2017	Analysis D	ate: 6/	20/2017	٤	SeqNo: 1:	375007	Units: mg/r	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		22	2.4	24.39	0	90.9	75	125			
Beryllium		22	0.15	24.39	0.3383	90.7	75	125			
Cadmium		21	0.098	24.39	0	87.0	75	125			
Chromium		26	0.29	24.39	4.643	85.5	75	125			
Cobalt		21	0.29	24.39	2.130	78.1	75	125			
Lead		19	0.24	24.39	0.7202	76.2	75	125			
Manganese		200	0.098	24.39	180.8	94.5	75	125			
Nickel		22	0.49	24.39	3.504	77.1	75	125			
Silver		4.3	0.24	4.878	0	88.1	75	125			
Vanadium		33	2.4	24.39	10.95	92.4	75	125			
Zinc		27	2.4	24.39	7.461	79.0	75	125			
Sample ID	1706910-003BMSI	D SampT	ype: M	3D	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	OW-59 (33-34')	Batch	ı ID: 32 :	349	F	≀unNo: 4 :	3643				
Prep Date:	6/19/2017	Analysis D	Date: 6/	/20/2017	ç	SeaNo: 1	375008	Units: ma/ł	۲a		I

	Analysis L		20/2017	C C		57 5000	orinto. Ing/r	v g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	23	2.5	24.89	0	90.7	75	125	1.74	20	
Beryllium	23	0.15	24.89	0.3383	89.5	75	125	0.681	20	
Cadmium	21	0.10	24.89	0	86.3	75	125	1.17	20	
Chromium	26	0.30	24.89	4.643	86.9	75	125	2.93	20	
Cobalt	21	0.30	24.89	2.130	77.6	75	125	1.21	20	
Lead	19	0.25	24.89	0.7202	75.1	75	125	0.552	20	
Manganese	200	0.10	24.89	180.8	93.0	75	125	0.0506	20	
Nickel	23	0.50	24.89	3.504	77.0	75	125	1.60	20	
Silver	4.3	0.25	4.977	0	86.9	75	125	0.614	20	
Vanadium	33	2.5	24.89	10.95	89.5	75	125	0.802	20	
Zinc	27	2.5	24.89	7.461	79.2	75	125	1.62	20	
Sample ID 1706910-003BMS	SampT	Гуре: М S	\$	Tes	tCode: E	PA Method	6010B: Soil	Metals		
			- <i>·</i> -							I

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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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 47 of 48

Client:Western Refining CompanyProject:SMW-2 AND BOUNDARY WELLS

Sample ID	1706910-003BMSD	SampT	ype: MS	SD.	Tes	tCode: El	PA Method	6010B: Soil	Metals		
Client ID:	OW-59 (33-34')	Batch	n ID: 32	349	R	RunNo: 4	3774				
Prep Date:	6/19/2017	Analysis D	ate: 6/	26/2017	S	SeqNo: 1	378920	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		7.8	2.5	24.89	0	31.5	75	125	7.50	20	S
Barium		180	0.10	24.89	132.5	185	75	125	1.56	20	S
Selenium		14	2.5	24.89	0	56.1	75	125	13.6	20	S

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 48 of 48

HALL ENVIE ANAL LABO	RONMENTAL YSIS Ratory	Hall Environmental Albu Albu TEL: 505-345-3975 Website: www.hai	Analysis Laborato 4901 Hawkins I querque, NM 871 FAX: 505-345-41 Ilenvironmental.co	wy NE 09 Sam 07 07	ple Log-In C	heck List
Client Name:	Western Refining Gallup	Work Order Number:	1706910		RcptNo:	1
Received By:	Anne Thorne	6/15/2017 11:15:00 AM	I	Anne Arm		
Completed By:	Anne Thorne	6/16/2017 12:41:46 PM	l	A. M		
Reviewed By:	ENM	06/16/17		anna ma		
Chain of Cus	stody					
1. Custody sea	als intact on sample bottles?		Yes 🗌	No 🗌	Not Present 🗹	
2. Is Chain of (Custody complete?		Yes 🗹	No 🗌	Not Present	
3. How was the	e sample delivered?		<u>Client</u>			
<u>Log In</u>						
4. Was an atte	empt made to cool the sample	es?	Yes 🗹	No 🗌	NA 🗍	
5. Were all sar	mples received at a temperatu	∎re of >0° C to 6.0°C	Yes 🗹	No 🗌		
6. Sample(s) i	n proper container(s)?		Yes 🗹	No 🗌		
7. Sufficient sa	ample volume for indicated tes	it(s)?	Yes 🗹	No 🗌		
8. Are samples	s (except VOA and ONG) prop	erly preserved?	Yes 🔽	No 🗌		
9. Was preserv	vative added to bottles?		Yes 🗌	No 🗹	NA 🗆	
10.VOA vials h	ave zero headspace?		Yes 🗹	No 🗆	No VOA Vials 🗌	
11. Were any s	ample containers received bro	oken?	Yes 🗌	No 🗹	# of preserved	
12. Does paper (Note discre	work match bottle labels? pancies on chain of custody)		Yes 🗹	No 🗌	bottles checked for pH:	Z, Z
13. Are matrices	s correctly identified on Chain	of Custody?	Yes 🗹	No 🖾	Adjusted?	<i>wo</i>
14. Is it clear wh	nat analyses were requested?		Yes 🗹	No 🗌		ko,
15. Were all hole (If no, notify	ding times able to be met? customer for authorization.)		Yes 🗹	No 🗌	Checked by:	
Special Hand	lling (if applicable)					

16.1	Was client notified of all o	liscrepancies with this order?	Yes	No 🗌	NA 🗹
	Person Notified:		Date		
	By Whom:		Via: 🗌 eMail 🗌 Ph	none 🗌 Fax 🛛	In Person
	Regarding:	[······································
	Client Instructions:		//////////////////////////////////////		

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17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

		www.hallenvironmental.com	A901 Hawkins NE - Albuquerque, NM 87109	Tel. 505-345-3975 Fax 505-345-4107	Analysis Request	() () () () ()	Э 8 В, ² 3) (1 20 1) 2)	s (8 (Gai SIMS) 085 005 10 50 6 11 10 11 10 10 10 10 10 10 10 10 10 10	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(C) (C) (C) (C) (C) (C) (C) (C) (C) (C)	TEX + MTE BTEX + MTE BTEX + MTE BTEX + MTE BE BE CORE CORE CORE CORE CORE CORE CORE COR												Remarks:			f this possibility. Any sub-contracted data will be clearly notated on the analytical report.
urn-Around Time:	KStandard 🗆 Rush	roject Name:	MW-Z AND BOUNDARY WELL	roject #:		roject Manager:		CHERYL JOHNSON	ampler: TRACY PAYNE	in Ice: X Yes 🗆 No	ample Temperature: 10	Container Preservative HEAL No.	40 ML HCL 70	HBER-1 NEAT	HER-1 NEAT 20	Destre 1 HNO- DY 20	1 ASTIC-1 HND3	ASTIC-1 NAOH	DATS HCL TC	HBER-1 NEAT 20	AMBER-1 NEAT -00	LASTIC-1 HNO3	Come-1 NAOH	ceived by: Date Time	cever by Marcare Date Time	Ultra Chan IIIS	acted to other accredited laboratories. This serves as notice o
Chain-of-Custody Record	Client: WESTERN REFINING SW, TNC.	GALLUP REFINERY	Mailing Address: 92 GTANT CROSSING RD 3	GALUP NM 87301	Phone #: 505-722-0231	email or Fax#: CHERYL. JOHNSON @	QA/QC Package: WNR.CON	□ Standard 🗙 Level 4 (Full Validation)	Accreditation	O NELAP Other O	K EDD (Type) EXCEL	Date Time Matrix Sample Request ID	6/17/1810 WATER EBO1 Vc				<u>5</u>		6/13/7 1715 MATER EBOZ				イマイ	Date: Time: Relinquished by:	Date: Time: Relinquished by: Re-	1115/22/SIN F/ISIIO	If necessary, samples submitted to Hall Environmental may be subcontra

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l Time:	d 🗆 Rush	e:	AND BOUN			ager:		DANSON	RACY PAY	KYes	perature:	Preservative Type	NEAT	MEDH	SOBI	NEAT	MEDH	3081						1) nu (ccredited laboratorie
Turn-Around	X Standard	Project Nam	SMM-2	Project #:		Project Man		CHERYL	Sampler: 1	On Ice;	Sample Tem	Container Type and #	.Tars-3	VIALS-2	VIALS-2	JARS-3	VIALS-2	VIALS-2	2				Received by:	Received by:	ontracted to other a
Chain-of-Custody Record	Client: WESTERN REFINING SW, INC.	GALUP REFINERY	Mailing Address: 92 BIANT CROSSING RD	GALLUP NM 87301	Phone #: 505-722-0231	Email or Fax#. CHERYL, JOHNSON (2)	QA/QC Package: WNR.COM	□ Standard	Accreditation	NELAP Other	K EDD (Type) EXEL	Date Time Matrix Sample Request ID	6/12/1700 3011 ON-59 (33-34')			eha/17/605 Soll ON-40 (20-22')		x x x					Date: Time: Relinquished by:	dSITTIS AND 2	If necessary, samples submitted to Hall Environmental may be subor

5...

WESTERN REFINING SOUTHWEST, INC. GALLUP REFINERY - GALLUP, NEW MEXICO SMW-2 AND BOUNDARY WELLS - JUNE 2016 METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES AND WATER QA/QC SAMPLES

TOTAL METALS ANALYSIS AND DISCOLVED METALS ANALYSIS

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES

Analyte	Analytical Method
Chloride	EPA method 3 00.0
Fluende	EPA method 300.0
 Sulfate	EPA method 300.0

WESTERN REFINING SOUTHWEST, INC. GALLUP REFINERY - GALLUP, NEW MEXICO SMW-2 AND BOUNDARY WELLS - JUNE 2016 METALS AND CYANIDE ANALYSES FOR SOIL SAMPLES

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020
Iron	SW-846 method 6010/6020
Manganese	SW-846 method 6010/6020

Appendix E Groundwater Analytical Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 03, 2017 Cheryl Johnson Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-3833 FAX (505) 722-0210

RE: SMW 2 and Boundary Wells

OrderNo.: 1706G62

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 8 sample(s) on 6/30/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order 1706G62

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 8/3/2017 **CLIENT:** Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM Diesel Range Organics (DRO) ND 0.36 1.0 mg/L 1 7/5/2017 10:10:22 AM 32608 Motor Oil Range Organics (MRO) ND 5.0 5.0 mg/L 1 7/5/2017 10:10:22 AM 32608 Surr: DNOP 72.4-157 %Rec 7/5/2017 10:10:22 AM 32608 115 0 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) 0.025 ND 0.050 mg/L 1 7/6/2017 1:51:07 PM G44019 Surr: BFB 295 0 52.3-138 S %Rec 1 7/6/2017 1:51:07 PM G44019 **EPA METHOD 300.0: ANIONS** Analyst: MRA 0.22 7/3/2017 6:30:12 PM Fluoride ND 0.50 mg/L 5 R43973 Chloride 1600 50 100 * mg/L 200 7/19/2017 1:32:26 PM R44381 Bromide 2.4 0.072 0.50 mg/L 5 7/3/2017 6:30:12 PM R43973 Phosphorus, Orthophosphate (As P) ND 1.2 2.5 Н mg/L 5 7/3/2017 6:30:12 PM R43973 740 1.9 10 mg/L 20 7/3/2017 6:42:37 PM R43973 Sulfate 5 0.13 1.0 7/3/2017 9:23:59 PM R43973 Nitrate+Nitrite as N 3.0 mg/L EPA METHOD 200.7: DISSOLVED METALS Analyst: pmf Barium 0.044 0.00093 0.0020 mg/L 1 7/18/2017 1:13:37 PM A44298 Beryllium 0.00045 0.00026 0.0020 J mg/L 1 7/18/2017 1:13:37 PM A44298 0.0020 Cadmium 0.00058 7/18/2017 1:13:37 PM A44298 ND mg/L 1 Calcium 170 0.45 mg/L 10 7/18/2017 1:21:54 PM A44298 10 Chromium ND 0.0011 0.0060 mg/L 1 7/18/2017 1:13:37 PM A44298 7/18/2017 1:13:37 PM Cobalt 0.0019 0.00076 0.0060 A44298 J mg/L 1 Iron ND 0.010 0.020 mg/L 1 7/18/2017 1:13:37 PM A44298 Magnesium 33 0.12 1.0 mg/L 1 7/18/2017 1:13:37 PM A44298 Manganese 0.55 0.0011 0.0020 * mg/L 1 7/18/2017 1:13:37 PM A44298 Nickel 0.0061 0.0036 0.010 J mg/L 1 7/18/2017 1:13:37 PM A44298 A44298 Potassium 5.0 0.071 1.0 mg/L 1 7/18/2017 1:13:37 PM Silver ND 0.00042 0.0050 mg/L 1 7/18/2017 1:13:37 PM A44298 Sodium 1100 3.2 20 mg/L 20 7/18/2017 1:39:26 PM A44298 Vanadium 0.0066 0.00076 0.050 J mg/L 1 7/18/2017 1:13:37 PM A44298 7/18/2017 1:13:37 PM A44298 **Zinc** 0.011 0.0028 0.010 mg/L 1 **EPA METHOD 200.7: TOTAL METALS** Analyst: pmf Barium 1.6 0.0093 0.020 mg/L 10 7/6/2017 5:42:54 PM 32644 Beryllium 0.0046 0.00026 0.0020 * mg/L 7/6/2017 5:41:00 PM 32644 1 Cadmium ND 0.00058 0.0020 7/6/2017 5:41:00 PM 32644 mg/L 1 Chromium 0.048 0.0011 0.0060 mg/L 1 7/6/2017 5:41:00 PM 32644 Cobalt 0.021 0.00076 0.0060 mg/L 1 7/6/2017 5:41:00 PM 32644 50 Iron 28 0.51 1.0 mg/L 7/7/2017 1:25:13 PM 32644 Manganese 2.2 0.011 0.020 * mg/L 10 7/6/2017 5:42:54 PM 32644

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

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

Practical Quanitative Limit PQL

Oualifiers:

S % Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 1 of 61

Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 200.7: TOTAL METALS** Analyst: pmf Nickel 0.047 0.0036 0.010 mg/L 1 7/6/2017 5:41:00 PM 32644 Silver ND 0.00042 0.0050 mg/L 1 7/6/2017 5:41:00 PM 32644 Vanadium 0.070 0.00076 0.050 mg/L 7/6/2017 5:41:00 PM 32644 1 7/6/2017 5:41:00 PM 32644 Zinc 0.071 0.0028 0.010 mg/L 1 EPA 200.8: DISSOLVED METALS Analyst: JLF 7/19/2017 7:14:45 PM Antimony 0.00028 0.00017 0.0010 J mg/L 1 C44340 Arsenic 0.0044 0.00089 0.0050 mg/L 5 7/21/2017 7:52:57 PM A44430 J Lead 5 ND 0.00084 mg/L 7/21/2017 7:52:57 PM A44430 0.0025 Selenium 0.014 0.0019 0.0050 mg/L 5 7/21/2017 7:52:57 PM A44430 200.8 ICPMS METALS:TOTAL Analyst: JLF Antimony ND 0.0019 0.0050 mg/L 5 7/14/2017 1:06:08 PM 32644 Arsenic 0.0081 0.0015 0.0050 mg/L 5 7/14/2017 1:06:08 PM 32644 * 5 Lead 0.031 0.00048 0.0025 mg/L 7/14/2017 1:06:08 PM 32644 0.013 0.0036 0.0050 mg/L 5 7/14/2017 1:06:08 PM 32644 Selenium **EPA METHOD 245.1: MERCURY** Analyst: MED 0.000099 0.000037 0.00020 J mg/L 1 7/14/2017 4:10:26 PM 32802 Mercury **EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 7/6/2017 8:24:22 PM Acenaphthene ND 3.6 10 µg/L 1 32619 ND 3.5 10 1 7/6/2017 8:24:22 PM 32619 Acenaphthylene µg/L Aniline ND 3.1 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Anthracene ND 3.5 10 1 32619 µg/L 7/6/2017 8:24:22 PM ND 4.5 7/6/2017 8:24:22 PM 32619 Azobenzene 10 µg/L 1 ND 3.9 Benz(a)anthracene 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Benzo(a)pyrene ND 4.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Benzo(b)fluoranthene ND 4.0 7/6/2017 8:24:22 PM 32619 10 µg/L 1 Benzo(g,h,i)perylene ND 4.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND Benzo(k)fluoranthene 4.4 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Benzoic acid 7.8 3.9 20 J 1 7/6/2017 8:24:22 PM 32619 µg/L Benzyl alcohol ND 4.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Bis(2-chloroethoxy)methane ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Bis(2-chloroethyl)ether ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Bis(2-chloroisopropyl)ether ND 3.9 10 7/6/2017 8:24:22 PM 32619 µg/L 1 Bis(2-ethylhexyl)phthalate 4.8 10 J 7/6/2017 8:24:22 PM 32619 5.1 µg/L 1 ND 4.6 4-Bromophenyl phenyl ether 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Butyl benzyl phthalate ND 4.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Carbazole 7/6/2017 8:24:22 PM ND 4.6 10 32619 µg/L 1 4-Chloro-3-methylphenol ND 6.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619

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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 2 of 61

Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 7/6/2017 8:24:22 PM 4-Chloroaniline ND 3.5 10 µg/L 1 32619 2-Chloronaphthalene ND 3.7 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2-Chlorophenol ND 7.5 10 7/6/2017 8:24:22 PM µg/L 1 32619 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND Chrysene 3.8 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Di-n-butyl phthalate ND 5.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Di-n-octyl phthalate ND 4.7 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Dibenzofuran ND 4.1 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND 2.0 10 7/6/2017 8:24:22 PM 1,2-Dichlorobenzene µg/L 1 32619 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 7/6/2017 8:24:22 PM 32619 1.4-Dichlorobenzene ND 2.1 10 µg/L 1 7/6/2017 8:24:22 PM 32619 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND 4.0 10 1 Diethyl phthalate µg/L 7/6/2017 8:24:22 PM 32619 ND 3.6 10 1 Dimethyl phthalate µg/L 7/6/2017 8:24:22 PM 32619 ND 2,4-Dichlorophenol 5.7 20 µg/L 1 7/6/2017 8:24:22 PM 32619 2,4-Dimethylphenol ND 2.8 10 µg/L 1 7/6/2017 8:24:22 PM 32619 4,6-Dinitro-2-methylphenol ND 3.9 20 µg/L 1 7/6/2017 8:24:22 PM 32619 2,4-Dinitrophenol ND 2.6 20 1 7/6/2017 8:24:22 PM 32619 µg/L 2,4-Dinitrotoluene ND 4.0 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2.6-Dinitrotoluene ND 4.5 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Fluoranthene ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Fluorene ND 4.0 10 1 32619 µg/L 7/6/2017 8:24:22 PM ND 3.8 7/6/2017 8:24:22 PM 32619 Hexachlorobenzene 10 µg/L 1 ND 1.3 Hexachlorobutadiene 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND Hexachlorocvclopentadiene 1.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Hexachloroethane ND 1.2 7/6/2017 8:24:22 PM 32619 10 µg/L 1 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 7/6/2017 8:24:22 PM 32619 ND 4.4 Isophorone 10 µg/L 1 7/6/2017 8:24:22 PM 32619 1-Methylnaphthalene ND 3.3 10 1 7/6/2017 8:24:22 PM 32619 µg/L 2-Methylnaphthalene ND 3.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2-Methylphenol ND 3.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619 3+4-Methylphenol ND 3.2 10 µg/L 1 7/6/2017 8:24:22 PM 32619 N-Nitrosodi-n-propylamine ND 4.6 10 µg/L 7/6/2017 8:24:22 PM 32619 1 N-Nitrosodimethylamine ND 3.5 10 7/6/2017 8:24:22 PM 32619 µg/L 1 N-Nitrosodiphenylamine ND 3.9 10 µg/L 1 7/6/2017 8:24:22 PM 32619 Naphthalene ND 2.9 10 µg/L 1 7/6/2017 8:24:22 PM 32619 2-Nitroaniline ND 4.9 10 32619 µg/L 1 7/6/2017 8:24:22 PM 3-Nitroaniline ND 4.3 10 µg/L 1 7/6/2017 8:24:22 PM 32619

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

* 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 3 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, GaProject:SMW 2 and Boundary WellsLab ID:1706G62-001	llup Matrix:	AQUEOUS	Clier Col S Ro	nt Sampl llection 1 eceived 1	e ID: OW Date: 6/28 Date: 6/30	7-60 3/2017 0/2017	11:10:00 AM 10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	4.0	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Nitrobenzene	ND	3.6	10		μg/L	1	7/6/2017 8:24:22 PM	32619
2-Nitrophenol	ND	5.2	10		µg/L	1	7/6/2017 8:24:22 PM	32619
4-Nitrophenol	ND	5.5	10		μg/L	1	7/6/2017 8:24:22 PM	32619
Pentachlorophenol	ND	4.9	20		μg/L	1	7/6/2017 8:24:22 PM	32619
Phenanthrene	ND	4.3	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Phenol	ND	3.1	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Pyrene	ND	4.4	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Pyridine	ND	2.3	10		µg/L	1	7/6/2017 8:24:22 PM	32619
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	7/6/2017 8:24:22 PM	32619
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	7/6/2017 8:24:22 PM	32619
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	7/6/2017 8:24:22 PM	32619
Surr: 2-Fluorophenol	19.2	0	15-98.1		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: Phenol-d5	34.8	0	15-80.7		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: 2,4,6-Tribromophenol	23.3	0	15-112		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: Nitrobenzene-d5	79.1	0 2	7.2-90.7		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: 2-Fluorobiphenyl	68.5	0 2	3.3-85.6		%Rec	1	7/6/2017 8:24:22 PM	32619
Surr: 4-Terphenyl-d14	64.8	0 2	27.6-107		%Rec	1	7/6/2017 8:24:22 PM	32619
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Benzene	ND	0.062	1.0		µg/L	1	7/5/2017 6:12:00 PM	R44015
Toluene	0.24	0.064	1.0	J	ug/L	1	7/5/2017 6:12:00 PM	R44015
Ethylbenzene	ND	0.093	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Methyl tert-butyl ether (MTBE)	0.86	0.24	1.0	J	ug/L	1	7/5/2017 6:12:00 PM	R44015
1.2.4-Trimethylbenzene	ND	0.11	1.0	-	ug/L	1	7/5/2017 6:12:00 PM	R44015
1.3.5-Trimethylbenzene	ND	0.087	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	7/5/2017 6:12:00 PM	R44015
1.2-Dibromoethane (EDB)	ND	0.13	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Naphthalene	ND	0.11	2.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
1-Methylnaphthalene	ND	0.16	4.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
2-Methylnaphthalene	ND	0.15	4.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Acetone	13	0.82	10		µg/L	1	7/5/2017 6:12:00 PM	R44015
Bromobenzene	ND	0.14	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Bromodichloromethane	ND	0.18	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Bromoform	ND	0.21	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Bromomethane	ND	0.26	3.0		µg/L	1	7/5/2017 6:12:00 PM	R44015
2-Butanone	ND	1.1	10		ug/L	1	7/5/2017 6:12:00 PM	R44015
Carbon disulfide	ND	0.40	10		ua/l	1	7/5/2017 6:12:00 PM	R44015
Carbon Tetrachloride	ND	0.11	1.0		ug/L	1	7/5/2017 6:12:00 PM	R44015
Chlorobenzene	ND	0.11	1.0		μg/L	1	7/5/2017 6:12:00 PM	R44015

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA Chloroethane ND 0.23 2.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Chloromethane ND 0.29 3.0 R44015 µg/L 1 7/5/2017 6:12:00 PM 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 7/5/2017 6:12:00 PM 4-Chlorotoluene 0.40 1.0 µg/L 1 R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.091 1.0 R44015 Dibromomethane µg/L 1 7/5/2017 6:12:00 PM 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.40 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,4-Dichlorobenzene ND 1.0 1.0 1 R44015 Dichlorodifluoromethane µg/L 7/5/2017 6:12:00 PM ND 0.40 1.0 1 1,1-Dichloroethane µg/L 7/5/2017 6:12:00 PM R44015 ND 1,1-Dichloroethene 0.081 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1.2-Dichloropropane ND 0.10 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.17 1,3-Dichloropropane 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.16 2.0 1 7/5/2017 6:12:00 PM R44015 2,2-Dichloropropane µg/L 1,1-Dichloropropene ND 0.093 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Hexachlorobutadiene ND 0.80 R44015 1.0 µg/L 1 7/5/2017 6:12:00 PM 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.051 1.0 1 R44015 Isopropylbenzene µg/L 7/5/2017 6:12:00 PM 0.21 0.096 7/5/2017 6:12:00 PM R44015 4-Isopropyltoluene 1.0 J µg/L 1 ND R44015 4-Methyl-2-pentanone 0.71 10 µg/L 1 7/5/2017 6:12:00 PM Methylene Chloride ND 0.11 3.0 µg/L 1 7/5/2017 6:12:00 PM R44015 n-Butylbenzene ND 0.13 3.0 7/5/2017 6:12:00 PM R44015 µg/L 1 n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 sec-Butylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Styrene ND 0.16 1.0 1 7/5/2017 6:12:00 PM R44015 µg/L tert-Butylbenzene ND 0.10 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.10 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Tetrachloroethene (PCE) ND 0.13 1.0 µg/L 7/5/2017 6:12:00 PM R44015 1 trans-1,2-DCE ND 0.18 7/5/2017 6:12:00 PM R44015 1.0 µg/L 1 ND 0.22 1.0 R44015 trans-1,3-Dichloropropene µg/L 1 7/5/2017 6:12:00 PM 1.2.3-Trichlorobenzene ND 0.12 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 ND 0.14 1.0 R44015 1,2,4-Trichlorobenzene µg/L 1 7/5/2017 6:12:00 PM 1,1,1-Trichloroethane ND 0.073 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015

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

* 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

Oualifiers:

- 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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: OW-60 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 11:10:00 AM Lab ID: 1706G62-001 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Analyses Result PQL Qual Units DF **Date Analyzed Batch ID MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 1,1,2-Trichloroethane ND 0.14 1.0 µg/L 7/5/2017 6:12:00 PM R44015 1 Trichloroethene (TCE) ND 0.11 1.0 µg/L 1 7/5/2017 6:12:00 PM R44015 Trichlorofluoromethane ND 0.18 7/5/2017 6:12:00 PM R44015 1.0 µg/L 1 1,2,3-Trichloropropane ND 0.39 7/5/2017 6:12:00 PM R44015 2.0 µg/L 1 Vinyl chloride ND 0.18 7/5/2017 6:12:00 PM R44015 1.0 µg/L 1 Xylenes, Total ND 0.32 1.5 µg/L 1 7/5/2017 6:12:00 PM R44015 Surr: 1,2-Dichloroethane-d4 112 0 70-130 %Rec 1 7/5/2017 6:12:00 PM R44015 Surr: 4-Bromofluorobenzene 112 0 70-130 %Rec 1 7/5/2017 6:12:00 PM R44015 Surr: Dibromofluoromethane 0 R44015 112 70-130 %Rec 1 7/5/2017 6:12:00 PM Surr: Toluene-d8 103 0 70-130 %Rec 7/5/2017 6:12:00 PM R44015 1

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above c

- Η
- Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- ted in the associated Method Blank
- alue above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells Lab ID: 1706G62-002	llup Matrix:	AQUEOU	Clier Col US R	nt Sampl llection I eceived I	e ID: GW Date: 6/28 Date: 6/30	DUP03 3/2017 0/2017 1	1 0:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: TOM	
Diesel Range Organics (DRO)	ND	0.36	10		ma/l	1	7/5/2017 11:34:25 AM	32608
Motor Oil Range Organics (MRO)	ND	5.0	5.0		ma/L	1	7/5/2017 11:34:25 AM	32608
Surr: DNOP	111	0	72.4-157		%Rec	1	7/5/2017 11:34:25 AM	32608
EPA METHOD 8015D: GASOLINE RANGE		-					Analyst: NSB	
Gasoline Range Organics (GRO)	0.035	0 025	0.050		ma/l	1	7/6/2017 2:16:13 PM	G44019
Surr: BEB	105	0.025	52 3-138	5	%Rec	1	7/6/2017 2:16:13 PM	G44019
	100	0	52.5 150		/01/00			01010
EPA METHOD 300.0: ANIONS						_	Analyst: MRA	
Fluoride	ND	0.22	0.50		mg/L	5	7/3/2017 6:55:02 PM	R43973
Chloride	1300	25	50	*	mg/L	100	7/19/2017 1:44:51 PM	R44381
Bromide	1.2	0.072	0.50		mg/L	5	7/3/2017 6:55:02 PM	R43973
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5	н	mg/L	5	7/3/2017 6:55:02 PM	R43973
Sulfate	230	0.48	2.5		mg/L	5	7/3/2017 6:55:02 PM	R43973
Nitrate+Nitrite as N	ND	0.13	1.0		mg/L	5	7/3/2017 9:36:24 PM	R43973
EPA METHOD 200.7: DISSOLVED METAL	S						Analyst: pmf	
Barium	0.21	0.00085	0.0020		mg/L	1	7/18/2017 1:23:49 PM	A44298
Beryllium	0.00033	0.00029	0.0020	J	mg/L	1	7/18/2017 1:23:49 PM	A44298
Cadmium	ND	0.0010	0.0020		mg/L	1	7/18/2017 1:23:49 PM	A44298
Calcium	64	0.078	1.0		mg/L	1	7/18/2017 1:23:49 PM	A44298
Chromium	ND	0.0010	0.0060		mg/L	1	7/18/2017 1:23:49 PM	A44298
Cobalt	ND	0.0016	0.0060		mg/L	1	7/18/2017 1:23:49 PM	A44298
Iron	ND	0.016	0.020		mg/L	1	7/18/2017 1:23:49 PM	A44298
Magnesium	8.5	0.25	1.0		mg/L	1	7/18/2017 1:23:49 PM	A44298
Manganese	0.12	0.00038	0.0020	*	mg/L	1	7/18/2017 1:23:49 PM	A44298
Nickel	0.0028	0.0011	0.010	J	mg/L	1	7/18/2017 1:23:49 PM	A44298
Potassium	3.6	0.11	1.0		mg/L	1	7/18/2017 1:23:49 PM	A44298
Silver	ND	0.00088	0.0050		mg/L	1	7/18/2017 1:23:49 PM	A44298
Sodium	980	1.6	10		mg/L	10	7/18/2017 1:25:45 PM	A44298
Vanadium	ND	0.0019	0.050		mg/L	1	7/18/2017 1:23:49 PM	A44298
Zinc	0.012	0.0011	0.010		mg/L	1	7/18/2017 1:23:49 PM	A44298
EPA METHOD 200.7: TOTAL METALS							Analyst: pmf	
Barium	0.21	0.00093	0.0020		mg/L	1	7/6/2017 5:44:41 PM	32644
Beryllium	ND	0.00026	0.0020		mg/L	1	7/6/2017 5:44:41 PM	32644
Cadmium	ND	0.00058	0.0020		mg/L	1	7/6/2017 5:44:41 PM	32644
Chromium	ND	0.0011	0.0060		mg/L	1	7/6/2017 5:44:41 PM	32644
Cobalt	0.0010	0.00076	0.0060	J	mg/L	1	7/6/2017 5:44:41 PM	32644
Iron	0.81	0.010	0.020	*	mg/L	1	7/6/2017 5:44:41 PM	32644
Manganese	0.13	0.0011	0.0020	*	mg/L	1	7/6/2017 5:44:41 PM	32644

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: SMW 2 and Boundary Wells	allup		Clier Col	t Sampl llection I	e ID: GW Date: 6/28	DUP0 3/2017	1	
Lab ID: 1706G62-002	Matrix:	AQUEOU	S R	eceived I	Date: 6/30)/2017	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: pmf	
Nickel	ND	0.0036	0.010		mg/L	1	7/6/2017 5:44:41 PM	32644
Silver	ND	0.00042	0.0050		mg/L	1	7/6/2017 5:44:41 PM	32644
Vanadium	0.0025	0.00076	0.050	J	mg/L	1	7/6/2017 5:44:41 PM	32644
Zinc	ND	0.0028	0.010		mg/L	1	7/6/2017 5:44:41 PM	32644
EPA 200.8: DISSOLVED METALS							Analyst: JLF	
Antimony	ND	0.00017	0.0010		mg/L	1	7/19/2017 7:19:54 PM	C44340
Arsenic	0.0019	0.00089	0.0050	J	mg/L	5	7/21/2017 8:13:34 PM	A44430
Lead	ND	0.00084	0.0025		mg/L	5	7/21/2017 8:13:34 PM	A44430
Selenium	0.0067	0.0019	0.0050		mg/L	5	7/21/2017 8:13:34 PM	A44430
200.8 ICPMS METALS:TOTAL							Analyst: JLF	
Antimony	ND	0.0019	0.0050		mg/L	5	7/14/2017 1:11:16 PM	32644
Arsenic	0.0017	0.0015	0.0050	J	mg/L	5	7/14/2017 1:11:16 PM	32644
Lead	ND	0.00048	0.0025		mg/L	5	7/14/2017 1:11:16 PM	32644
Selenium	0.0065	0.0036	0.0050		mg/L	5	7/14/2017 1:11:16 PM	32644
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	0.00018	0.000037	0.00020	J	mg/L	1	7/14/2017 4:12:25 PM	32802
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	3.6	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Acenaphthylene	ND	3.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Aniline	ND	3.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Anthracene	ND	3.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Azobenzene	ND	4.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benz(a)anthracene	ND	3.9	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(a)pyrene	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzo(k)fluoranthene	ND	4.4	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzoic acid	22	3.9	20		µg/L	1	7/6/2017 8:52:57 PM	32619
Benzyl alcohol	ND	4.6	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-chloroethoxy)methane	ND	4.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-chloroethyl)ether	ND	4.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	7/6/2017 8:52:57 PM	32619
Bis(2-etnyinexyi)phthalate		4.8	10		µg/∟ 	1	7/6/2017 8:52:57 PM	32619
4-Dromopnenyi pnenyi etner		4.6	10		µg/∟	1	7/0/2017 0:52:57 PM	32019
Dutyi benzyi prinalate		4.6	10		µg/∟	1	7/0/2017 0:52:57 PM	32019
Calud2018 4-Chloro-3-methylphenol		4.0 6.2	10		µg/∟ ug/l	1	7/6/2017 8:52:57 PM	32019 32610
	ND	0.5	10		µg/∟	I	1/0/2017 0.32.37 FIVI	52015

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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: GW DUP01 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 Lab ID: 1706G62-002 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 7/6/2017 8:52:57 PM 4-Chloroaniline ND 3.5 10 µg/L 1 32619 2-Chloronaphthalene ND 3.7 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2-Chlorophenol ND 7.5 10 µg/L 1 7/6/2017 8:52:57 PM 32619 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND Chrysene 3.8 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Di-n-butyl phthalate ND 5.0 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Di-n-octyl phthalate 5.0 4.7 10 J µg/L 1 7/6/2017 8:52:57 PM 32619 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Dibenzofuran ND 4.1 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND 2.0 10 7/6/2017 8:52:57 PM 32619 1,2-Dichlorobenzene µg/L 1 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 7/6/2017 8:52:57 PM 32619 1.4-Dichlorobenzene ND 2.1 10 µg/L 1 7/6/2017 8:52:57 PM 32619 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND 4.0 10 1 Diethyl phthalate µg/L 7/6/2017 8:52:57 PM 32619 ND 3.6 10 1 Dimethyl phthalate µg/L 7/6/2017 8:52:57 PM 32619 ND 2,4-Dichlorophenol 5.7 20 µg/L 1 7/6/2017 8:52:57 PM 32619 2,4-Dimethylphenol ND 2.8 10 µg/L 1 7/6/2017 8:52:57 PM 32619 4,6-Dinitro-2-methylphenol ND 3.9 20 µg/L 1 7/6/2017 8:52:57 PM 32619 2,4-Dinitrophenol ND 2.6 20 1 7/6/2017 8:52:57 PM 32619 µg/L 2,4-Dinitrotoluene ND 4.0 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2.6-Dinitrotoluene ND 4.5 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Fluoranthene ND 4.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Fluorene ND 4.0 10 1 32619 µg/L 7/6/2017 8:52:57 PM ND 3.8 7/6/2017 8:52:57 PM 32619 Hexachlorobenzene 10 µg/L 1 ND 1.3 Hexachlorobutadiene 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND Hexachlorocvclopentadiene 1.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 Hexachloroethane ND 1.2 7/6/2017 8:52:57 PM 32619 10 µg/L 1 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 7/6/2017 8:52:57 PM 32619 ND 4.4 Isophorone 10 µg/L 1 7/6/2017 8:52:57 PM 32619 1-Methylnaphthalene ND 3.3 10 1 7/6/2017 8:52:57 PM 32619 µg/L 2-Methylnaphthalene ND 3.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2-Methylphenol ND 3.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619 3+4-Methylphenol ND 3.2 10 µg/L 1 7/6/2017 8:52:57 PM 32619 N-Nitrosodi-n-propylamine ND 4.6 10 µg/L 7/6/2017 8:52:57 PM 32619 1 N-Nitrosodimethylamine ND 3.5 10 7/6/2017 8:52:57 PM 32619 µg/L 1 N-Nitrosodiphenylamine ND 3.9 32619 10 µg/L 1 7/6/2017 8:52:57 PM Naphthalene ND 2.9 10 µg/L 1 7/6/2017 8:52:57 PM 32619 2-Nitroaniline ND 4.9 10 32619 µg/L 1 7/6/2017 8:52:57 PM 3-Nitroaniline ND 4.3 10 µg/L 1 7/6/2017 8:52:57 PM 32619

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

* 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

Oualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining SouthwesProject:SMW 2 and Boundary WellLab ID:1706G62-002	t, Gallup ls Matrix:	allup Client Sample ID: GW DUP01 Collection Date: 6/28/2017 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILI	ES						Analyst: JDC		
4-Nitroaniline	ND	4.0	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Nitrobenzene	ND	3.6	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
2-Nitrophenol	ND	5.2	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
4-Nitrophenol	ND	5.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Pentachlorophenol	ND	4.9	20		µg/L	1	7/6/2017 8:52:57 PM	32619	
Phenanthrene	ND	4.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Phenol	ND	3.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Pyrene	ND	4.4	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Pyridine	ND	2.3	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	7/6/2017 8:52:57 PM	32619	
Surr: 2-Fluorophenol	53.9	0	15-98.1		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: Phenol-d5	56.5	0	15-80.7		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: 2,4,6-Tribromophenol	71.7	0	15-112		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: Nitrobenzene-d5	83.9	0	27.2-90.7		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: 2-Fluorobiphenyl	75.2	0	23.3-85.6		%Rec	1	7/6/2017 8:52:57 PM	32619	
Surr: 4-Terphenyl-d14	65.2	0	27.6-107		%Rec	1	7/6/2017 8:52:57 PM	32619	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
Benzene	ND	0.062	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Toluene	ND	0.064	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Ethylbenzene	ND	0.093	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Methyl tert-butyl ether (MTBE)	37	0.24	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.2.4-Trimethylbenzene	ND	0.11	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.3.5-Trimethylbenzene	ND	0.087	1.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.2-Dichloroethane (EDC)	0.54	0.40	1.0	J	ua/L	1	7/5/2017 6:36:00 PM	R44015	
1.2-Dibromoethane (EDB)	ND	0.13	1.0	-	ua/L	1	7/5/2017 6:36:00 PM	R44015	
Naphthalene	ND	0.11	2.0		µ9/= ua/l	1	7/5/2017 6:36:00 PM	R44015	
1-Methylnaphthalene	ND	0.16	4.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
2-Methylnaphthalene	ND	0.15	4.0		ua/L	1	7/5/2017 6:36:00 PM	R44015	
Acetone	15	0.82	10		ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromobenzene		0.14	1.0		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromodichloromethane	ND	0.14	1.0		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromoform	ND	0.21	1.0		ua/l	1	7/5/2017 6:36:00 PM	R44015	
Bromomethane	ND	0.21	3.0		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
2-Butanone	ND	1 1	10		rs,⊢ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Carbon disulfide	ND	0.40	10		₽9/⊏ ua/l	1	7/5/2017 6:36:00 PM	R44015	
Carbon Tetrachloride		0. 4 0 0.11	10		µg/⊑ ⊔a/l	1	7/5/2017 6:36:00 PM	R44015	
		0.11	1.0		µg/∟ ug/l	1	7/5/2017 6:26:00 PM	D4015	

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: GW DUP01 **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 Lab ID: 1706G62-002 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 7/5/2017 6:36:00 PM Chloroethane ND 0.23 2.0 µg/L 1 R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 Chloromethane ND 0.29 3.0 R44015 µg/L 1 7/5/2017 6:36:00 PM 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 7/5/2017 6:36:00 PM 4-Chlorotoluene 0.40 1.0 µg/L 1 R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 6:36:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.091 1.0 R44015 Dibromomethane µg/L 1 7/5/2017 6:36:00 PM 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.40 1.0 1 7/5/2017 6:36:00 PM R44015 1,4-Dichlorobenzene µg/L ND 1.0 1.0 1 R44015 Dichlorodifluoromethane µg/L 7/5/2017 6:36:00 PM 0.61 0.40 J 1 R44015 1,1-Dichloroethane 1.0 µg/L 7/5/2017 6:36:00 PM 1,1-Dichloroethene ND 0.081 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,2-Dichloropropane ND 0.10 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.17 1,3-Dichloropropane 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.16 2.0 1 7/5/2017 6:36:00 PM R44015 2,2-Dichloropropane µg/L 1,1-Dichloropropene ND 0.093 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.80 R44015 Hexachlorobutadiene 1.0 µg/L 1 7/5/2017 6:36:00 PM 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.051 1.0 1 R44015 Isopropylbenzene µg/L 7/5/2017 6:36:00 PM ND 0.096 7/5/2017 6:36:00 PM R44015 4-Isopropyltoluene 1.0 µg/L 1 ND 4-Methyl-2-pentanone 0.71 10 µg/L 1 7/5/2017 6:36:00 PM R44015 ND Methylene Chloride 0.11 3.0 µg/L 1 7/5/2017 6:36:00 PM R44015 n-Butylbenzene ND 0.13 3.0 R44015 µg/L 1 7/5/2017 6:36:00 PM n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.11 sec-Butylbenzene 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 7/5/2017 6:36:00 PM Styrene ND 0.16 1.0 1 R44015 µg/L tert-Butylbenzene ND 0.10 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.10 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 6:36:00 PM R44015 Tetrachloroethene (PCE) ND 0.13 1.0 µg/L 7/5/2017 6:36:00 PM R44015 1 trans-1,2-DCE ND 0.18 R44015 1.0 µg/L 1 7/5/2017 6:36:00 PM ND 0.22 1.0 R44015 trans-1,3-Dichloropropene µg/L 1 7/5/2017 6:36:00 PM 1.2.3-Trichlorobenzene ND 0.12 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015 ND 0.14 1.0 R44015 1,2,4-Trichlorobenzene µg/L 1 7/5/2017 6:36:00 PM 1,1,1-Trichloroethane ND 0.073 1.0 µg/L 1 7/5/2017 6:36:00 PM R44015

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest, G SMW 2 and Boundary Wells	allup	lup Client Sample ID: GW DUP01 Collection Date: 6/28/2017									
Lab ID:	1706G62-002	Matrix:	AQUEOUS	R	Received Date: 6/30/2017 10:30:00 AM							
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
	HOD 8260B: VOLATILES							Analyst: RAA				
1,1,2-Trich	hloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Trichloroe	thene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Trichlorofl	uoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
1,2,3-Trich	hloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Vinyl chloi	ride	ND	0.18	1.0		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Xylenes, 1	Total	ND	0.32	1.5		µg/L	1	7/5/2017 6:36:00 PM	R44015			
Surr: 1,	2-Dichloroethane-d4	110	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			
Surr: 4-	Bromofluorobenzene	107	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			
Surr: Di	ibromofluoromethane	115	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			
Surr: To	oluene-d8	104	0	70-130		%Rec	1	7/5/2017 6:36:00 PM	R44015			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detecte
	D	Sample Diluted Due to Matrix	Е	Value above qu

- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 12 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT.		11		Cline	4.01								
CLIENI:	western Refining Southwest, Ga	nup	Collection Date: 6/28/2017 10:20:00 AM										
Project:	SMW 2 and Boundary Wells			Co	llection	Date: 6/28	3/2017 1	0:30:00 AM					
Lab ID:	1706G62-003	Matrix:	Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM										
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA METH	HOD 8015M/D: DIESEL RANGE							Analyst: TOM					
Diesel Ra	inge Organics (DRO)	0.47	0.36	1.0	J	mg/L	1	7/5/2017 12:02:35 PM	32608				
Motor Oil	Range Organics (MRO)	ND	5.0	5.0		mg/L	1	7/5/2017 12:02:35 PM	32608				
Surr: D	NOP	113	0	72.4-157		%Rec	1	7/5/2017 12:02:35 PM	32608				
EPA METH	HOD 8015D: GASOLINE RANGE							Analyst: NSB					
Gasoline	Range Organics (GRO)	ND	0.050	0.10	D	mg/L	2	7/6/2017 2:41:39 PM	G44019				
Surr: B	FB	114	0	52.3-138	D	%Rec	2	7/6/2017 2:41:39 PM	G44019				
EPA METH	HOD 300.0: ANIONS							Analyst: MRA					
Fluoride		1.3	0.22	0.50		mg/L	5	7/3/2017 7:19:51 PM	R43973				
Chloride		73	1.2	2.5		mg/L	5	7/3/2017 7:19:51 PM	R43973				
Bromide		0.33	0.072	0.50	J	mg/L	5	7/3/2017 7:19:51 PM	R43973				
Phosphor	rus, Orthophosphate (As P)	ND	1.2	2.5	Н	mg/L	5	7/3/2017 7:19:51 PM	R43973				
Sulfate		230	0.48	2.5		mg/L	5	7/3/2017 7:19:51 PM	R43973				
Nitrate+N	itrite as N	ND	0.13	1.0		mg/L	5	7/3/2017 9:48:48 PM	R43973				
EPA METH	HOD 200.7: TOTAL METALS							Analyst: pmf					
Barium		4.7	0.0047	0.010	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Beryllium		0.048	0.0013	0.010	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Cadmium		ND	0.0029	0.010		mg/L	5	7/18/2017 3:30:19 PM	32644				
Chromium	n	0.17	0.0055	0.030	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Cobalt		0.079	0.0038	0.030		mg/L	5	7/18/2017 3:30:19 PM	32644				
Iron		82	1.0	2.0	*	mg/L	100	7/7/2017 1:33:40 PM	32644				
Manganes	se	5.6	0.055	0.10	*	mg/L	50	7/18/2017 3:32:08 PM	32644				
Nickel		0.54	0.018	0.050	*	mg/L	5	7/18/2017 3:30:19 PM	32644				
Silver		ND	0.0021	0.025		mg/L	5	7/18/2017 3:30:19 PM	32644				
Vanadium	1	0.14	0.0038	0.25	J	mg/L	5	7/18/2017 3:30:19 PM	32644				
Zinc		3.4	0.014	0.050		mg/L	5	7/18/2017 3:30:19 PM	32644				
200.8 ICPI	MS METALS:TOTAL							Analyst: JLF					
Antimony		ND	0.0019	0.0050		mg/L	5	7/14/2017 1:26:41 PM	32644				
Arsenic		0.012	0.0030	0.010	*	mg/L	10	7/14/2017 1:31:50 PM	32644				
Lead		0.20	0.00095	0.0050	*	mg/L	10	7/14/2017 1:31:50 PM	32644				
Selenium		ND	0.0071	0.010		mg/L	10	7/14/2017 1:31:50 PM	32644				
EPA METH	HOD 245.1: MERCURY							Analyst: MED					
Mercury		0.00024	0.000037	0.00020		mg/L	1	7/14/2017 4:14:24 PM	32802				
EPA METH	HOD 8270C: SEMIVOLATILES							Analyst: JDC					
Acenapht	hene	ND	36	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619				
Acenapht	hylene	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619				
Aniline		ND	31	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619				

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

* 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

Qualifiers:

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 Page 13 of 61

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells Lab ID: 1706G62-003	allup Matrix:	AQUEOUS	10:30:00 AM 10:30:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Anthracene	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Azobenzene	ND	45	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
Benz(a)anthracene	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(a)pyrene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(b)fluoranthene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(g,h,i)perylene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzo(k)fluoranthene	ND	44	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzoic acid	93	39	200	JD	µg/L	1	7/7/2017 1:52:19 PM	32619
Benzyl alcohol	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-chloroethoxy)methane	ND	43	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-chloroethyl)ether	ND	43	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-chloroisopropyl)ether	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Bis(2-ethylhexyl)phthalate	ND	48	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Bromophenyl phenyl ether	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Butyl benzyl phthalate	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Carbazole	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Chloro-3-methylphenol	ND	63	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Chloroaniline	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2-Chloronaphthalene	ND	37	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2-Chlorophenol	ND	75	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
4-Chlorophenyl phenyl ether	ND	36	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Chrysene	ND	38	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Di-n-butyl phthalate	ND	50	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Di-n-octyl phthalate	ND	47	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Dibenz(a,h)anthracene	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Dibenzofuran	ND	41	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
1,2-Dichlorobenzene	ND	20	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
1,3-Dichlorobenzene	ND	18	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
1,4-Dichlorobenzene	ND	21	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
3,3´-Dichlorobenzidine	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Diethyl phthalate	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Dimethyl phthalate	ND	36	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dichlorophenol	ND	57	200	D	μg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dimethylphenol	ND	28	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619
4,6-Dinitro-2-methylphenol	ND	39	200	D	μg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dinitrophenol	ND	26	200	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2,4-Dinitrotoluene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
2,6-Dinitrotoluene	ND	45	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619
Fluoranthene	ND	43	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619

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

* 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

Qualifiers:

- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells	Allup Client Sample ID: BW-4B Collection Date: 6/28/2017 10:30:00 AM										
Lab ID: 1706G62-003	Matrix:	10:30:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC				
Fluorene	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachlorobenzene	ND	38	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachlorobutadiene	ND	13	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachlorocyclopentadiene	ND	13	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Hexachloroethane	ND	12	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Indeno(1,2,3-cd)pyrene	ND	42	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Isophorone	ND	44	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
1-Methylnaphthalene	ND	33	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
2-Methylnaphthalene	ND	33	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
2-Methylphenol	ND	33	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
3+4-Methylphenol	ND	32	100	D	μg/L	1	7/7/2017 1:52:19 PM	32619			
N-Nitrosodi-n-propylamine	ND	46	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
N-Nitrosodimethylamine	ND	35	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
N-Nitrosodiphenylamine	ND	39	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Naphthalene	ND	29	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
2-Nitroaniline	ND	49	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
3-Nitroaniline	ND	43	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
4-Nitroaniline	ND	40	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Nitrobenzene	ND	36	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619			
2-Nitrophenol	ND	52	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
4-Nitrophenol	ND	55	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Pentachlorophenol	ND	49	200	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Phenanthrene	ND	43	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619			
Phenol	ND	31	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Pvrene	ND	44	100	D	ua/L	1	7/7/2017 1:52:19 PM	32619			
Pyridine	ND	23	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
1,2,4-Trichlorobenzene	ND	21	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
2,4,5-Trichlorophenol	ND	51	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
2,4,6-Trichlorophenol	ND	55	100	D	µg/L	1	7/7/2017 1:52:19 PM	32619			
Surr: 2-Fluorophenol	57.6	0	15-98.1	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: Phenol-d5	47.6	0	15-80.7	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: 2,4,6-Tribromophenol	76.5	0	15-112	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: Nitrobenzene-d5	87.2	0 27	7.2-90.7	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: 2-Fluorobiphenvl	76.1	0 23	3.3-85.6	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
Surr: 4-Terphenyl-d14	75.7	0 2	7.6-107	D	%Rec	1	7/7/2017 1:52:19 PM	32619			
EPA METHOD 8260B: VOLATILES			-				Analyst: RAA				
Benzene	ND	0.12	2.0	Л	ua/l	2	7/5/2017 7:00:00 PM	R44015			
Toluene	ND	0.12	2.0	D	r9′⊏ ua/l	2	7/5/2017 7·00·00 PM	R44015			
Ethylbenzene	ND	0.10	2.0	n	P9′⊏ ua/l	2	7/5/2017 7·00·00 PM	R44015			
		0.13	2.0	D	µ9/⊏	2					

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

* 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

Qualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

				~	. ~ .					
CLIENT:	LIENT: Western Refining Southwest, Gallup Client Sample ID: BW-4B									
Project:	SMW 2 and Boundary Wells	Collection Date: 6/28/2017 10:30:00 AM								
Lab ID:	1706G62-003	Matrix:	AQUEOUS	R	eceived l	Date: 6/30)/2017	10:30:00 AM		
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA MET	HOD 8260B: VOLATILES							Analyst: RAA		
Methyl te	rt-butyl ether (MTBE)	ND	0.48	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2,4-Trin	nethylbenzene	ND	0.23	2.0	D	μg/L	2	7/5/2017 7:00:00 PM	R44015	
1,3,5-Trin	nethylbenzene	ND	0.17	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dichle	proethane (EDC)	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dibro	moethane (EDB)	ND	0.26	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Naphthale	ene	ND	0.23	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1-Methylr	naphthalene	ND	0.32	8.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Methylr	naphthalene	ND	0.30	8.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Acetone		10	1.6	20	JD	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromobe	nzene	ND	0.28	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromodic	chloromethane	ND	0.35	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromofor	m	ND	0.42	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Bromome	ethane	ND	0.51	6.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Butano	ne	ND	2.3	20	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Carbon d	isulfide	ND	0.80	20	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Carbon T	etrachloride	ND	0.22	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chlorobe	nzene	ND	0.21	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chloroeth	nane	ND	0.47	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chlorofor	m	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Chlorome	ethane	ND	0.59	6.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Chlorot	oluene	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
4-Chlorot	oluene	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
cis-1,2-D	CE	ND	0.41	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
cis-1,3-Di	ichloropropene	ND	0.16	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dibro	mo-3-chloropropane	ND	2.8	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Dibromoc	chloromethane	ND	0.14	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Dibromor	nethane	ND	0.18	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dichlo	orobenzene	ND	0.18	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,3-Dichlo	orobenzene	ND	0.30	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,4-Dichlo	orobenzene	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Dichlorod	Dichlorodifluoromethane		2.0	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,1-Dichlo	oroethane	ND	0.80	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,1-Dichloroethene		ND	0.16	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,2-Dichloropropane		ND	0.20	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,3-Dichlo	oropropane	ND	0.33	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2,2-Dichlo	oropropane	ND	0.31	4.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
1,1-Dichlo	oropropene	ND	0.19	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
Hexachlo	robutadiene	ND	1.6	2.0	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	
2-Hexanone		ND	1.3	20	D	µg/L	2	7/5/2017 7:00:00 PM	R44015	

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

* 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

Qualifiers:

- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup **Client Sample ID: BW-4B Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 10:30:00 AM Lab ID: 1706G62-003 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA Isopropylbenzene ND 0.10 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 4-Isopropyltoluene ND 0.19 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 ND 1.4 20 D 2 R44015 4-Methyl-2-pentanone µg/L 7/5/2017 7:00:00 PM Methylene Chloride ND 0.22 D 2 R44015 6.0 µg/L 7/5/2017 7:00:00 PM D 2 n-Butylbenzene ND 0.26 6.0 µg/L 7/5/2017 7:00:00 PM R44015 n-Propylbenzene ND 0.15 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 2 sec-Butylbenzene ND 0.22 2.0 D µg/L 7/5/2017 7:00:00 PM R44015 Styrene ND 0.31 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 D 2 tert-Butylbenzene ND 0.21 2.0 µg/L 7/5/2017 7:00:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.21 2.0 D 2 R44015 µg/L 7/5/2017 7:00:00 PM 1,1,2,2-Tetrachloroethane ND 0.27 4.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 Tetrachloroethene (PCE) ND 0.26 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 trans-1,2-DCE ND 0.37 2.0 D 2 7/5/2017 7:00:00 PM R44015 µg/L D 2 ND 0.44 2.0 R44015 trans-1,3-Dichloropropene µg/L 7/5/2017 7:00:00 PM ND 2.0 D 2 R44015 1,2,3-Trichlorobenzene 0.23 µg/L 7/5/2017 7:00:00 PM D 2 1,2,4-Trichlorobenzene ND 0.28 2.0 µg/L 7/5/2017 7:00:00 PM R44015 1,1,1-Trichloroethane ND 0.15 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 ND 2.0 D 2 1,1,2-Trichloroethane 0.28 µg/L 7/5/2017 7:00:00 PM R44015 Trichloroethene (TCE) ND 0.22 2.0 D 2 7/5/2017 7:00:00 PM R44015 µg/L 2 Trichlorofluoromethane ND 0.37 2.0 D µg/L 7/5/2017 7:00:00 PM R44015 ND 0.78 4.0 D 2 R44015 1,2,3-Trichloropropane µg/L 7/5/2017 7:00:00 PM Vinyl chloride ND 0.36 2.0 D µg/L 2 7/5/2017 7:00:00 PM R44015 Xylenes, Total ND 0.64 3.0 D 2 R44015 µg/L 7/5/2017 7:00:00 PM Surr: 1,2-Dichloroethane-d4 108 0 70-130 D %Rec 2 R44015 7/5/2017 7:00:00 PM Surr: 4-Bromofluorobenzene 0 70-130 D %Rec 2 109 7/5/2017 7:00:00 PM R44015 Surr: Dibromofluoromethane 0 70-130 D 2 110 %Rec 7/5/2017 7:00:00 PM R44015 Surr: Toluene-d8 0 70-130 D %Rec 2 7/5/2017 7:00:00 PM R44015 104

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

% Recovery outside of range due to dilution or matrix

S

- W Sample container temperature is out of limit as specified
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Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Defining Southwest	Callup		Clier	at Samn	o ID. DW	1.50						
CLIENT: Western Renning Southwest,	Ganup	Collection Date: 6/28/2017 0.10.00 AM										
Project: SMW 2 and Boundary Wells												
Lab ID: 1706G62-004	Matrix:	AQUEOU	JS R	eceived 1	Date: 6/30)/2017 1	0:30:00 AM					
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA METHOD 8015M/D: DIESEL RANG	Ε						Analyst: TOM					
Diesel Range Organics (DRO)	ND	0.36	1.0		mg/L	1	7/5/2017 12:30:40 PM	32608				
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	7/5/2017 12:30:40 PM	32608				
Surr: DNOP	114	0	72.4-157		%Rec	1	7/5/2017 12:30:40 PM	32608				
EPA METHOD 8015D: GASOLINE RAN	GE						Analyst: NSB					
Gasoline Range Organics (GRO)	0.039	0.025	0.050	J	mg/L	1	7/6/2017 3:07:27 PM	G44019				
Surr: BFB	115	0	52.3-138		%Rec	1	7/6/2017 3:07:27 PM	G44019				
EPA METHOD 300.0: ANIONS							Analyst: MRA					
Fluoride	ND	0.22	0.50		mg/L	5	7/3/2017 7:44:41 PM	R43973				
Chloride	1400	25	50	*	mg/L	100	7/19/2017 1:57:16 PM	R44381				
Bromide	1.7	0.072	0.50		mg/L	5	7/3/2017 7:44:41 PM	R43973				
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5	н	mg/L	5	7/3/2017 7:44:41 PM	R43973				
Sulfate	220	0.48	2.5		mg/L	5	7/3/2017 7:44:41 PM	R43973				
Nitrate+Nitrite as N	ND	0.13	1.0		mg/L	5	7/3/2017 10:01:12 PM	R43973				
EPA METHOD 200.7: DISSOLVED MET	ALS						Analyst: pmf					
Barium	0.21	0.00085	0.0020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Beryllium	ND	0.00029	0.0020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Cadmium	ND	0.0010	0.0020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Calcium	64	0.078	1.0		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Chromium	0.0016	0.0010	0.0060	J	mg/L	1	7/18/2017 1:27:39 PM	A44298				
Cobalt	ND	0.0016	0.0060		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Iron	ND	0.016	0.020		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Magnesium	8.3	0.25	1.0		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Manganese	0.12	0.00038	0.0020	*	mg/L	1	7/18/2017 1:27:39 PM	A44298				
Nickel	0.0049	0.0011	0.010	J	mg/L	1	7/18/2017 1:27:39 PM	A44298				
Potassium	3.5	0.11	1.0		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Silver	ND	0.00088	0.0050		mg/L	1	7/18/2017 1:27:39 PM	A44298				
Sodium	950	1.6	10		mg/∟	10	7/18/2017 1:29:36 PM	A44298				
Zine	ND 0.011	0.0019	0.050		mg/L	1	7/10/2017 1.27.39 PM	A44290				
	0.011	0.0011	0.010		mg/∟	1	1/10/2017 1.27.39 FW	A44290				
EPA METHOD 200.7: TOTAL METALS	0.04		0.0000				Analyst: pmf	00044				
Barium	0.21	0.00093	0.0020		mg/L	1	7/6/2017 6:04:03 PM	32644				
Beryllium	ND	0.00026	0.0020		mg/L	1	7/6/2017 6:04:03 PM	32644				
Caomium	ND	0.00058	0.0020		mg/L	1	7/6/2017 6:04:03 PM	32644				
Coholt		0.0011	0.0060		mg/∟	1	7/0/2017 0:04:03 PM	32044				
lion	0.0012	0.00076	0.000	J *	mg/L	1	7/6/2017 6:04:03 PM	32044 32644				
Mangapasa	0.74	0.010	0.020	*	mg/L	1	7/6/2017 6:04:03 PM	32044				
wanganese	0.13	0.0011	0.0020		mg/∟	I	1/0/2017 0:04:03 PM	32044				

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

* 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

Qualifiers:

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 Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, C Project: SMW 2 and Boundary Wells	Allup Client Sample ID: BW-5C Collection Date: 6/28/2017 9:10:00 AM Matrix: AOUEOUS Received Date: 6/30/2017 10:30:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 200.7: TOTAL METALS				-			Analyst: pmf			
Nickel	ND	0.0036	0.010		ma/l	1	7/6/2017 6·04·03 PM	32644		
Silver	ND	0.00042	0.0050		ma/l	1	7/6/2017 6:04:03 PM	32644		
Vanadium	0.0029	0.00076	0.050	J	ma/L	1	7/6/2017 6:04:03 PM	32644		
Zinc	0.0036	0.0028	0.010	J	mg/L	1	7/6/2017 6:04:03 PM	32644		
EPA 200.8: DISSOLVED METALS					-		Analyst: JLF			
Antimony	ND	0.00017	0.0010		ma/L	1	7/19/2017 7:25:02 PM	C44340		
Arsenic	0.0019	0.00089	0.0050	J	ma/L	5	7/21/2017 8:18:42 PM	A44430		
Lead	ND	0.00084	0.0025	-	mg/L	5	7/21/2017 8:18:42 PM	A44430		
Selenium	0.0068	0.0019	0.0050		mg/L	5	7/21/2017 8:18:42 PM	A44430		
200.8 ICPMS METALS:TOTAL					-		Analyst: JLF			
Antimony	ND	0.0019	0.0050		ma/L	5	7/14/2017 1:47:18 PM	32644		
Arsenic	ND	0.0015	0.0050		mg/L	5	7/14/2017 1:47:18 PM	32644		
Lead	ND	0.00048	0.0025		mg/L	5	7/14/2017 1:47:18 PM	32644		
Selenium	0.0049	0.0036	0.0050	J	mg/L	5	7/14/2017 1:47:18 PM	32644		
EPA METHOD 245.1: MERCURY							Analyst: MED			
Mercury	0.00018	0.000037	0.00020	J	mg/L	1	7/14/2017 4:16:25 PM	32802		
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC			
Acenaphthene	ND	3.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Acenaphthylene	ND	3.5	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Aniline	ND	3.1	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Anthracene	ND	3.5	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Azobenzene	ND	4.5	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benz(a)anthracene	ND	3.9	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(a)pyrene	ND	4.0	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzo(k)fluoranthene	ND	4.4	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzoic acid	7.9	3.9	20	J	µg/L	1	7/7/2017 2:20:13 PM	32619		
Benzyl alcohol	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-chloroethoxy)methane	ND	4.3	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-chloroethyl)ether	ND	4.3	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Bis(2-ethylhexyl)phthalate	ND	4.8	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
4-Bromophenyl phenyl ether	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Butyl benzyl phthalate	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
Carbazole	ND	4.6	10		µg/L	1	7/7/2017 2:20:13 PM	32619		
4-Chloro-3-methylphenol	ND	6.3	10		µg/L	1	7/7/2017 2:20:13 PM	32619		

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5C **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:10:00 AM Lab ID: 1706G62-004 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 4-Chloroaniline ND 3.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Chloronaphthalene ND 3.7 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Chlorophenol ND 7.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 4-Chlorophenyl phenyl ether ND 3.6 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND Chrysene 3.8 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Di-n-butyl phthalate ND 5.0 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Di-n-octyl phthalate 5.0 4.7 10 J µg/L 1 7/7/2017 2:20:13 PM 32619 Dibenz(a,h)anthracene ND 4.6 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Dibenzofuran ND 4.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 2.0 10 7/7/2017 2:20:13 PM 1,2-Dichlorobenzene µg/L 1 32619 1,3-Dichlorobenzene ND 1.8 10 µg/L 1 7/7/2017 2:20:13 PM 32619 1.4-Dichlorobenzene ND 2.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 3,3'-Dichlorobenzidine ND 3.9 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 4.0 10 1 Diethyl phthalate µg/L 7/7/2017 2:20:13 PM 32619 ND 3.6 10 1 Dimethyl phthalate µg/L 7/7/2017 2:20:13 PM 32619 ND 2,4-Dichlorophenol 5.7 20 µg/L 1 7/7/2017 2:20:13 PM 32619 2,4-Dimethylphenol ND 2.8 10 µg/L 1 7/7/2017 2:20:13 PM 32619 4,6-Dinitro-2-methylphenol ND 3.9 20 µg/L 1 7/7/2017 2:20:13 PM 32619 2,4-Dinitrophenol ND 2.6 20 1 7/7/2017 2:20:13 PM 32619 µg/L 2,4-Dinitrotoluene ND 4.0 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2.6-Dinitrotoluene ND 4.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Fluoranthene ND 4.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Fluorene ND 4.0 10 1 32619 µg/L 7/7/2017 2:20:13 PM ND 3.8 7/7/2017 2:20:13 PM 32619 Hexachlorobenzene 10 µg/L 1 ND 1.3 Hexachlorobutadiene 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND Hexachlorocvclopentadiene 1.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Hexachloroethane ND 1.2 7/7/2017 2:20:13 PM 32619 10 µg/L 1 Indeno(1,2,3-cd)pyrene ND 4.2 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 4.4 Isophorone 10 µg/L 1 7/7/2017 2:20:13 PM 32619 1-Methylnaphthalene ND 3.3 10 1 7/7/2017 2:20:13 PM 32619 µg/L 2-Methylnaphthalene ND 3.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Methylphenol ND 3.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 3+4-Methylphenol ND 3.2 10 µg/L 1 7/7/2017 2:20:13 PM 32619 N-Nitrosodi-n-propylamine ND 4.6 10 µg/L 7/7/2017 2:20:13 PM 32619 1 N-Nitrosodimethylamine ND 3.5 7/7/2017 2:20:13 PM 32619 10 µg/L 1 N-Nitrosodiphenylamine ND 3.9 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Naphthalene ND 2.9 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2-Nitroaniline ND 4.9 10 32619 µg/L 1 7/7/2017 2:20:13 PM 3-Nitroaniline ND 4.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5C **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:10:00 AM Lab ID: 1706G62-004 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL EPA METHOD 8270C: SEMIVOLATILES** Analyst: JDC 4-Nitroaniline ND 4.0 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Nitrobenzene ND 3.6 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 5.2 10 2-Nitrophenol µg/L 1 7/7/2017 2:20:13 PM 32619 4-Nitrophenol ND 5.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND Pentachlorophenol 4.9 20 µg/L 1 7/7/2017 2:20:13 PM 32619 Phenanthrene ND 4.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Phenol ND 3.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Pyrene ND 4.4 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Pyridine ND 2.3 10 µg/L 1 7/7/2017 2:20:13 PM 32619 ND 2.1 10 7/7/2017 2:20:13 PM 1,2,4-Trichlorobenzene µg/L 1 32619 2,4,5-Trichlorophenol ND 5.1 10 µg/L 1 7/7/2017 2:20:13 PM 32619 2,4,6-Trichlorophenol ND 5.5 10 µg/L 1 7/7/2017 2:20:13 PM 32619 Surr: 2-Fluorophenol 66.2 0 15-98.1 %Rec 1 7/7/2017 2:20:13 PM 32619 0 Surr: Phenol-d5 51.2 1 15-80.7 %Rec 7/7/2017 2:20:13 PM 32619 Surr: 2,4,6-Tribromophenol 0 %Rec 84.6 15-112 1 7/7/2017 2:20:13 PM 32619 Surr: Nitrobenzene-d5 97.0 0 27.2-90.7 S %Rec 1 7/7/2017 2:20:13 PM 32619 Surr: 2-Fluorobiphenyl 88.8 0 23.3-85.6 S %Rec 1 7/7/2017 2:20:13 PM 32619 Surr: 4-Terphenyl-d14 78.7 27.6-107 %Rec 7/7/2017 2:20:13 PM 0 1 32619 EPA METHOD 8260B: VOLATILES Analyst: RAA ND 0.062 7/5/2017 7:24:00 PM R44015 Benzene 1.0 µg/L 1 7/5/2017 7:24:00 PM Toluene ND 0.064 1.0 R44015 µg/L 1 Ethylbenzene ND 0.093 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 R44015 Methyl tert-butyl ether (MTBE) 38 0.24 1.0 µg/L 1 7/5/2017 7:24:00 PM 1,2,4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 1,3,5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 0.57 0.40 µg/L R44015 1,2-Dichloroethane (EDC) 1.0 J 1 7/5/2017 7:24:00 PM 1,2-Dibromoethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Naphthalene ND 0.11 2.0 7/5/2017 7:24:00 PM R44015 µg/L 1 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 7:24:00 PM R44015 ND 0.15 R44015 2-Methylnaphthalene 4.0 µg/L 1 7/5/2017 7:24:00 PM 0.82 R44015 Acetone 5.4 10 J µg/L 1 7/5/2017 7:24:00 PM ND 0.14 1.0 1 7/5/2017 7:24:00 PM R44015 Bromobenzene µg/L Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Bromoform ND 0.21 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Bromomethane ND 0.26 3.0 7/5/2017 7:24:00 PM R44015 µg/L 1 2-Butanone ND 1.1 10 µg/L 1 7/5/2017 7:24:00 PM R44015 Carbon disulfide ND 0.40 10 R44015 µg/L 1 7/5/2017 7:24:00 PM Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 7:24:00 PM R44015

Hall Environmental Analysis Laboratory, Inc.

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

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ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

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E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project: Lab ID:	Western Refining Southwest, G SMW 2 and Boundary Wells 1706G62-004	allup Matrix:	Illup Client Sample ID: BW-5C Collection Date: 6/28/2017 9:10:00 AM Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM										
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID				
EPA MET	HOD 8260B: VOLATILES							Analyst: RAA					
Chloroeth	nane	ND	0.23	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Chlorofor	m	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Chlorome	ethane	ND	0.29	3.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
2-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
4-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
cis-1,2-D0	CE	ND	0.20	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
cis-1,3-Di	ichloropropene	ND	0.082	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2-Dibro	mo-3-chloropropane	ND	1.4	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Dibromoc	chloromethane	ND	0.072	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Dibromon	nethane	ND	0.091	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2-Dichlo	orobenzene	ND	0.090	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,3-Dichlo	orobenzene	ND	0.15	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,4-Dichlo	orobenzene	ND	0.40	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Dichlorod	lifluoromethane	ND	1.0	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1-Dichlo	oroethane	0.61	0.40	1.0	J	µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1-Dichlo	oroethene	ND	0.081	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2-Dichlo	oropropane	ND	0.10	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,3-Dichlo	oropropane	ND	0.17	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
2,2-Dichlo	oropropane	ND	0.16	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1-Dichlo	oropropene	ND	0.093	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Hexachlo	robutadiene	ND	0.80	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
2-Hexano	one	ND	0.66	10		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Isopropyll	benzene	ND	0.051	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
4-Isoprop	yltoluene	ND	0.096	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
4-Methyl-	2-pentanone	ND	0.71	10		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Methylene	e Chloride	ND	0.11	3.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
n-Butylbe	enzene	ND	0.13	3.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
n-Propylb	benzene	ND	0.074	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
sec-Butyl	benzene	ND	0.11	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Styrene		ND	0.16	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
tert-Butyl	benzene	ND	0.10	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1,1,2-Te	etrachloroethane	ND	0.10	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1,2,2-Te	etrachloroethane	ND	0.14	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
Tetrachlo	roethene (PCE)	ND	0.13	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
trans-1,2-	-DCE	ND	0.18	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
trans-1,3-	Dichloropropene	ND	0.22	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2,3-Tric	hlorobenzene	ND	0.12	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,2,4-Tric	hlorobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				
1,1,1-Tric	hloroethane	ND	0.073	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015				

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

* 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

Qualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

CLIENT: Western Refining Southwest, 0 Project: SMW 2 and Boundary Wells Lab ID: 1706G62-004	GallupClient Sample ID: BW-5CCollection Date: 6/28/2017 9:10:00 AMMatrix: AQUEOUSReceived Date: 6/30/2017 10:30:00 AM								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Vinyl chloride	ND	0.18	1.0		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/5/2017 7:24:00 PM	R44015	
Surr: 1,2-Dichloroethane-d4	113	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	
Surr: 4-Bromofluorobenzene	107	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	
Surr: Toluene-d8	103	0	70-130		%Rec	1	7/5/2017 7:24:00 PM	R44015	

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above q

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
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- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
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- W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5B **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:40:00 AM Lab ID: 1706G62-005 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result POL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8015M/D: DIESEL RANGE Analyst: TOM 7/5/2017 12:58:49 PM Diesel Range Organics (DRO) 0.74 0.36 1.0 J mg/L 1 32608 Motor Oil Range Organics (MRO) ND 5.0 5.0 mg/L 1 7/5/2017 12:58:49 PM 32608 Surr: DNOP 72.4-157 %Rec 7/5/2017 12:58:49 PM 32608 112 0 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 7/6/2017 3:33:25 PM G44019 7/6/2017 3:33:25 PM Surr: BFB 117 0 52.3-138 %Rec 1 G44019 **EPA METHOD 300.0: ANIONS** Analyst: MRA 0.22 7/3/2017 8:09:30 PM Fluoride 0.28 0.50 J mg/L 5 R43973 50 mg/L Chloride 1.2 2.5 5 7/3/2017 8:09:30 PM R43973 Bromide 0.43 0.072 0.50 J mg/L 5 7/3/2017 8:09:30 PM R43973 Phosphorus, Orthophosphate (As P) ND 1.2 2.5 н mg/L 5 7/3/2017 8:09:30 PM R43973 100 0.48 2.5 mg/L 5 7/3/2017 8:09:30 PM R43973 Sulfate 5 0.20 0.13 1.0 J 7/3/2017 10:13:37 PM R43973 Nitrate+Nitrite as N mg/L EPA METHOD 200.7: DISSOLVED METALS Analyst: pmf Barium 0.052 0.00085 0.0020 mg/L 1 7/18/2017 1:31:31 PM A44298 Beryllium ND 0.00029 0.0020 mg/L 1 7/18/2017 1:31:31 PM A44298 Cadmium 0.0010 0.0020 7/18/2017 1:31:31 PM A44298 ND mg/L 1 Calcium 2.8 0.078 mg/L 1 7/18/2017 1:31:31 PM A44298 1.0 0.0018 Chromium 0.0010 0.0060 J mg/L 1 7/18/2017 1:31:31 PM A44298 Cobalt ND 0.0016 A44298 0.0060 mg/L 1 7/18/2017 1:31:31 PM Iron 0.11 0.016 0.020 mg/L 1 7/18/2017 1:31:31 PM A44298 Magnesium 0.35 0.25 1.0 J mg/L 1 7/18/2017 1:31:31 PM A44298 Manganese 0.0082 0.00038 0.0020 mg/L 1 7/18/2017 1:31:31 PM A44298 Nickel ND 0.0011 0.010 mg/L 1 7/18/2017 1:31:31 PM A44298 0.85 A44298 Potassium 0.11 1.0 mg/L 1 7/18/2017 1:31:31 PM J Silver ND 0.00088 0.0050 mg/L 1 7/18/2017 1:31:31 PM A44298 Sodium 260 mg/L 10 7/18/2017 1:33:34 PM A44298 1.6 10 Vanadium 0.018 0.0019 0.050 J mg/L 1 7/18/2017 1:31:31 PM A44298 Zinc 7/18/2017 1:31:31 PM A44298 0.012 0.0011 0.010 mg/L 1 **EPA METHOD 200.7: TOTAL METALS** Analyst: pmf Barium 0.073 0.00093 0.0020 mg/L 1 7/6/2017 6:07:46 PM 32644 Beryllium ND 0.00026 0.0020 mg/L 7/6/2017 6:07:46 PM 32644 1 Cadmium ND 0.00058 0.0020 7/6/2017 6:07:46 PM 32644 mg/L 1 Chromium 0.0030 0.0011 0.0060 J mg/L 1 7/6/2017 6:07:46 PM 32644 Cobalt 0.0010 0.00076 0.0060 J mg/L 1 7/6/2017 6:07:46 PM 32644 mg/L 10 Iron 1.5 0.10 0.20 7/6/2017 6:09:43 PM 32644 Manganese 0.026 0.0011 0.0020 mg/L 1 7/6/2017 6:07:46 PM 32644

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

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E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest.	Gallup		Clier	nt Sampl	le ID: BW	′-5B					
Project:	SMW 2 and Boundary Wells	- · · · F	Collection Date: 6/28/2017 9:40:00 AM									
Lab ID:	1706G62-005	Matrix:	AQUEOU	IS R	eceived 1	Date: 6/30)/2017	10:30:00 AM				
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METH	HOD 200.7: TOTAL METALS							Analyst: pmf				
Nickel		ND	0.0036	0.010		mg/L	1	7/6/2017 6:07:46 PM	32644			
Silver		ND	0.00042	0.0050		mg/L	1	7/6/2017 6:07:46 PM	32644			
Vanadium	1	0.022	0.00076	0.050	J	mg/L	1	7/6/2017 6:07:46 PM	32644			
Zinc		0.0038	0.0028	0.010	J	mg/L	1	7/6/2017 6:07:46 PM	32644			
EPA 200.8	: DISSOLVED METALS							Analyst: JLF				
Antimony		ND	0.00017	0.0010		mg/L	1	7/19/2017 7:30:11 PM	C44340			
Arsenic		0.0024	0.00018	0.0010		mg/L	1	7/19/2017 7:30:11 PM	C44340			
Lead		0.00023	0.00017	0.00050	J	mg/L	1	7/19/2017 7:30:11 PM	C44340			
Selenium		0.0053	0.00039	0.0010		mg/L	1	7/19/2017 7:30:11 PM	C44340			
200.8 ICPI	MS METALS:TOTAL							Analyst: JLF				
Antimony		ND	0.0019	0.0050		mg/L	5	7/14/2017 1:52:27 PM	32644			
Arsenic		0.0028	0.0015	0.0050	J	mg/L	5	7/14/2017 1:52:27 PM	32644			
Lead		0.00093	0.00048	0.0025	J	mg/L	5	7/14/2017 1:52:27 PM	32644			
Selenium		0.0044	0.0036	0.0050	J	mg/L	5	7/14/2017 1:52:27 PM	32644			
EPA METH	HOD 245.1: MERCURY							Analyst: MED				
Mercury		0.000074	0.000037	0.00020	J	mg/L	1	7/14/2017 4:22:28 PM	32802			
EPA METH	HOD 8270C: SEMIVOLATILES							Analyst: JDC				
Acenaphth	hene	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Acenaphth	hylene	ND	3.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Aniline		ND	3.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Anthracen	ie	ND	3.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Azobenze	ne	ND	4.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benz(a)an	nthracene	ND	3.9	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(a)p	byrene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(b)fl	luoranthene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(g,h	n,i)perylene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzo(k)fl	luoranthene	ND	4.4	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzoic a	cid	8.2	3.9	20	J	µg/L	1	7/7/2017 2:48:15 PM	32619			
Benzyl alc	cohol	ND	4.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Bis(2-chlo	roethoxy)methane	ND	4.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
Bis(2-chlo	roethyl)ether	ND	4.3	10		µg/L	1	//7/2017 2:48:15 PM	32619			
Bis(2-chlo	roisopropyl)ether	ND	3.9	10		µg/L	1	////2017 2:48:15 PM	32619			
Bis(2-ethy	nexyl)phthalate	ND	4.8	10		µg/L	1	////2017 2:48:15 PM	32619			
4-Bromop	nenyi phenyi ether	ND	4.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619			
			4.6	10		µg/∟	ן א	7/7/2017 2:48:15 PM	32019			
	e mothylahoaol		4.6	10		µg/∟	ן א	7/7/2017 2:48:15 PM	32019			
4-Unioro-3	s-methylphenol	ND	6.3	10		µg/∟	1	7/7/2017 2:48:15 PM	32619			

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

- 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 25 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

		11		<u>cu</u>	4 G 1				
CLIENT:	Western Refining Southwest, Ga	llup		Cher	it Sampl	e ID: BW	-5B		
Project:	SMW 2 and Boundary Wells			Co	llection	Date: 6/28	8/2017	9:40:00 AM	
Lab ID:	1706G62-005	Matrix:	AQUEOUS	R	eceived l	Date: 6/30)/2017	10:30:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METI	HOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Chloroa	Iniline	ND	3.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2-Chloron	aphthalene	ND	3.7	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2-Chlorop	henol	ND	7.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
4-Chlorop	henyl phenyl ether	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Chrysene		ND	3.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Di-n-butyl	phthalate	ND	5.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Di-n-octyl	phthalate	ND	4.7	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Dibenz(a,	h)anthracene	ND	4.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Dibenzofu	Iran	ND	4.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619
1,2-Dichlo	probenzene	ND	2.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
1,3-Dichlo	probenzene	ND	1.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
1,4-Dichlo	probenzene	ND	2.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619
3,3´-Dichl	orobenzidine	ND	3.9	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Diethyl ph	nthalate	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Dimethyl	phthalate	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dichlo	prophenol	ND	5.7	20		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dimet	thylphenol	ND	2.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
4,6-Dinitro	p-2-methylphenol	ND	3.9	20		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dinitro	ophenol	ND	2.6	20		µg/L	1	7/7/2017 2:48:15 PM	32619
2,4-Dinitro	otoluene	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2,6-Dinitro	otoluene	ND	4.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Fluoranth	ene	ND	4.3	10		µg/L	1	////2017 2:48:15 PM	32619
Fluorene		ND	4.0	10		µg/L	1	////2017 2:48:15 PM	32619
Hexachlo	robenzene	ND	3.8	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Hexachio	robutadiene	ND	1.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Hexachio	rocyclopentadiene	ND	1.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Hexachio		ND	1.2	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Indeno(1,	2,3-ca)pyrene	ND	4.2	10		µg/∟	1	7/7/2017 2:48:15 PM	32619
Isopnoron		ND	4.4	10		µg/∟	1	7/7/2017 2:48:15 PM	32619
1-Methyln		ND	3.3	10		µg/∟	1	7/7/2017 2:48:15 PM	32619
2-Ivietnyin	laphthalene		3.3	10		µg/∟ α/l	1	7/7/2017 2:48:15 PM	32619
2-ivietnyip	vinenci		3.3	10		µg/∟ α/l	1	7/7/2017 2:48:15 PM	32619
S+4-IVIEIN			3.Z	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
IN-INITIOSO	dimethylamine		4.0	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
IN-INITIOSO	dinhenvlemine		3.5	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
Norbthele			3.9	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
Naphthalene			2.9	10		µg/∟	1	7/7/2017 2:48:15 PM	32019 22610
2 Nitroani			4.9	10		µg/∟	1	7/7/2017 2.40.10 PW	32019 33610
3-INITroahl		ND	4.3	10		µg/L	1	1/1/2017 2:48:15 PM	32019

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

* 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ga	allup		Clien	nt Sampl	e ID: BW	′-5B		
Project: SMW 2 and Boundary Wells			Col	llection 1	Date: 6/28	8/2017	9:40:00 AM	
Lab ID: 1706G62-005	Matrix:	AQUEOUS	R	eceived l	Date: 6/30	0/2017	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
4-Nitroaniline	ND	4.0	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Nitrobenzene	ND	3.6	10		µg/L	1	7/7/2017 2:48:15 PM	32619
2-Nitrophenol	ND	5.2	10		µg/L	1	7/7/2017 2:48:15 PM	32619
4-Nitrophenol	ND	5.5	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Pentachlorophenol	ND	4.9	20		µg/L	1	7/7/2017 2:48:15 PM	32619
Phenanthrene	ND	4.3	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Phenol	ND	3.1	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Pyrene	ND	4.4	10		µg/L	1	7/7/2017 2:48:15 PM	32619
Pyridine	ND	2.3	10		μg/L	1	7/7/2017 2:48:15 PM	32619
1,2,4-Trichlorobenzene	ND	2.1	10		μg/L	1	7/7/2017 2:48:15 PM	32619
2,4,5-Trichlorophenol	ND	5.1	10		μg/L	1	7/7/2017 2:48:15 PM	32619
2,4,6-Trichlorophenol	ND	5.5	10		μg/L	1	7/7/2017 2:48:15 PM	32619
Surr: 2-Fluorophenol	56.7	0	15-98.1		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: Phenol-d5	43.8	0	15-80.7		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: 2,4,6-Tribromophenol	77.5	0	15-112		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: Nitrobenzene-d5	95.0	0 27	7.2-90.7	S	%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: 2-Fluorobiphenyl	82.5	0 23	3.3-85.6		%Rec	1	7/7/2017 2:48:15 PM	32619
Surr: 4-Terphenyl-d14	64.3	0 2	7.6-107		%Rec	1	7/7/2017 2:48:15 PM	32619
EPA METHOD 8260B: VOLATILES							Analyst: RAA	
Benzene	ND	0.062	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
Toluene	0.23	0.064	1.0	J	µg/L	1	7/5/2017 7:48:00 PM	R44015
Ethylbenzene	ND	0.093	1.0		μg/L	1	7/5/2017 7:48:00 PM	R44015
Methyl tert-butyl ether (MTBE)	ND	0.24	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1,2,4-Trimethylbenzene	ND	0.11	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1,3,5-Trimethylbenzene	ND	0.087	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015
1.2-Dibromoethane (EDB)	ND	0.13	1.0		ua/L	1	7/5/2017 7:48:00 PM	R44015
Naphthalene	ND	0.11	2.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
1-Methylnaphthalene	ND	0.16	4.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
2-Methylnaphthalene	ND	0.15	4.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
Acetone	3.1	0.82	10	J	µa/L	1	7/5/2017 7:48:00 PM	R44015
Bromobenzene	ND	0.14	1.0	-	µ=9	1	7/5/2017 7:48:00 PM	R44015
Bromodichloromethane	ND	0.18	1.0		µg/=	1	7/5/2017 7:48:00 PM	R44015
Bromoform	ND	0.21	1.0		μα/L	1	7/5/2017 7:48:00 PM	R44015
Bromomethane	ND	0.26	3.0		ua/l	1	7/5/2017 7:48:00 PM	R44015
2-Butanone	ND	1.1	10		ua/l	1	7/5/2017 7:48:00 PM	R44015
Carbon disulfide	ND	0.40	10		µa/L	1	7/5/2017 7:48:00 PM	R44015
Carbon Tetrachloride	ND	0.11	1.0		µa/L	1	7/5/2017 7:48:00 PM	R44015
Chlorobenzene	ND	0.11	1.0		r-∍, – ⊔a/l	1	7/5/2017 7·48·00 PM	R44015
5		0.11	1.0		м9 [,] н			

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order **1706G62** Date Reported: **8/3/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gallup Client Sample ID: BW-5B **Project:** SMW 2 and Boundary Wells Collection Date: 6/28/2017 9:40:00 AM Lab ID: 1706G62-005 Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 7/5/2017 7:48:00 PM Chloroethane ND 0.23 2.0 µg/L 1 R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Chloromethane ND 0.29 3.0 R44015 µg/L 1 7/5/2017 7:48:00 PM 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 7/5/2017 7:48:00 PM 4-Chlorotoluene 0.40 1.0 µg/L 1 R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.091 1.0 R44015 Dibromomethane µg/L 1 7/5/2017 7:48:00 PM 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.40 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,4-Dichlorobenzene ND 1.0 1.0 1 R44015 Dichlorodifluoromethane µg/L 7/5/2017 7:48:00 PM ND 0.40 1.0 1 R44015 1,1-Dichloroethane µg/L 7/5/2017 7:48:00 PM ND 1,1-Dichloroethene 0.081 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1.2-Dichloropropane ND 0.10 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.17 1,3-Dichloropropane 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.16 2.0 1 7/5/2017 7:48:00 PM R44015 2,2-Dichloropropane µg/L 1,1-Dichloropropene ND 0.093 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Hexachlorobutadiene ND 0.80 R44015 1.0 µg/L 1 7/5/2017 7:48:00 PM 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.051 1.0 1 R44015 Isopropylbenzene µg/L 7/5/2017 7:48:00 PM ND 0.096 7/5/2017 7:48:00 PM R44015 4-Isopropyltoluene 1.0 µg/L 1 ND R44015 4-Methyl-2-pentanone 0.71 10 µg/L 1 7/5/2017 7:48:00 PM Methylene Chloride ND 0.11 3.0 µg/L 1 7/5/2017 7:48:00 PM R44015 n-Butylbenzene ND 0.13 3.0 7/5/2017 7:48:00 PM R44015 µg/L 1 n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 sec-Butylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 7/5/2017 7:48:00 PM Styrene ND 0.16 1.0 1 R44015 µg/L tert-Butylbenzene ND 0.10 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,1,1,2-Tetrachloroethane ND 0.10 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 7:48:00 PM R44015 Tetrachloroethene (PCE) ND 0.13 1.0 µg/L 7/5/2017 7:48:00 PM R44015 1 trans-1,2-DCE ND 0.18 7/5/2017 7:48:00 PM R44015 1.0 µg/L 1 ND 0.22 1.0 R44015 trans-1,3-Dichloropropene µg/L 1 7/5/2017 7:48:00 PM 1.2.3-Trichlorobenzene ND 0.12 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015 ND 0.14 1.0 R44015 1,2,4-Trichlorobenzene µg/L 1 7/5/2017 7:48:00 PM 1,1,1-Trichloroethane ND 0.073 1.0 µg/L 1 7/5/2017 7:48:00 PM R44015

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

* 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

Oualifiers:

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Date Reported: 8/3/2017

CLIENT: Western Refining Southwest, Ga	allup		Clier	nt Sampl	e ID: BW	′-5B			
Project: SMW 2 and Boundary Wells			Co	llection 1	Date: 6/28	8/2017	9:40:00 AM		
Lab ID: 1706G62-005	Matrix:	trix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM							
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Vinyl chloride	ND	0.18	1.0		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/5/2017 7:48:00 PM	R44015	
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	
Surr: Dibromofluoromethane	113	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	
Surr: Toluene-d8	102	0	70-130		%Rec	1	7/5/2017 7:48:00 PM	R44015	

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above c

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Hall Environmental Analysis	Labora	itory, II	1C.				Date Reported	l: 8/3/2017			
CLIENT: Western Refining Southwest, Ga Project: SMW 2 and Boundary Wells	llup	P Client Sample ID: TRIP BLANK Collection Date:									
Lab ID: 1706G62-006	Matrix:	TRIP BLA	ANK R	eceived l	Date: 6/30)/2017	10:30:00 AM				
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB				
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	7/6/2017 3:59:34 PM	G44019			
Surr: BFB	118	0	52.3-138		%Rec	1	7/6/2017 3:59:34 PM	G44019			
EPA METHOD 8260B: VOLATILES							Analyst: RAA				
Benzene	ND	0.062	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Toluene	ND	0.064	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
Ethylbenzene	ND	0.093	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
Methyl tert-butyl ether (MTBE)	ND	0.24	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1,2,4-Trimethylbenzene	ND	0.11	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1,3,5-Trimethylbenzene	ND	0.087	1.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
Naphthalene	ND	0.11	2.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
1-Methylnaphthalene	ND	0.16	4.0		µg/L	1	7/5/2017 8:12:00 PM	R44015			
2-Methvlnaphthalene	ND	0.15	4.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Acetone	2.7	0.82	10	J	ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromobenzene	ND	0.14	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromodichloromethane	ND	0.18	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromoform	ND	0.21	1.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Bromomethane	ND	0.26	3.0		ua/L	1	7/5/2017 8:12:00 PM	R44015			
2-Butanone	ND	1.1	10		ua/L	1	7/5/2017 8:12:00 PM	R44015			
Carbon disulfide	ND	0.40	10		ua/l	1	7/5/2017 8:12:00 PM	R44015			
Carbon Tetrachloride	ND	0.11	1.0		µg/=	1	7/5/2017 8:12:00 PM	R44015			
Chlorobenzene	ND	0.11	1.0		µg/= ua/l	1	7/5/2017 8·12·00 PM	R44015			
Chloroethane	ND	0.23	2.0		µg/=	1	7/5/2017 8:12:00 PM	R44015			
Chloroform	ND	0.40	1.0		µg/= ua/l	1	7/5/2017 8·12·00 PM	R44015			
Chloromethane	ND	0.29	3.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
2-Chlorotoluene	ND	0.40	1.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
4-Chlorotoluene	ND	0.40	1.0		μg/L	1	7/5/2017 8:12:00 PM	R44015			
cis-1 2-DCF	ND	0.40	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
cis-1 3-Dichloropropene	ND	0.20	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
1 2-Dibromo-3-chloropropane	ND	1 4	2.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
Dibromochloromethane		0.072	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
Dibromomethane	ND	0.072	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
1 2-Dichlorobenzene	ND	0.001	1.0		μg/L μα/Ι	1	7/5/2017 8:12:00 PM	R44015			
1.3-Dichlorobenzene	ND	0.000	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
1 4-Dichlorobenzene		0.10	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
Dichlorodifluoromethane		1 0	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
1 1-Dichloroethane	ND	0.40	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
1 1-Dichloroethene		0.40	1.0		P9/⊏ ⊔a/l	1	7/5/2017 8·12·00 PM	R44015			
		0.001	1.0		P9/⊏		1,0/2011 0.12.00110				

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

Н 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

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified Page 30 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

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Hall Environmental Analysis Laboratory, Inc. **CLIENT:** Western Refining Southwest, Gallup **Client Sample ID: TRIP BLANK Project:** SMW 2 and Boundary Wells **Collection Date:** Lab ID: 1706G62-006 Matrix: TRIP BLANK Received Date: 6/30/2017 10:30:00 AM Result PQL Qual Units DF **Date Analyzed Batch ID** Analyses **MDL** EPA METHOD 8260B: VOLATILES Analyst: RAA 7/5/2017 8:12:00 PM ND 0.10 1.0 µg/L 1 R44015 1,2-Dichloropropane 1,3-Dichloropropane ND 0.17 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 2.0 2,2-Dichloropropane 0.16 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.093 1,1-Dichloropropene 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 Hexachlorobutadiene ND 0.80 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 2-Hexanone ND 0.66 10 µg/L 1 7/5/2017 8:12:00 PM R44015 Isopropylbenzene ND 0.051 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 4-Isopropyltoluene ND 0.096 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 4-Methyl-2-pentanone ND 0.71 10 µg/L 1 7/5/2017 8:12:00 PM R44015 Methylene Chloride ND 0.11 3.0 R44015 µg/L 1 7/5/2017 8:12:00 PM n-Butylbenzene ND 0.13 3.0 µg/L 1 7/5/2017 8:12:00 PM R44015 n-Propylbenzene ND 0.074 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 sec-Butylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.16 1.0 1 R44015 Styrene µg/L 7/5/2017 8:12:00 PM ND 1.0 1 tert-Butylbenzene 0.10 µg/L 7/5/2017 8:12:00 PM R44015 ND 1,1,1,2-Tetrachloroethane 0.10 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 1,1,2,2-Tetrachloroethane ND 0.14 2.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.13 Tetrachloroethene (PCE) 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 trans-1,2-DCE ND 0.18 1.0 1 7/5/2017 8:12:00 PM R44015 µg/L trans-1,3-Dichloropropene ND 0.22 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.12 R44015 1,2,3-Trichlorobenzene 1.0 µg/L 1 7/5/2017 8:12:00 PM 1,2,4-Trichlorobenzene ND 0.14 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.073 1.0 1 R44015 1,1,1-Trichloroethane µg/L 7/5/2017 8:12:00 PM ND 0.14 7/5/2017 8:12:00 PM R44015 1,1,2-Trichloroethane 1.0 µg/L 1 ND 0.11 Trichloroethene (TCE) 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND Trichlorofluoromethane 0.18 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 1,2,3-Trichloropropane ND 0.39 2.0 7/5/2017 8:12:00 PM R44015 µg/L 1 Vinyl chloride ND 0.18 1.0 µg/L 1 7/5/2017 8:12:00 PM R44015 ND 0.32 Xylenes, Total 1.5 µg/L 1 7/5/2017 8:12:00 PM R44015 Surr: 1,2-Dichloroethane-d4 111 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015 Surr: 4-Bromofluorobenzene 108 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015 Surr: Dibromofluoromethane 115 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015 Surr: Toluene-d8 103 0 70-130 %Rec 1 7/5/2017 8:12:00 PM R44015

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest, G	Gallup		Clier	nt Sampl	e ID: OW	7-59		
Project:	SMW 2 and Boundary Wells			Co	llection]	Date: 6/28	8/2017 1	2:40:00 PM	
Lab ID:	1706G62-007	Matrix:	AQUEOU	US R	eceived]	Date: 6/30	0/2017 1	10:30:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METH	HOD 8015M/D: DIESEL RANG	E						Analyst: TOM	
Diesel Ra	nge Organics (DRO)	0.56	0.36	1.0	J	mg/L	1	7/5/2017 1:27:11 PM	32608
Motor Oil	Range Organics (MRO)	ND	5.0	5.0		mg/L	1	7/5/2017 1:27:11 PM	32608
Surr: DI	NOP	115	0	72.4-157		%Rec	1	7/5/2017 1:27:11 PM	32608
EPA METH	HOD 8015D: GASOLINE RANG	θE						Analyst: NSB	
Gasoline F	Range Organics (GRO)	0.23	0.025	0.050		mg/L	1	7/6/2017 4:26:01 PM	G44019
Surr: Bl	FB	3950	0	52.3-138	S	%Rec	1	7/6/2017 4:26:01 PM	G44019
EPA METH	HOD 300.0: ANIONS							Analyst: MRA	
Fluoride		ND	0.22	0.50		mg/L	5	7/3/2017 8:59:09 PM	R43973
Chloride		2000	50	100	*	mg/L	200	7/19/2017 2:09:41 PM	R44381
Bromide		3.6	0.072	0.50		mg/L	5	7/3/2017 8:59:09 PM	R43973
Phosphoru	us, Orthophosphate (As P)	ND	5.0	10	н	mg/L	20	7/3/2017 9:11:34 PM	R43973
Sulfate		3000	19	100	*	mg/L	200	7/19/2017 2:09:41 PM	R44381
Nitrate+Ni	trite as N	ND	0.26	2.0		mg/L	10	7/26/2017 3:44:57 PM	R44528
EPA METH	HOD 200.7: DISSOLVED META	ALS						Analyst: pmf	
Barium		0.014	0.00085	0.0020		mg/L	1	7/18/2017 1:35:22 PM	A44298
Beryllium		0.00039	0.00029	0.0020	J	mg/L	1	7/18/2017 1:35:22 PM	A44298
Cadmium		ND	0.0010	0.0020		mg/L	1	7/18/2017 1:35:22 PM	A44298
Calcium		210	0.78	10		mg/L	10	7/18/2017 1:37:23 PM	A44298
Chromium	1	ND	0.0010	0.0060		mg/L	1	7/18/2017 1:35:22 PM	A44298
Cobalt		0.0035	0.0016	0.0060	J	mg/L	1	7/18/2017 1:35:22 PM	A44298
Iron		0.030	0.016	0.020		mg/L	1	7/18/2017 1:35:22 PM	A44298
Magnesiu	m	65	0.25	1.0		mg/L	1	7/18/2017 1:35:22 PM	A44298
Manganes	Se	0.67	0.00038	0.0020	*	mg/L	1	7/18/2017 1:35:22 PM	A44298
Nickel		0.010	0.0011	0.010		mg/L	1	7/18/2017 1:35:22 PM	A44298
Potassium	1	1.7	0.11	1.0		mg/L	1	7/18/2017 1:35:22 PM	A44298
Silver		ND	0.00088	0.0050		mg/L	1	7/18/2017 1:35:22 PM	A44298
Sodium		2400	8.2	50		mg/L	50	7/18/2017 1:47:36 PM	A44298
Vanadium	I Contraction of the second second second second second second second second second second second second second	0.0042	0.0019	0.050	J	mg/L	1	7/18/2017 1:35:22 PM	A44298
Zinc		0.013	0.0011	0.010		mg/L	1	7/18/2017 1:35:22 PM	A44298
EPA METH	HOD 200.7: TOTAL METALS							Analyst: pmf	
Barium		0.35	0.00093	0.0020		mg/L	1	7/6/2017 6:11:30 PM	32644
Beryllium		0.0015	0.00026	0.0020	J	mg/L	1	7/6/2017 6:11:30 PM	32644
Cadmium		ND	0.00058	0.0020		mg/L	1	7/6/2017 6:11:30 PM	32644
Chromium	1	0.014	0.0011	0.0060		mg/L	1	7/6/2017 6:11:30 PM	32644
Cobalt		0.0080	0.00076	0.0060		mg/L	1	7/6/2017 6:11:30 PM	32644
Iron		9.7	0.20	0.40	*	mg/L	20	7/7/2017 1:35:46 PM	32644
Manganes	se	1.2	0.011	0.020	*	mg/L	10	7/6/2017 6:13:16 PM	32644

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

* 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

Qualifiers:

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

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P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Project: SMW 2 and Boundary Wells	Gallup		Clier Co	nt Sampl llection l	e ID: OW Date: 6/28	7-59 8/2017	12:40:00 PM	
Lab ID: 1706G62-007	Matrix:	AQUEOU	S R	eceived l	Date: 6/30)/2017	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 200.7: TOTAL METALS							Analyst: pmf	
Nickel	0.020	0.0036	0.010		mg/L	1	7/6/2017 6:11:30 PM	32644
Silver	ND	0.00042	0.0050		mg/L	1	7/6/2017 6:11:30 PM	32644
Vanadium	0.026	0.00076	0.050	J	mg/L	1	7/6/2017 6:11:30 PM	32644
Zinc	0.032	0.0028	0.010		mg/L	1	7/6/2017 6:11:30 PM	32644
EPA 200.8: DISSOLVED METALS							Analyst: JLF	
Antimony	0.0010	0.00084	0.0050	J	mg/L	5	7/21/2017 4:42:33 PM	A44430
Arsenic	0.0094	0.0018	0.010	J	mg/L	10	7/21/2017 4:47:42 PM	A44430
Lead	ND	0.00084	0.0025		mg/L	5	7/21/2017 4:42:33 PM	A44430
Selenium	0.023	0.0019	0.0050		mg/L	5	7/21/2017 4:42:33 PM	A44430
200.8 ICPMS METALS:TOTAL							Analyst: JLF	
Antimony	ND	0.0019	0.0050		mg/L	5	7/14/2017 1:57:35 PM	32644
Arsenic	0.011	0.0015	0.0050	*	mg/L	5	7/14/2017 1:57:35 PM	32644
Lead	0.0094	0.00095	0.0050		mg/L	10	7/14/2017 3:08:09 PM	32644
Selenium	0.015	0.0036	0.0050		mg/L	5	7/14/2017 1:57:35 PM	32644
EPA METHOD 245.1: MERCURY							Analyst: MED	
Mercury	0.000082	0.000037	0.00020	J	mg/L	1	7/14/2017 4:24:22 PM	32802
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC	
Acenaphthene	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Acenaphthylene	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Aniline	ND	3.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Anthracene	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Azobenzene	ND	4.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benz(a)anthracene	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(a)pyrene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(b)fluoranthene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(g,h,i)perylene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzo(k)fluoranthene	ND	4.4	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Benzoic acid	8.3	3.9	20	J	µg/L	1	7/7/2017 3:16:16 PM	32619
Benzyl alcohol	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-chloroethoxy)methane	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-chloroethyl)ether	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-chloroisopropyl)ether	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619
Bis(2-ethylhexyl)phthalate	ND	4.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619
4-Bromophenyl phenyl ether	ND	4.6	10		µg/L	1	//7/2017 3:16:16 PM	32619
Butyl benzyl phthalate	ND	4.6	10		µg/L	1	////201/ 3:16:16 PM	32619
	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619
4-Unioro-3-metnyipnenoi	ND	6.3	10		µg/L	1	///2017 3:16:16 PM	32619

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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project: Lab ID:	Western Refining Southwest, Ga SMW 2 and Boundary Wells 1706G62-007	Ilup Client Sample ID: OW-59 Collection Date: 6/28/2017 12:40:00 PM Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM										
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METH	OD 8270C: SEMIVOLATILES							Analyst: JDC				
4-Chloroani	iline	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Chlorona	phthalene	ND	3.7	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Chloroph	enol	ND	7.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
4-Chloroph	enyl phenyl ether	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Chrysene		ND	3.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Di-n-butyl p	ohthalate	ND	5.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Di-n-octyl p	hthalate	ND	4.7	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Dibenz(a,h))anthracene	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Dibenzofura	an	ND	4.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1,2-Dichloro	obenzene	ND	2.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1,3-Dichloro	obenzene	ND	1.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1,4-Dichloro	obenzene	ND	2.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
3,3'-Dichlor	robenzidine	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Diethyl phth	nalate	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Dimethyl ph	hthalate	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dichloro	ophenol	ND	5.7	20		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dimethy	ylphenol	ND	2.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
4,6-Dinitro-2	2-methylphenol	ND	3.9	20		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dinitrop	bhenol	ND	2.6	20		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,4-Dinitroto	oluene	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2,6-Dinitroto	oluene	ND	4.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Fluoranther	ne	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Fluorene		ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	benzene	ND	3.8	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	butadiene	ND	1.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	ocyclopentadiene	ND	1.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Hexachloro	bethane	ND	1.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Indeno(1,2,	,3-cd)pyrene	ND	4.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Isophorone)	ND	4.4	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
1-Methylna	phthalene	ND	3.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Methylna	phthalene	ND	3.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Methylph	enol	ND	3.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
3+4-Methyl	phenol	ND	3.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
N-Nitrosodi	i-n-propylamine	ND	4.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
N-Nitrosodi	imethylamine	ND	3.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
N-Nitrosodi	iphenylamine	ND	3.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
Naphthalen	ne	ND	2.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
2-Nitroanilir	ne	ND	4.9	10		µg/L	1	7/7/2017 3:16:16 PM	32619			
3-Nitroanilir	ne	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619			

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

* 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

Qualifiers:

- 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

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- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, G Project: SMW 2 and Boundary Wells Lab ID: 1706G62-007	AllupClient Sample ID: OW-59Collection Date: 6/28/2017 12:40:00 PMMatrix: AQUEOUSReceived Date: 6/30/2017 10:30:00 AM								
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID	
EPA METHOD 8270C: SEMIVOLATILES							Analyst: JDC		
4-Nitroaniline	ND	4.0	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Nitrobenzene	ND	3.6	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
2-Nitrophenol	ND	5.2	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
4-Nitrophenol	ND	5.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Pentachlorophenol	ND	4.9	20		µg/L	1	7/7/2017 3:16:16 PM	32619	
Phenanthrene	ND	4.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Phenol	ND	3.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Pyrene	ND	4.4	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Pyridine	ND	2.3	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
1,2,4-Trichlorobenzene	ND	2.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
2,4,5-Trichlorophenol	ND	5.1	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
2,4,6-Trichlorophenol	ND	5.5	10		µg/L	1	7/7/2017 3:16:16 PM	32619	
Surr: 2-Fluorophenol	55.0	0	15-98.1		%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: Phenol-d5	44.8	0	15-80.7		%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: 2,4,6-Tribromophenol	70.3	0	15-112		%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: Nitrobenzene-d5	90.7	0 2	7.2-90.7	S	%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: 2-Fluorobiphenyl	85.7	0 2	3.3-85.6	S	%Rec	1	7/7/2017 3:16:16 PM	32619	
Surr: 4-Terphenyl-d14	69.0	0 2	27.6-107		%Rec	1	7/7/2017 3:16:16 PM	32619	
EPA METHOD 8260B: VOLATILES							Analyst: RAA		
Benzene	ND	0.062	1.0		ua/L	1	7/5/2017 8:36:00 PM	R44015	
Toluene	ND	0.064	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
Ethylbenzene	ND	0.093	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
Methyl tert-butyl ether (MTBE)	6.8	0.24	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
1,2,4-Trimethylbenzene	0.13	0.11	1.0	J	µq/L	1	7/5/2017 8:36:00 PM	R44015	
1,3,5-Trimethylbenzene	ND	0.087	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µq/L	1	7/5/2017 8:36:00 PM	R44015	
1.2-Dibromoethane (EDB)	ND	0.13	1.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
Naphthalene	ND	0.11	2.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
1-Methylnaphthalene	ND	0.16	4.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
2-Methylnaphthalene	ND	0.15	4.0		µg/L	1	7/5/2017 8:36:00 PM	R44015	
Acetone	6.0	0.82	10	J	µg/L	1	7/5/2017 8:36:00 PM	R44015	
Bromobenzene	ND	0.14	1.0	-	µg/L	1	7/5/2017 8:36:00 PM	R44015	
Bromodichloromethane	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015	
Bromoform	ND	0.21	1.0		µa/L	1	7/5/2017 8:36:00 PM	R44015	
Bromomethane	ND	0.26	3.0		µa/l	1	7/5/2017 8:36:00 PM	R44015	
2-Butanone	ND	1.1	10		ua/l	1	7/5/2017 8:36:00 PM	R44015	
Carbon disulfide	ND	0.40	10		ua/l	1	7/5/2017 8:36:00 PM	R44015	
Carbon Tetrachloride	ND	0.11	1.0		ua/l	1	7/5/2017 8:36:00 PM	R44015	
		0.11	1.0		M 9' L				

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 Detection Limit

W Sample container temperature is out of limit as specified

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Lab Order 1706G62

Date Reported: 8/3/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Western Refining Southwest, Ga	llup		Clier	nt Sampl	e ID: OW	7-59		
Project.	SMW 2 and Boundary Wells	F		Col	llection 1	Date: 6/28	8/2017	12·40·00 PM	
I of ID.		Matuinu	AOUEOUS			Date: $0/20$	0/2017	10.20.00 AM	
Lab ID:	1/06G62-007		AQUEOUS	K	eceivea	Date: 0/30)/2017	10:30:00 AM	
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA MET	HOD 8260B: VOLATILES							Analyst: RAA	
Chloroeth	nane	ND	0.23	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Chlorofor	m	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Chloromethane		ND	0.29	3.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
2-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
4-Chlorot	oluene	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
cis-1,2-D	CE	ND	0.20	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
cis-1,3-Di	ichloropropene	ND	0.082	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2-Dibro	mo-3-chloropropane	ND	1.4	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Dibromoc	chloromethane	ND	0.072	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Dibromor	nethane	ND	0.091	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2-Dichlo	orobenzene	ND	0.090	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,3-Dichlo	orobenzene	ND	0.15	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,4-Dichlo	orobenzene	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Dichlorod	lifluoromethane	ND	1.0	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1-Dichlo	oroethane	ND	0.40	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1-Dichlo	proethene	ND	0.081	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2-Dichlo	oropropane	ND	0.10	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,3-Dichlo	oropropane	ND	0.17	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
2,2-Dichlo	oropropane	ND	0.16	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1-Dichlo	oropropene	ND	0.093	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Hexachlo	robutadiene	ND	0.80	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
2-Hexand	one	ND	0.66	10		µg/L	1	7/5/2017 8:36:00 PM	R44015
Isopropyll	benzene	ND	0.051	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
4-Isoprop	yltoluene	ND	0.096	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
4-Methyl-	2-pentanone	ND	0.71	10		µg/L	1	7/5/2017 8:36:00 PM	R44015
Methylen	e Chloride	ND	0.11	3.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
n-Butylbe	nzene	ND	0.13	3.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
n-Propylb	penzene	ND	0.074	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
sec-Butyl	benzene	ND	0.11	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Styrene		ND	0.16	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
tert-Butyll	benzene	ND	0.10	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1,1,2-Te	etrachloroethane	ND	0.10	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1,2,2-Te	etrachloroethane	ND	0.14	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
Tetrachlo	roethene (PCE)	ND	0.13	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
trans-1,2-	-DCE	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
trans-1,3-Dichloropropene		ND	0.22	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2,3-Trichlorobenzene		ND	0.12	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,2,4-Tric	hlorobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015
1,1,1-Tric	hloroethane	ND	0.073	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015

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

* 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

Qualifiers:

- 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

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P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Lab Order **1706G62** Date Reported: **8/3/2017**

CLIENT: Western Refining Southwest, C	Gallup		Clie	nt Sampl	e ID: OW	7-59					
Project: SMW 2 and Boundary Wells			Со	llection]	Date: 6/28	8/2017	12:40:00 PM				
Lab ID: 1706G62-007	Matrix:	Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM									
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8260B: VOLATILES							Analyst: RAA				
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Vinyl chloride	ND	0.18	1.0		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/5/2017 8:36:00 PM	R44015			
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			
Surr: 4-Bromofluorobenzene	110	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			
Surr: Dibromofluoromethane	110	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			
Surr: Toluene-d8	101	0	70-130		%Rec	1	7/5/2017 8:36:00 PM	R44015			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detect
	D	Sample Diluted Due to Matrix	Е	Value above o

H Holding times for preparation or analysis exceeded

Hall Environmental Analysis Laboratory, Inc.

- 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Lab Order 1706G62

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CHENT: Western Refining Southwest, Gallup Client Sample ID: TRIP BLANK Collection Date: Collection Colspan="2">Collection Colspan="2">Collection Colspan= 2" Collection Colspan= 2" Coll	Hall Environmental Analysis		Date Reported	: 8/3/2017							
Analyses Result MDL PQL Qual Units DF Date Analysed Batch ID EPA METHOD 8015D: GASOLINE RANGE Gasoline Range Organics (GRO) ND 0.025 0.050 mgl_L 1 7/10/2017 2:53:57 PM WG440 Sur: BFB 116 0 52.3:138 %Rec 1 7/10/2017 2:53:57 PM WG440 EPA METHOD 8260E: VOLATILES Analyse: RAA Analyse: RAA Benzene ND 0.064 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 Ethybenzene ND 0.083 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 12.4-Timethybenzene ND 0.047 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 1.2-Dibromethane (EDC) ND 0.40 1.0 µgl_L 1 7/52017 9:00:00 PM R44015 1.2-Dibromethane (EDC) ND 0.11 2.0 µgl_L 1 7/52017 9:00:00 PM R44015 2-Metryinaphthalene ND <t< th=""><th>CLIENT: Western Refining Southwest, Gal Project: SMW 2 and Boundary Wells Lab ID: 1706G62-008</th><th>llup Matrix:</th><th colspan="9">ap Client Sample ID: TRIP BLANK Collection Date: Matrix: TRIP BLANK Received Date: 6/30/2017 10:30:00 AM</th></t<>	CLIENT: Western Refining Southwest, Gal Project: SMW 2 and Boundary Wells Lab ID: 1706G62-008	llup Matrix:	ap Client Sample ID: TRIP BLANK Collection Date: Matrix: TRIP BLANK Received Date: 6/30/2017 10:30:00 AM								
PA METHOD 8015D: GASOLINE RANGE Analyst: NSB Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 7/10/2017 2:53:57 PM WG440 Sur:: BFB 116 0 52.3:138 %Rec 1 7/10/2017 2:53:57 PM WG440 EPA METHOD 8260B: VOLATILES Enzene ND 0.066 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Ethyberzene ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.4.Trimethyberzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.5-Trimethyberzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromethane (EDB) ND 0.16 4.0 µg/L	Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
Gasoline Range Organics (GRO) ND 0.025 0.050 mg/L 1 7/10/2017 2:35:7 PM WG440 EPA mETHOD 8260B: VOLATILES	EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB			
Sur: BFB 118 0.020 1192 117(102117 2:035.7 M) WG440 EPA METHOD 8260B: VOLATILES Factor Analyst: RAA Benzene ND 0.062 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Enzene ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Ethylbenzene ND 0.024 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2,4-Trimethylbenzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2,2-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobanae (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 <	Gasoline Range Organics (GRO)	ND	0.025	0.050		ma/l	1	7/10/2017 2:53:57 PM	WG440		
Detail of the second	Surr: BEB	116	0.020	52 3-138		%Rec	1	7/10/2017 2:53:57 PM	WG440		
Benzene ND 0.062 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Toluene ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Einylbenzene ND 0.093 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2,4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3,5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dichloroethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dichloroethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acatone ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND <t< td=""><td></td><td>110</td><td>0</td><td>02.0 100</td><td></td><td>,01100</td><td>•</td><td>Analyst: RAA</td><td></td></t<>		110	0	02.0 100		,01100	•	Analyst: RAA			
Delization ND 0.064 1.0 µg/L 1 7/32/17 90:000 PM R44015 Ethylbenzene ND 0.064 1.0 µg/L 1 7/52/17 90:000 PM R44015 Ethylbenzene ND 0.24 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2.4-Trimethylbenzene ND 0.047 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2.4-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2-Dibromethane (EDC) ND 0.40 1.0 µg/L 1 7/52/17 90:000 PM R44015 1.2-Dibromethane (EDB) ND 0.16 4.0 µg/L 1 7/52/17 90:000 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/52/017 90:000 PM R44015 Bromodorinomsthane ND 0.14 1.0 µg/L 1 7/52/017 90:000 PM R44015 Bromodorbinormethane ND	Descent		0.000	4.0			4		DAADAE		
Indication ND 0.064 1.0 µg/L 1 7/5/2017 9:00:00 PM R44013 Ethylbenzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.5-Trimethylbenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromoethane (EDC) ND 0.41 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichorenthane ND <t< td=""><td>Benzene</td><td></td><td>0.062</td><td>1.0</td><td></td><td>µg/∟ α/l</td><td>1</td><td>7/5/2017 9:00:00 PM</td><td>R44015</td></t<>	Benzene		0.062	1.0		µg/∟ α/l	1	7/5/2017 9:00:00 PM	R44015		
Ethylenzene ND 0.093 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.3.4-Trimethylbenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.3.5-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.2.Dichloroethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:0000 PM R44015 1.2.Dichloroethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:000 PM R44015 1.Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:000 PM R44015 2.Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:000 PM R44015 Bromoberzene ND 0.14 1.0 µg/L 1 7/5/2017 9:000 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:000 PM R44015 Bromodichloromethane ND <td></td> <td>ND</td> <td>0.064</td> <td>1.0</td> <td></td> <td>µg/∟</td> <td>1</td> <td>7/5/2017 9:00:00 PM</td> <td>R44015</td>		ND	0.064	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
Methylenzene ND 0.24 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.4-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2.4-Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromothane (EDC) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dibromothane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.4Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoberzene ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromomethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND <t< td=""><td>Ethylbenzene</td><td></td><td>0.093</td><td>1.0</td><td></td><td>µg/∟ α/l</td><td>1</td><td>7/5/2017 9:00:00 PM</td><td>R44015</td></t<>	Ethylbenzene		0.093	1.0		µg/∟ α/l	1	7/5/2017 9:00:00 PM	R44015		
1.2.4 Intherry Detizene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.3.5 Trimethylbenzene ND 0.087 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1.2-Dichloroethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Naphthalene ND 0.11 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015	A 2.4 Trimethyllegraphy	ND	0.24	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
1,3-printering/deficience ND 0.067 1.0 µg/L 1 7/5/2017 900:00 PM R44015 1,2-Dichlorosethane (EDB) ND 0.13 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Naphthalene ND 0.11 2.0 µg/L 1 7/5/2017 900:00 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 900:00 PM R44015 2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.16 4.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Bromochichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 900:00 PM R44015 Carbon disulfide <th< td=""><td>1,2,4-1 rimethylbenzene</td><td>ND</td><td>0.11</td><td>1.0</td><td></td><td>µg/∟</td><td>1</td><td>7/5/2017 9:00:00 PM</td><td>R44015</td></th<>	1,2,4-1 rimethylbenzene	ND	0.11	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
1.2-Ditoromethane (EDC) ND 0.40 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Naphthalene ND 0.11 2.0 µg/L 1 7/5/2017 90:000 PM R44015 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 90:000 PM R44015 2-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 90:000 PM R44015 Acetone 4.5 0.82 10 J µg/L 1 7/5/2017 90:000 PM R44015 Bromodenzere ND 0.14 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Bromodom ND 0.21 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Bromodom ND 0.26 3.0 µg/L 1 7/5/2017 90:000 PM R44015 Carbon disulfide ND 0.11 1.0 µg/L 1 7/5/2017 90:000 PM R44015 Chiorobenzene ND 0.40 10	1,3,5-1 rimetnyidenzene	ND	0.087	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
I.2-Dinformedmane (EDS) ND 0.13 1.0 µg/L 1 7/3/2017 9:00:00 PM R44015 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone 4.5 0.82 10 J µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoform ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
Napitralene ND 0.11 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1-Methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND	1,2-Dibromoethane (EDB)	ND	0.13	1.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
1-methylnaphthalene ND 0.16 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Methylnaphthalene A.5 0.82 10 J µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Stornomethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND		ND	0.11	2.0		µg/∟	1	7/5/2017 9:00:00 PM	R44015		
2-Methylnaphthalene ND 0.15 4.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Acetone 4.5 0.82 10 J µg/L 1 7/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromotichloromethane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromotemane ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachioride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/201		ND	0.16	4.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Acctone 4.5 0.82 10 J µg/L 1 1/5/2017 9:00:00 PM R44015 Bromobenzene ND 0.14 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoform ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroto	2-Methylnaphthalene	ND	0.15	4.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromobenzene ND 0.14 1.0 μg/L 1 //s/2017 9:00:00 PM R44015 Bromodichloromethane ND 0.18 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Bromoform ND 0.21 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Bromomethane ND 0.26 3.0 μg/L 1 7/s/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 μg/L 1 7/s/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 μg/L 1 7/s/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 Chlorobuene ND 0.40 1.0 μg/L 1 7/s/2017 9:00:00 PM R44015 2-Chlorobuene ND 0.40 1.0 <	Acetone	4.5	0.82	10	J	µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromodichloromethane ND 0.18 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Bromoform ND 0.21 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 0.26 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0	Bromobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromoform ND 0.21 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Bromomethane ND 0.26 3.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.40 1.0	Bromodichloromethane	ND	0.18	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Bromomethane ND 0.26 3.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Butanone ND 1.1 10 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 μg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chlorotothane ND 0.23 2.0 μg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 μg/L 1 7/5/2017 9:0:00 PM R44015 cis-1,2-DCE ND 0.082 1.0 μg/L 1 7/5/2017 9:0:0	Bromoform	ND	0.21	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
2-Butanone ND 1.1 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobethane ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.072 <	Bromomethane	ND	0.26	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Carbon disulfide ND 0.40 10 µg/L 1 7/5/2017 9:00:00 PM R44015 Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.82 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibrhorobenzene ND 0.072 <td>2-Butanone</td> <td>ND</td> <td>1.1</td> <td>10</td> <td></td> <td>µg/L</td> <td>1</td> <td>7/5/2017 9:00:00 PM</td> <td>R44015</td>	2-Butanone	ND	1.1	10		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Carbon Tetrachloride ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorobenzene ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,3-Dichloropropane ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0	Carbon disulfide	ND	0.40	10		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chlorobenzene ND 0.11 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroethane ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 i,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.091	Carbon Tetrachloride	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chloroethane ND 0.23 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 i.s-1,3-Dichloropropene ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 j.birormo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.09	Chlorobenzene	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chloroform ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND	Chloroethane	ND	0.23	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Chloromethane ND 0.29 3.0 µg/L 1 7/5/2017 9:00:00 PM R44015 2-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 4-Chlorotoluene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,2-DCE ND 0.20 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 cis-1,3-Dichloropropene ND 0.082 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dibromo-3-chloropropane ND 1.4 2.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dibromochloromethane ND 0.072 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND<	Chloroform	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
2-ChlorotolueneND0.401.0μg/L17/5/2017 9:00:00 PMR440154-ChlorotolueneND0.401.0μg/L17/5/2017 9:00:00 PMR44015cis-1,2-DCEND0.201.0μg/L17/5/2017 9:00:00 PMR44015cis-1,3-DichloropropeneND0.0821.0μg/L17/5/2017 9:00:00 PMR440151,2-Dibromo-3-chloropropaneND1.42.0μg/L17/5/2017 9:00:00 PMR44015DibromochloromethaneND0.0721.0μg/L17/5/2017 9:00:00 PMR44015DibromochlorobenzeneND0.0911.0μg/L17/5/2017 9:00:00 PMR440151,3-DichlorobenzeneND0.0901.0μg/L17/5/2017 9:00:00 PMR440151,4-DichlorobenzeneND0.151.0μg/L17/5/2017 9:00:00 PMR440151,4-DichlorobenzeneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L17/5/2017 9:00:00 PMR440151,1-DichloromethaneND0.401.0μg/L1 <td>Chloromethane</td> <td>ND</td> <td>0.29</td> <td>3.0</td> <td></td> <td>µg/L</td> <td>1</td> <td>7/5/2017 9:00:00 PM</td> <td>R44015</td>	Chloromethane	ND	0.29	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
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Dibromomethane ND 0.091 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.081 1.0 µg/L 1 7/5/2017 9:00:00 PM P44015 1	Dibromochloromethane	ND	0.072	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
1,2-Dichlorobenzene ND 0.090 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,3-Dichlorobenzene ND 0.15 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	Dibromomethane	ND	0.091	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
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1,4-Dichlorobenzene ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.081 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	1,3-Dichlorobenzene	ND	0.15	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
Dichlorodifluoromethane ND 1.0 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1,1-Dichloroethane ND 0.40 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015 1 1-Dichloroethane ND 0.81 1.0 µg/L 1 7/5/2017 9:00:00 PM R44015	1,4-Dichlorobenzene	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
1,1-Dichloroethane ND 0.40 1.0 μg/L 1 7/5/2017 9:00:00 PM R44015 1 1-Dichloroethane ND 0.081 1.0 μc/L 1 7/5/2017 9:00:00 PM R44015	Dichlorodifluoromethane	ND	1.0	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
11-Dichloroethene ND 0.081 1.0 uo/l 1 7/5/2017 0:00:00 PM P44015	1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		
n, Elemeno μg/L I //J/2017 3.00.00 FWI K44013	1,1-Dichloroethene	ND	0.081	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015		

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
- Н 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
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 38 of 61

Lab Order 1706G62

Date Reported: 8/3/2017

Page 39 of 61

CLIENT: Western Refining Southwest,Project:SMW 2 and Boundary Wells1706000	Gallup	llup Client Sample ID: TRIP BLANK Collection Date:									
2 ad ID: 1706G62-008	Matrix:	I KIP BLA	INK K)/2017	10:30:00 AM						
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8260B: VOLATILES							Analyst: RAA				
1,2-Dichloropropane	ND	0.10	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,3-Dichloropropane	ND	0.17	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
2,2-Dichloropropane	ND	0.16	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1-Dichloropropene	ND	0.093	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Hexachlorobutadiene	ND	0.80	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
2-Hexanone	ND	0.66	10		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Isopropylbenzene	ND	0.051	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
4-Isopropyltoluene	ND	0.096	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
4-Methyl-2-pentanone	ND	0.71	10		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Methylene Chloride	ND	0.11	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
n-Butylbenzene	ND	0.13	3.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
n-Propylbenzene	ND	0.074	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
sec-Butylbenzene	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Styrene	ND	0.16	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
tert-Butylbenzene	ND	0.10	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,1,2-Tetrachloroethane	ND	0.10	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,2,2-Tetrachloroethane	ND	0.14	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Tetrachloroethene (PCE)	ND	0.13	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
trans-1,3-Dichloropropene	ND	0.22	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,2,3-Trichlorobenzene	ND	0.12	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,2,4-Trichlorobenzene	ND	0.14	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,1-Trichloroethane	ND	0.073	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,1,2-Trichloroethane	ND	0.14	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Trichloroethene (TCE)	ND	0.11	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Trichlorofluoromethane	ND	0.18	1.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
1,2,3-Trichloropropane	ND	0.39	2.0		µg/L	1	7/5/2017 9:00:00 PM	R44015			
Vinyl chloride	ND	0.18	1.0		μg/L	1	7/5/2017 9:00:00 PM	R44015			
Xylenes, Total	ND	0.32	1.5		μg/L	1	7/5/2017 9:00:00 PM	R44015			
Surr: 1,2-Dichloroethane-d4	109	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			
Surr: 4-Bromofluorobenzene	109	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			
Surr: Dibromofluoromethane	114	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			
Surr: Toluene-d8	102	0	70-130		%Rec	1	7/5/2017 9:00:00 PM	R44015			

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

1706G62-001G OW-60 Collected date/time: 06/28/17 11:10

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SAMPLE RESULTS - 02

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Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	07/11/2017 15:23	WG996538



DATE/TIME: 07/12/17 14:55

SAMPLE RESULTS - 03

Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/l		mg/l		date / time		
Cyanide	ND		0.00500	1	07/11/2017 16:25	<u>WG996538</u>	Ĺ

Ss [†]Cn Sr Qç GI A Sc

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1706G62-003G BW-4B

SAMPLE RESULTS - 04

Collected date/time: 06/28/17 10:30

Wet Chemistry by Method 4500CN E-2011

<u> </u>	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/!		mg/l		date / tim e	
Cyanide	ND		0.00500	1	07/11/2017 16:25	<u>WG996538</u>

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1706G62-004G BW-5C Collected date/time: 06/28/17 09:10

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SAMPLE RESULTS - 05

Wet Chemistry by Method 4500CN E-2011

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	Result	Qualifier	RDL	Dilution	Analysis	Batch	<u></u>	•
Analyte	mg/l		mg/l		date / time		0	
Cyanide	ND		0.00500	1	07/11/2017 16:27	<u>WG996538</u>	Ť٦	С

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1706G62-005G BW-5B Collected date/time: 06/28/17 09:40

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SAMPLE RESULTS - 06

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Wet Chemistry by Method 4500CN E-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	07/11/2017 16:32	<u>WG996538</u>

⁴Cn Sfr ⁶Qc ⁷GI ⁸AI

1706G62-007G OW-59 Collected date/time: 06/28/17 12:40

SAMPLE RESULTS - 07

Wet Chemistry by Method 4500CN E-2011

2 J							
	Result	Qualifier	RDL	Dilution	Analysis	Batch	$\downarrow \bigcirc 0$
Analyte	mg/l	_	mg/i		date / time	—	Season
Cyanide	0.0268		0.00500	1	07/11/2017 16:33	<u>WG996538</u>	Tc

³Ss ⁴Cn ⁶Qc ⁷Gl ⁸Al

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WG996538 Wet Chemistry by Method 45000	CN E-2011		0	UALIT)	CONTF 1920655-02.03.	ROL SUN 04.05.06.07	IMARY			ONE LAB. NATIONWI	Э́н
Method Blank (MB)						2					5-000000000000000000000000000000000000
(MB) R3232467-1 07/11/17 16:06						WARRANT PRATE TO A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT			A B / T / T C COMMON AND AND AND AND AND AND AND AND AND AN		<u>.</u>
MB Result Analyte mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l		·						2
Cyanide		0.0018	0.00500								
L920655-02 Original Samp	ile (OS) • Dur	olicate (Dt									3Ss
(OS) L920655-02 07/11/17 16:23 • (DU	P) R3232467-4_C	7/11/17 16-24								a an an an an an an an an an an an an an	4 Cu
Original Res	sult DUP Result	Dilution D	UP RPD	OUP Qualifier	DUP RPD Limits						;
Analyte mg/l	l/gm	8			8						ц» V
Cyanide ND	0.00343	1 0			20						;
L920655-07 Original Samp	le (OS) • Dup	olicate (DL	<u>á</u>								O O
(OS) L920655-07 07/11/17 16:33 • (DUI	P) R3232467-7 0	7/11/17 16:34								n men vy von sy van de de de de de de de de de de de de de	<u>ת</u> ת
Original Re:	sult DUP Result	Dilution DI	UP RPD	OUP Qualifier	dup RPD Limits						
l/filli	шдл	8			Ŷ						
Cyanide 0.0268	0.0283	- 0			20						
Laboratory Control Sample	(LCS) • Labor	ratory Cor	ntrol Samp	ole Duplica	te (LCSD)						
(LCS) R3232467-2 07/11/17 16:07 • (LC	SD) R3232467-3	07/11/17 16:08	8						NAME AND A DESCRIPTION OF A DESCRIPTIONO	ANALY CONTRACTOR OF A CALE OF A CALE OF A CALE OF A CALE OF A CALE OF A CALE OF A CALE OF A CALE OF A CALE OF A	
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Alialyte	l/Gm	1/бш	۶	*	*	and a second second second second second second second second second second second second second second second		8	8		
Cyanide 0.100	0.102	0.0969	102	16	85-115			ۍ. د	20	V control water and the second se	
L920655-05 Original Samp	le (OS) • Mat	ríx Spike I	(MS) • Mat	ríx Spike D	uplicate (MS	(Q					
(OS) L920655-05 07/11/17 16:27 • (MS)	R3232467-5 07	/11/17 16:28 • (MSD) R32324	.67-6 07/11/17	16:31	of the second second second second second second second second second second second second second second second	A STATE OF CONTRACT OF THE OWNER OF CONTRACT.		A November of the first strategic st Strategic strategic st	NAMEN AND AND AND AND AND AND AND AND AND AN	
Spike Amou Analute	nt Original Result mail	MS Result	MSD Result	MS Rec. «	MSD Rec. «	Dilution Rec.	Limits <u>MS 0</u>	ualifier N	ISD Qualifier RPD	RPD Limits	
				والأ	R 20	e, r			¢	%	- 4-
Cyanide 0.100	Q	0.0931	0.0959	66	95	1 75-12	ъ		m	20	
		:									
ACCOUNT: Hall Environmental Analysis L	aboratory		Δ.	ROJECT:		SDG: L920655			DATE/TIME: 07/12/17 14:55		

GLOSSARY OF TERMS

襞	
Ср	Summer and a construction of the
² Tc	
³Ss	
⁴Cn	
⁵Sr	
⁶ Qc	
GI	
⁸ AI	
°Sc	

Abbreviations a	nd Definitions
SDG MDL RDL ND U RPD Original Sample Rec.	Sample Delivery Group. Method Detection Limit. Reported Detection Limit. Not detected at the Reporting Limit (or MDL where applicable). Not detected at the Reporting Limit (or MDL where applicable). Relative Percent Difference. 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. Recovery.
Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

WO#:	1706G62
	03-Aug-17

		•								0
Client: Project:	Western Refining SMW 2 and Boun	Southwe dary We	st, Gallup lls							
Sample ID MB-	A Samp	Type: MI	BLK	Tes	tCode: E	PA Method	200.7: Dissol	ved Meta	ls	
Client ID: PBW	Bat	ch ID: A4	4298	F	RunNo: 4	4298				
Prep Date:	Analysis	Date: 7	18/2017	S	SeqNo: 1	400233	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Iron	ND	0.020								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Silver	ND	0.0050								
Sodium	ND	1.0								
Vanadium	ND	0.050								
Zinc	ND	0.010								
Sample ID LCS	L L-A Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Dissol	ved Meta	ls	
Client ID: Batc	hQC Bat	ch ID: A4	4298	F	RunNo: 4	4298				
Prep Date:	Analysis	Date: 7	18/2017	5	SeqNo: 1	400234	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0018	0.0020	0.002000	0	89.0	50	150			J
Beryllium	0.0021	0.0020	0.002000	0	106	50	150			
Cadmium	0.0020	0.0020	0.002000	0	98.5	50	150			J
Calcium	0.53	1.0	0.5000	0	106	50	150			J
Chromium	0.0063	0.0060	0.006000	0	105	50	150			
Cobalt	0.0060	0.0060	0.006000	0	99.7	50	150			J
Iron	0.020	0.020	0.02000	0	102	50	150			
Magnesium	0.53	1.0	0.5000	0	106	50	150			J
Manganese	0.0020	0.0020	0.002000	0	102	50	150			
Nickel	0.0051	0.010	0.005000	0	103	50	150			J
Potassium	0.53	1.0	0.5000	0	107	50	150			J
Silver	0.0049	0.0050	0.005000	0	97.4	50	150			J
Sodium	0.51	1.0	0.5000	0	102	50	150			J
Vanadium	0.010	0.050	0.01000	0	105	50	150			J
Zinc	0.0056	0.010	0.005000	0	113	50	150			J

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 40 of 61

WO#: 1706G62

03-Aug-17

Client: Western Refining Southwest, Gallup

Project: SMW 2 and Boundary Wells

Sample ID LCS-A	Samp	Type: LC	S	Test	tCode: E	PA Method	200.7: Dissol	ved Metal	s	
Client ID: LCSW	Bato	h ID: A4	4298	R	unNo: 4	4298				
Prep Date:	Analysis	Date: 7/	18/2017	S	eqNo: 1	400235	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	97.2	85	115			
Beryllium	0.49	0.0020	0.5000	0	98.0	85	115			
Cadmium	0.49	0.0020	0.5000	0	97.1	85	115			
Calcium	49	1.0	50.00	0	97.6	85	115			
Chromium	0.49	0.0060	0.5000	0	97.3	85	115			
Cobalt	0.47	0.0060	0.5000	0	93.6	85	115			
Iron	0.48	0.020	0.5000	0	95.1	85	115			
Magnesium	49	1.0	50.00	0	98.7	85	115			
Manganese	0.48	0.0020	0.5000	0	95.0	85	115			
Nickel	0.48	0.010	0.5000	0	95.0	85	115			
Potassium	47	1.0	50.00	0	94.7	85	115			
Silver	0.10	0.0050	0.1000	0	100	85	115			
Sodium	48	1.0	50.00	0	96.6	85	115			
Vanadium	0.50	0.050	0.5000	0	99.7	85	115			
Zinc	0.47	0.010	0.5000	0	94.2	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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1706G62
	03-Aug-17

Client: Project:	Weste SMW	ern Refining S	Southwes lary Wel	st, Gallup lls							
Sample ID	MB-32644	Samp	Туре: МЕ	BLK	Tes	tCode: E	PA Method	200.7: Total M	/letals		
Client ID:	PBW	Bato	h ID: 32	644	F	anNo: 4	14032				
Prep Date:	7/5/2017	Analysis	Date: 7/	6/2017	5	SeqNo: '	388501	Units: mg/L			
Analita		Decult					Loud insit	Lliabl insit	0/ חחח		Qual
Rarium		Result		SFR value	SFK Kei Vai	%REC	LOWLIIIII	підпішінні	%RFD	KFDLIIIII	Quai
Borvillium			0.0020								
Cadmium			0.0020								
Chromium		ND	0.0020								
Cohalt		ND	0.0000								
Iron		ND	0.0000								
Manganese		ND	0.020								
Nickel		ND	0.010								
Silver		ND	0.0050								
Vanadium		ND	0.050								
Zinc		ND	0.010								
Sample ID	LCSLL-32644	Samp	Type: LC	SLL	Tes	tCode: E	PA Method	200.7: Total N	letals		
Client ID:	BatchQC	Bato	h ID: 32	644	F	anNo:	14032				
Prep Date:		Analysis	Date: 7/	6/2017	S	SeqNo:	388502	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.0020	0.0020	0.002000	0	102	50	150			
Beryllium		0.0020	0.0020	0.002000	0	100	50	150			
Cadmium		0.0021	0.0020	0.002000	0	106	50	150			
Chromium		0.0062	0.0060	0.006000	0	104	50	150			
Cobalt		0.0061	0.0060	0.006000	0	101	50	150			
Iron		0.020	0.020	0.02000	0	99.8	50	150			J
Manganese		0.0020	0.0020	0.002000	0	100	50	150			
Nickel		0.0044	0.010	0.005000	0	88.0	50	150			J
Silver		0.0045	0.0050	0.005000	0	90.6	50	150			J
Vanadium		0.0097	0.050	0.01000	0	96.7	50	150			J
Zinc		0.0056	0.010	0.005000	0	112	50	150			J
Sample ID	LCS-32644	Samp	Type: LC	S	Tes	tCode: E	PA Method	200.7: Total M	letals		
Client ID:	LCSW	Bato	h ID: 32	644	F	anNo: 4	14032				
Prep Date:	7/5/2017	Analysis	Date: 7/	6/2017	5	SeqNo: '	389083	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium		0.49	0.0020	0.5000	0	97.9	85	115			
Beryllium		0.50	0.0020	0.5000	0	100	85	115			
Cadmium		0.49	0.0020	0.5000	0	98.6	85	115			
Chromium		0.49	0.0060	0.5000	0	98.4	85	115			
Cobalt		0.48	0.0060	0.5000	0	95.4	85	115			
Iron		0.48	0.020	0.5000	0	96.4	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 Detection Limit

W Sample container temperature is out of limit as specified

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Client:	Western Refining Southwest, Gallup
Project:	SMW 2 and Boundary Wells

Sample ID LCS-32644 Client ID: LCSW	Samp Bato	Type: LC	:S 644	Tes F	tCode: El RunNo: 4	PA Method 4032	200.7: Total M	letals		
Prep Date: 7/5/2017	Analysis	Date: 7/	6/2017	S	SeqNo: 1	389083	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.48	0.0020	0.5000	0	95.7	85	115			
Nickel	0.48	0.010	0.5000	0	95.7	85	115			
Silver	0.094	0.0050	0.1000	0	94.0	85	115			
Vanadium	0.50	0.050	0.5000	0	99.8	85	115			
Zinc	0.48	0.010	0.5000	0	95.3	85	115			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 43 of 61

Client:		Western Refining	South	west, Gallup							
Project:		SMW 2 and Boun	dary V	Vells							
Sample ID	LCS	Samp	Туре:	LCS	TestCode: EPA 200.8: Dissolved Metals						
Client ID:	LCSW	Bat	Batch ID: C44340			RunNo: 44340					
Prep Date:		Analysis	Date:	7/19/2017	5	SeqNo: 1	401304	Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.023	0.00	10 0.02500	0	90.8	85	115			
Arsenic		0.024	0.00	10 0.02500	0	94.1	85	115			
Lead		0.012	0.000	50 0.01250	0	95.1	85	115			
Selenium		0.023	0.00	10 0.02500	0	93.8	85	115			
Uranium		0.012	0.000	50 0.01250	0	94.1	85	115			
Sample ID	LLLCS	Samp	Type:	LCSLL	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	BatchQ	C Bat	ch ID:	C44340	F	RunNo: 4	4340				
Prep Date:		Analysis	Date:	7/19/2017	5	SeqNo: 1	401305	Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.00053	0.00	10 0.001000	0	52.7	50	150			J
Arsenic		0.00096	0.00	10 0.001000	0	96.0	50	150			J
Lead		0.00047	0.000	50 0.0005001	0	94.2	50	150			J
Selenium		0.0011	0.00	10 0.001000	0	106	50	150			
Uranium		0.00047	0.000	50 0.0005001	0	93.2	50	150			J
Sample ID	МВ	Samp	Туре:	MBLK	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	PBW	Bate	ch ID:	C44340	F	RunNo: 4	4340				
Prep Date:		Analysis	Date:	7/19/2017	5	SeqNo: 1	401306	Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		ND	0.00	10							
Arsenic		ND	0.00	10							
Lead		ND	0.000	50							
Selenium		ND	0.00	10							
Uranium		ND	0.000	50							
Sample ID	LCS	Samp	Туре:	LCS	Tes	tCode: E	PA 200.8: [Dissolved Met	als		
Client ID:	LCSW	Bate	ch ID:	A44430	F	RunNo: 4	4430				
Prep Date:		Analysis	Date:	7/21/2017	5	SeqNo: 1	404397	Units: mg/L			
Analyte		Result	PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.024	0.00	10 0.02500	0	94.5	85	115			
Arsenic		0.023	0.00	10 0.02500	0	91.5	85	115			
Lead		0.012	0.000	50 0.01250	0	95.3	85	115			
Selenium		0.023	0.00	10 0.02500	0	91.7	85	115			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 44 of 61

Client: Project:	V S	Western Refining SMW 2 and Bour	Southwe	st, Gallup lls							
Sample ID	LLLCS	Sam	pType: LC	SLL	TestCode: EPA 200.8: Dissolved Metals						
Client ID:	BatchQC	: Ba	tch ID: A4	4430	RunNo: 44430						
Prep Date:		Analysis	Date: 7	/21/2017	S	SeqNo: 1	404398	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.00097	0.0010	0.001000	0	96.6	50	150			J
Arsenic		0.00090	0.0010	0.001000	0	89.8	50	150			J
Lead		0.00048	0.00050	0.0005001	0	96.9	50	150			J
Selenium		0.00088	0.0010	0.001000	0	87.8	50	150			J
Sample ID	MB	Sam	рТуре: М І	BLK	TestCode: EPA 200.8: Dissolved Metals						
Client ID:	PBW	Ba	tch ID: A4	4430	F	RunNo: 4	4430				
Prep Date:		Analysis	Date: 7	/21/2017	S	SeqNo: 1	404399	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		ND	0.0010								
Arsenic		ND	0.0010								
Lead		ND	0.00050								
Selenium		ND	0.0010								

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1706G62
	03-Aug-17

Client: Project:	Western SMW 2 a	Refining and Boun	Southwes dary Wel	st, Gallup 1s							
Sample ID	MB-32644	Samp	оТуре: МЕ	BLK	TestCode: 200.8 ICPMS Metals:Total						
Client ID:	PBW	Bat	ch ID: 32	644	RunNo: 44075						
Prep Date:	7/5/2017	Analysis	Date: 7/	8/2017	S	SeqNo: 1	390839	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		ND	0.0010								
Arsenic		ND	0.0010								
Lead		ND	0.00050								
Selenium		ND	0.0010								
Sample ID	MSLCS-32644	Samp	oType: LC	S	Tes	tCode: 20	0.8 ICPMS	Metals:Total			
Client ID:	LCSW	Bat	ch ID: 32	644	R	RunNo: 44	4075				
Prep Date:	7/5/2017	Analysis	Date: 7/	8/2017	S	eqNo: 1	390841	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.025	0.0010	0.02500	0	102	85	115			
Arsenic		0.023	0.0010	0.02500	0	92.5	85	115			
Lead		0.012	0.00050	0.01250	0	96.0	85	115			
Selenium		0.022	0.0010	0.02500	0	89.1	85	115			
Sample ID	MSLLLCS-32644 SampType: LCSLL			TestCode: 200.8 ICPMS Metals:Total							
Client ID:	BatchQC	Bat	ch ID: 32	644	RunNo: 44075						
Prep Date:	7/5/2017	Analysis	Date: 7/	8/2017	S	SeqNo: 1	390843	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.00095	0.0010	0.001000	0	94.9	50	150			J
Arsenic		0.0011	0.0010	0.001000	0	113	50	150			
Lead		0.00048	0.00050	0.0005001	0	96.1	50	150			J
Selenium		0.00085	0.0010	0.001000	0	84.9	50	150			J
Sample ID	1706G62-002ELL	MS Samp	Type: MS	DLL	TestCode: 200.8 ICPMS Metals:Total						
Client ID:	GW DUP01	Bat	ch ID: 32	644	RunNo: 44225						
Prep Date:	7/5/2017	Analysis	Date: 7/	14/2017	S	eqNo: 1	396853	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.027	0.0050	0.02500	0	108	70	130	0.216	20	
Arsenic		0.026	0.0050	0.02500	0.001656	99.1	70	130	1.76	20	
Lead		0.014	0.0025	0.01250	0	111	70	130	0.949	20	
Selenium		0.029	0.0050	0.02500	0.006456	92.1	70	130	7.46	20	
Sample ID	1706G62-002ELL	MS Samp	туре: МS	SLL	TestCode: 200.8 ICPMS Metals:Total						
Client ID:	GW DUP01	Bat	ch ID: 32	644	R	RunNo: 4	4225				
Prep Date:	7/5/2017	Analysis	Date: 7/	14/2017	S	SeqNo: 1	396854	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 46 of 61

Client:	Western Refining Southwest, Gallup
Project:	SMW 2 and Boundary Wells

Sample ID	1706G62-002ELL	MS Samp	Туре: МS	SLL	Tes	tCode: 20	0.8 ICPMS	Metals:Total			
Client ID:	GW DUP01	Bato	h ID: 32	644	R	RunNo: 4	4225				
Prep Date:	7/5/2017	Analysis I	Date: 7/	14/2017	S	SeqNo: 1	396854	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony		0.027	0.0050	0.02500	0	108	70	130			
Arsenic		0.027	0.0050	0.02500	0.001656	101	70	130			
Lead		0.014	0.0025	0.01250	0	110	70	130			
Selenium		0.027	0.0050	0.02500	0.006456	83.6	70	130			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 47 of 61

Client:	Wester	n Refining Southwest, Gallup				
Project:	SMW 2	2 and Boundary Wells				
Sample ID	MB-32802	SampType: MBLK	TestCode: EPA Metho	d 245.1: Mercury		
Client ID:	PBW	Batch ID: 32802	RunNo: 44238			
Prep Date:	7/14/2017	Analysis Date: 7/14/2017	SeqNo: 1396754	Units: mg/L		
Analyte		Result PQL SPK valu	e SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Mercury		0.000079 0.00020				J
Sample ID	LCS-32802	SampType: LCS	TestCode: EPA Metho	d 245.1: Mercury		
Client ID:	LCSW	Batch ID: 32802	RunNo: 44238			
Prep Date:	7/14/2017	Analysis Date: 7/14/2017	SeqNo: 1396755	Units: mg/L		
Analyte		Result PQL SPK valu	e SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Mercury		0.0052 0.00020 0.00500	0 0 104 80	120		

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 48 of 61
| WO#: | 170 | 5G62 |
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| | | |

03-Aug-17	
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Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R43973 RunNu: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387126 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Floride ND 0.50 Biomide ND 0.50 Simple ID KRPD ND 0.50 Simple ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Filter Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit %RPD RPDLimit Qual Floride 0.52 0.10 0.5000 97.7	Client: V Project: S	Vestern Refining S MW 2 and Bound	Southwe lary Wel	st, Gallup lls							
Client ID: PBW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387126 Units: mg/L Analyte Result POL SPK Value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Analyte ND 0.0 0.0 SeqNo: 1387126 Units: mg/L Chiordie ND 0.0 0.0 SeqNo: 1387127 Units: Mg/L	Sample ID MB	Samp	Type: m l	olk	Tes	tCode: El	PA Method	300.0: Anion	S		
Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387126 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride ND 0.10 SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Bornide ND 0.50 Similare ND 0.50 NTate-Nithe as N ND 0.50 Simple ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNix: 43973 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 90 1110 NRTA SREC LowLimit HighLimit %RPD RPDLimit Qual NRTA SREC LowL	Client ID: PBW	Bato	h ID: R4	3973	F						
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Flooride ND 0.10	Prep Date:	Analysis I	Date: 7/	3/2017	S	SeqNo: 1	387126	Units: mg/L			
Flindte ND 0.10 Chiorde ND 0.50 Bromide ND 0.50 Suffate Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result POL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Flioride 0.52 0.10 0.500 0 96.6 90 110 Second Second 90 110 Second Second 90 110 Second	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chioride ND 0.50 Bromide ND 0.10 Phosphorus, Orthophosphate (As P ND 0.50 Suffale ND 0.20 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.500 0 104 90 110 Chioride 4.8 0.50 5.000 0 96.6 90 110 Phosphorus, Othophosphate (As P 4.8 0.50 5.000 0 96.6 90 110 Phosphorus, Othophosphate (As P 4.8 0.50 5.000 0 96.6 90 110 Phosphorus, Othophosphate (As P 4.8 0.50 5.000 0 96.6 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.7 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.6 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.6 90 110 Suffate Nither as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mb/k TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride A, 6 0.50 5.00 0 93.7 90 110 Sample ID MB SampType: WBLK TestCode: EPA Method 300.0: Anions	Fluoride	ND	0.10								
Bromide ND 0.10 Phosphorus, Orthophosphate (As P ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sulfale ND 0.50 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde 0.52 0.10 0.500 0 104 90 1110 Sulfale 0.50 0.10 0.500 0 96.6 90 110 Bromide 2.4 0.10 0.500 0 96.6 90 110 Bromide 2.4 0.10 0.500 0 97.7 90 110 Sulfale 9.8 0.50 10.00 0 96.4 90 1110 Sulfale 9.8 0.50 10.00 0 96.4 90 1110 Sulfale 9.8 0.50 5.000 0 97.6 90 110 Sulfale 9.8 0.50 5.000 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde ND 0.50 Sulfale 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde ND 0.50 Sulfale 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chiorde 4.6 0.50 5.00 0 92.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44528 RunNo: 44528	Chloride	ND	0.50								
Phosphorus, Orthophosphate (As P ND 0.50 Suifate ND 0.20 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result POL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 104 90 110 Simolide 2.4 0.10 2.500 0 97.7 90 110 Prosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 98.1 90 110 Suffate - Nitrite a Nitrite a Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mbik TestCode: EPA Method 300.0: Anions Client ID: POL </th <th>Bromide</th> <th>ND</th> <th>0.10</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Bromide	ND	0.10								
Sulfale ND 0.50 Sulfate-Nitrite as N ND 0.20 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Floride 4.8 0.50 5.000 0 96.6 90 110 Chordie 4.8 0.50 5.000 0 96.4 90 110 Suffate 9.8 0.50 10.00 96.6 90 110 <th>Phosphorus, Orthophospha</th> <th>ite (As P ND</th> <th>0.50</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Phosphorus, Orthophospha	ite (As P ND	0.50								
Nitrate-Nitrite as N ND 0.20 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result POL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 96.6 90 110 Bromide 2.4 0.10 2.500 0 97.7 90 110 Bromide 2.4 0.50 5.000 0 96.4 90 110 Sutate 9.8 0.50 10.00 0 97.7 90 110 Sutate 9.8 0.50 10.00 90 90 110 Sutate 9.8 0.50 10.00 97.7 90 110<	Sulfate	ND	0.50								
Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 104 90 110 Chioride 4.8 0.50 5.000 0 96.6 90 110 Bromide 2.4 0.10 2.500 0 97.7 90 110 Suffate 9.8 0.50 10.00 0 98.1 90 110 Suffate 9.8 0.50 10.00 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: Client ID: <t< th=""><th>Nitrate+Nitrite as N</th><th>ND</th><th>0.20</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	Nitrate+Nitrite as N	ND	0.20								
Client ID: LCSW Batch ID: R43973 RunNo: 43973 Prep Date: Analysis Date: T/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 104 90 110 0.000 0 104 90 110 0.000 0 96.6 90 110 0.000 0 96.6 90 110 0.000 0 96.4 90 110 0.000 0 96.4 90 110 0.000 0.00 98.1 90 110 0.000 0.000 98.1 90 110 0.000 0.000 0.000 0.000 100 0.000 0.000 0.000 0.000 0.000 0.000 100 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Sample ID LCS	Samp	Type: Ics	6	Tes	tCode: El	PA Method	300.0: Anion	8		
Prep Date: Analysis Date: 7/3/2017 SeqNo: 1387127 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 90.6 90 110 Value SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride 4.8 0.50 5.000 0 97.7 90 110 Value Value SPK value SPK 0 90 110 Value Value SPK 0 90 110 Value Value SPK 0 90 110 Value Value SPK 0 90 110 Value Value SPK 0 90 110 Value	Client ID: LCSW	Bato	:h ID: R4	3973	F	RunNo: 4	3973				
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Fluoride 0.52 0.10 0.5000 0 104 90 110 Chioride 4.8 0.50 5.000 0 96.6 90 110 Bromide 2.4 0.10 2.500 0 97.7 90 110 90 100 90 110 </th <th>Prep Date:</th> <th>Analysis I</th> <th>Date: 7/</th> <th>3/2017</th> <th>S</th> <th>SeqNo: 1</th> <th>387127</th> <th>Units: mg/L</th> <th></th> <th></th> <th></th>	Prep Date:	Analysis I	Date: 7/	3/2017	S	SeqNo: 1	387127	Units: mg/L			
Fluoride 0.52 0.10 0.500 0 104 90 110 Chioride 4.8 0.50 5.000 0 96.6 90 110 Bromide 2.4 0.10 2.500 0 97.7 90 110 Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 96.4 90 110 Nitrate - Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions EVENT Client ID: PBW Batch ID: R44381 RunNo: 44381 EVENT Analyte Result PQL SPK value SPK Ref Val %REC Lowlinit HighLimit %RPD RPDLimit Qual Chioride ND 0.50 J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride 4.8 0.50 5.000 0 96.6 90 110 Bromide 2.4 0.10 2.500 0 97.7 90 110 Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 96.6 90 110 Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 98.1 90 110 Nitrate+Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Vertice Verti	Fluoride	0.52	0.10	0.5000	0	104	90	110			
Bromide 2.4 0.10 2.500 0 97.7 90 110 Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 96.4 90 110 Sulfate 9.8 0.50 10.00 0 98.1 90 110 Nitrate Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Aniovs Client ID: PBW Batch ID: R44381 RunNo: 44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Client ID: LCSW Batch ID: R44381 RunNo: 44381 J J Sample ID LCSW Batch ID: R44381 RunNo: 1402927 Units: mg/L Analyte Result	Chloride	4.8	0.50	5.000	0	96.6	90	110			
Phosphorus, Orthophosphate (As P 4.8 0.50 5.000 0 96.4 90 110 Sulfate 9.8 0.50 10.00 0 98.1 90 110 Nitrate+Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Qual Chloride ND 0.50 50.00 90 90 110 Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Units: mg/L Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Client ID: LCSW Batch ID: R44381 RunNo: 44381 Units: mg/L A	Bromide	2.4	0.10	2.500	0	97.7	90	110			
Sulfate 9.8 0.50 10.00 0 98.1 90 110 Nitrate+Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Vector Analysis Vector Analysis Vector <	Phosphorus, Orthophospha	ite (As P 4.8	0.50	5.000	0	96.4	90	110			
Nitrate+Nitrite as N 3.4 0.20 3.500 0 97.6 90 110 Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 4.6 0.50 5.000 92.7	Sulfate	9.8	0.50	10.00	0	98.1	90	110			
Sample ID MB SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 J J J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions J Client ID: LCSW Batch ID: R44381 RunNo: 44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val<	Nitrate+Nitrite as N	3.4	0.20	3.500	0	97.6	90	110			
Client ID: PBW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 Suffate 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Qual Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Analysis Date: 7/19/2017 SeqNo: 1402927 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Sample ID MB	Samp	Type: m ł	olk	Tes	tCode: El	PA Method	300.0: Anion	8		
Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402926 Units: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 0.50 0.50 J J J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Vitis: mg/L Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Qual Chloride 4.6 0.50 5.000 0 92.7 90 110 Qual Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions	Client ID: PBW	Batc	h ID: R4	4381	F	RunNo: 4	4381				
AnalyteResultPQLSPK valueSPK Ref Val%RECLowLimitHighLimit%RPDRPDLimitQualChlorideND0.50	Prep Date:	Analysis I	Date: 7/	19/2017	S	SeqNo: 1	402926	Units: mg/L			
ND 0.50 Sulfate 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528 RunNo: 44528	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate 0.15 0.50 J Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Value <	Chloride	ND	0.50								
Sample ID LCS SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions EVA Client ID: PBW Batch ID: R44528 RunNo: 44528	Sulfate	0.15	0.50								J
Client ID: LCSW Batch ID: R44381 RunNo: 44381 Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 9.4 0.50 10.00 0 93.7 90 110 90.000 1000 90.000 90.0000 90.0000 90.00000 90.00000 90.000000 90.00000000000000000000000000000000000	Sample ID LCS	Samp	Type: Ics	5	Tes	tCode: El	PA Method	300.0: Anion	5		
Prep Date: Analysis Date: 7/19/2017 SeqNo: 1402927 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 92.7 90 110 100 100 100 93.7 90 110 100	Client ID: LCSW	Bato	h ID: R4	4381	F	RunNo: 4	4381				
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 4.6 0.50 5.000 0 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528 KunNo: 44528	Prep Date:	Analysis I	Date: 7/	19/2017	S	SeqNo: 1	402927	Units: mg/L			
Chloride 4.6 0.50 5.000 0 92.7 90 110 Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate 9.4 0.50 10.00 0 93.7 90 110 Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528	Chloride	4.6	0.50	5.000	0	92.7	90	110			
Sample ID MB SampType: MBLK TestCode: EPA Method 300.0: Anions Client ID: PBW Batch ID: R44528 RunNo: 44528	Sulfate	9.4	0.50	10.00	0	93.7	90	110			
Client ID: PBW Batch ID: R44528 RunNo: 44528	Sample ID MB	Samp	Туре: МЕ	BLK	Tes	tCode: El	PA Method	300.0: Anion	S		
	Client ID: PBW	Bato	h ID: R4	4528	F	RunNo: 4	4528				
Prep Date: Analysis Date: 7/26/2017 SeqNo: 1408053 Units: mg/L	Prep Date:	Analysis I	Date: 7/	26/2017	S	SeqNo: 1	408053	Units: mg/L			
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 49 of 61

Client: Project:		Western Refining S SMW 2 and Bounda	outhwe ary We	st, Gallup lls							
Sample ID N	/IB PBW	SampT Batch	ype: MF 1 ID: R4	3LK 4528	Tes F	tCode: EF	PA Method	300.0: Anions	5		
Prep Date:		Analysis D	ate: 7/	26/2017	S	SeqNo: 14	408053	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as	N	ND	0.20								
Sample ID	.cs	SampT	ype: LC	s	Tes	tCode: EF	PA Method	300.0: Anions	6		
Client ID: L	csw	Batch	1D: R4	4528	F	RunNo: 44	4528				
Prep Date:		Analysis D	ate: 7/	26/2017	5	GeqNo: 14	408054	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as	Ν	3.4	0.20	3.500	0	97.0	90	110			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 50 of 61

WO#:	1706G62
	03-Aug-17

Client: Project:	Western I SMW 2 a	Refining S .nd Bound	outhwe ary We	st, Gallup lls								
Sample ID	MB-32608	SampT	Type: MI	BLK	TestCode: EPA Method 8015M/D: Diesel Range							
Client ID:	PBW	Batcl	h ID: 32	608	F	RunNo: 4	3984					
Prep Date:	7/3/2017	Analysis D	Date: 7/	5/2017	S	SeqNo: 1	386515	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range O	rganics (DRO)	ND	1.0									
Motor Oil Range	e Organics (MRO)	ND	5.0									
Surr: DNOP		1.1		1.000		112	72.4	157				
Sample ID	LCS-32608	SampType: LCS TestCode: EPA Method 8015M/D: Diesel Range										
Client ID:	LCSW	Batcl	h ID: 32	608	F	RunNo: 4	3984					
Prep Date:	7/3/2017	Analysis D	Date: 7/	5/2017	5	SeqNo: 1	386736	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range O	rganics (DRO)	6.0	1.0	5.000	0	121	82.8	146				
Surr: DNOP		0.54		0.5000		109	72.4	157				
Sample ID	1706G62-001BMS	SampT	Гуре: М	3	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	9		
Client ID:	OW-60	Batcl	h ID: 32	608	F	RunNo: 4	3984					
Prep Date:	7/3/2017	Analysis D	Date: 7/	5/2017	5	SeqNo: 1	386854	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range O	rganics (DRO)	6.5	1.0	5.000	0	129	87.2	145				
Surr: DNOP		0.56		0.5000		112	72.4	157				
Sample ID	1706G62-001BMS	D Samp1	Type: MS	SD	Tes	tCode: El	PA Method	8015M/D: Die	sel Rang	9		
Client ID:	OW-60	Batcl	h ID: 32	608	F	RunNo: 4	3984					
Prep Date:	7/3/2017	Analysis E	Date: 7/	5/2017	5	SeqNo: 1	386861	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range O	rganics (DRO)	6.6	1.0	5.000	0	131	87.2	145	1.51	20		
Surr: DNOP		0.56		0.5000		112	72.4	157	0	0		

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1706G62

03-Aug-17

Client: Project:	Western SMW 2	Refining S and Bound	Southw lary W	vest, Gallup Tells									
Sample ID	RB	Samp	Гуре: М	/IBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID:	PBW	Batc	h ID: (G44019	F	RunNo: 4	44019						
Prep Date:		Analysis [Date:	7/6/2017	S	SeqNo: 1	1388622	Units: mg/L					
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Rang Surr: BFB	ge Organics (GRO)	ND 21	0.05	0 20.00		106	52.3	138					
Sample ID	2.5UG GRO LCS	Samp	Гуре: L	.cs	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e			
Client ID:	LCSW	Batc	h ID: (G44019	F	RunNo: 4	44019						
Prep Date:		Analysis [Date:	7/6/2017	S	SeqNo: 1	1388623	Units: mg/L					
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Rang	ge Organics (GRO)	0.50	0.05	0 0.5000	0	99.7	75.8	123					
Surr: BFB		24		20.00		118	52.3	138					
Sample ID	1706G62-002AM	S Samp	Гуре: М	IS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID:	GW DUP01	Batc	h ID: (G44019	F	RunNo: 4	44019						
Prep Date:		Analysis [Date:	7/6/2017	S	SeqNo: 1	1388626	Units: mg/L					
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Rang	ge Organics (GRO)	0.49	0.05	0 0.5000	0.03520	90.7	53.2	134					
Surr: BFB		26		20.00		131	52.3	138					
Sample ID	1706G62-002AM	SD Samp	Гуре: 🛚	ISD	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e			
Client ID:	GW DUP01	Batc	h ID: (G44019	F	RunNo: 4	44019						
Prep Date:		Analysis [Date:	7/6/2017	5	SeqNo: 1	1388627	Units: mg/L					
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Rang	ge Organics (GRO)	0.48	0.05	0 0.5000	0.03520	90.0	53.2	134	0.740	20			
Surr: BFB		26		20.00		129	52.3	138	0	0			
Sample ID	RB	Samp	Гуре: 🛚	IBLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e			
Client ID:	PBW	Batc	h ID: V	VG44091	F	RunNo: 4	44091						
Prep Date:		Analysis [Date:	7/10/2017	S	SeqNo: 1	1391577	Units: mg/L					
Analyte		Result	PQL	. SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Rang	ge Organics (GRO)	ND	0.05	0									
Surr: BFB		23		20.00		114	52.3	138					
Sample ID	2.5UG GRO LCS	Samp	Type: L	CS	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e			
Client ID:	LCSW	Batc	h ID: V	VG44091	F	RunNo: 4	44091						
Prep Date:		Analysis [Date:	7/10/2017	S	SeqNo: 1	1391578	Units: mg/L					

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Client: Project:	Western Refining Southwest, Gallup SMW 2 and Boundary Wells										
Sample ID	2.5UG GRO LCS	SampTy	pe: LC	s	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	LCSW	Batch	ID: W	G44091	R	aunNo: 4	4091				
Prep Date:		Analysis Da	te: 7	/10/2017	S	SeqNo: 1	391578	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	0.48	0.050	0.5000	0	95.7	75.8	123			
Surr: BFB		25		20.00		125	52.3	138			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1706G62 03-Aug-17

Client:
Project:

Western Refining Southwest, Gallup

SMW 2 and Boundary Wells

Sample ID 100ng Ics	SampT	SampType: LCS4 TestCode: EPA Method 8260B: VOLATILES								
Client ID: BatchQC	Batch	n ID: R4	4015	RunNo: 44015						
Prep Date:	Analysis D	ate: 7/	5/2017	SeqNo: 1387911 Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	20	1.0	20.00	0	100	70	130			
Ethylbenzene	20	1.0	20.00	0	99.5	70	130			
Methyl tert-butyl ether (MTBE)	42	1.0	40.00	0	104	70	130			
1,2,4-Trimethylbenzene	21	1.0	20.00	0	103	70	130			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	101	70	130			
1,2-Dichloroethane (EDC)	21	1.0	20.00	0	103	62.2	143			
1,2-Dibromoethane (EDB)	20	1.0	20.00	0	99.1	70	130			
Naphthalene	19	2.0	20.00	0	92.6	70	130			
1-Methylnaphthalene	19	4.0	20.00	0	95.0	60	140			
2-Methylnaphthalene	14	4.0	20.00	0	71.6	60	140			
Acetone	43	10	40.00	0	107	60	140			
Bromobenzene	21	1.0	20.00	0	104	70	130			
Bromodichloromethane	21	1.0	20.00	0	107	70	130			
Bromoform	20	1.0	20.00	0	99.3	70	130			
Bromomethane	17	3.0	20.00	0	87.2	60	140			
2-Butanone	47	10	40.00	0	117	60	140			
Carbon disulfide	38	10	40.00	0	94.3	60	140			
Carbon Tetrachloride	21	1.0	20.00	0	104	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
Chloroethane	20	2.0	20.00	0	99.2	60	140			
Chloroform	21	1.0	20.00	0	107	70	130			
Chloromethane	17	3.0	20.00	0	87.0	60	140			
2-Chlorotoluene	20	1.0	20.00	0	102	70	130			
4-Chlorotoluene	20	1.0	20.00	0	102	70	130			
cis-1,2-DCE	21	1.0	20.00	0	107	70	130			
cis-1,3-Dichloropropene	19	1.0	20.00	0	96.8	70	130			
1,2-Dibromo-3-chloropropane	20	2.0	20.00	0	102	70	130			
Dibromochloromethane	19	1.0	20.00	0	95.4	70	130			
Dibromomethane	22	1.0	20.00	0	108	70	130			
1,2-Dichlorobenzene	20	1.0	20.00	0	101	70	130			
1,3-Dichlorobenzene	21	1.0	20.00	0	103	70	130			
1,4-Dichlorobenzene	21	1.0	20.00	0	103	67.2	141			
Dichlorodifluoromethane	17	1.0	20.00	0	85.6	60	140			
1,1-Dichloroethane	21	1.0	20.00	0	103	52.6	157			
1,1-Dichloroethene	20	1.0	20.00	0	101	70	130			
1,2-Dichloropropane	21	1.0	20.00	0	103	63.7	138			
1,3-Dichloropropane	20	1.0	20.00	0	98.1	70	130			
2,2-Dichloropropane	21	2.0	20.00	0	107	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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1706G62 03-Aug-17

Client:
Project:

Western Refining Southwest, Gallup

SMW 2 and Boundary Wells

Sample ID 100ng lcs	SampT	ype: LC	:S4	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: BatchQC	Batch ID: R44015		F	RunNo: 44015						
Prep Date:	Analysis D	Date: 7/	5/2017	S	SeqNo: 1	387911	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	20	1.0	20.00	0	102	70	130			
Hexachlorobutadiene	18	1.0	20.00	0	87.6	70	130			
2-Hexanone	38	10	40.00	0	95.4	60	140			
Isopropylbenzene	20	1.0	20.00	0	100	70	130			
4-Isopropyltoluene	21	1.0	20.00	0	104	70	130			
4-Methyl-2-pentanone	41	10	40.00	0	102	60	140			
Methylene Chloride	21	3.0	20.00	0	103	70	130			
n-Butylbenzene	19	3.0	20.00	0	97.4	70	130			
n-Propylbenzene	20	1.0	20.00	0	100	70	130			
sec-Butylbenzene	20	1.0	20.00	0	98.3	70	130			
Styrene	20	1.0	20.00	0	101	70	130			
tert-Butylbenzene	20	1.0	20.00	0	101	70	130			
1,1,1,2-Tetrachloroethane	20	1.0	20.00	0	98.5	70	130			
1,1,2,2-Tetrachloroethane	21	2.0	20.00	0	105	65.9	133			
Tetrachloroethene (PCE)	21	1.0	20.00	0	103	70	130			
trans-1,2-DCE	20	1.0	20.00	0	99.9	70	130			
trans-1,3-Dichloropropene	19	1.0	20.00	0	92.8	70	130			
1,2,3-Trichlorobenzene	19	1.0	20.00	0	92.9	70	130			
1,2,4-Trichlorobenzene	18	1.0	20.00	0	92.3	70	130			
1,1,1-Trichloroethane	21	1.0	20.00	0	104	70	130			
1,1,2-Trichloroethane	20	1.0	20.00	0	99.1	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Trichlorofluoromethane	20	1.0	20.00	0	102	70	130			
1,2,3-Trichloropropane	21	2.0	20.00	0	103	69.7	129			
Vinyl chloride	19	1.0	20.00	0	93.5	70	130			
Xylenes, Total	61	1.5	60.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		113	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	n ID: R4	4015	F	RunNo: 4	4015				
Prep Date:	Analysis D	Date: 7/	5/2017	S	SeqNo: 1	387914	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								

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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WO#:	1706G62
	03-Aug-17

Client: Wester	ern Refining S	Southwe	est, Gallup								
Project: SMW	2 and Bound	ary We	ells								
Sample ID rb	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batc	h ID: R	44015	F	RunNo: 4	4015					
Prep Date:	Analysis E	Date: 7	/5/2017	:	SeqNo: 1	387914	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
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-DCF	ND	1.0									
cis-1 3-Dichloronronene	ND	1.0									
1 2-Dibromo-3-chloronronane	ND	2.0									
Dibromochloromethane	ND	2.0									
Dibromomethane	ND	1.0									
1.2 Dichlorobenzene	ND	1.0									
1,2-Dichlorobenzene		1.0									
1,3-Dichlorobenzene		1.0									
Dichlorodifluoromethane		1.0									
1 1 Dichloroethane		1.0									
		1.0									
1, I-Dichloropropago		1.0									
		1.0									
		1.0									
		2.0									
		1.0									
Hexachioroputadiene	ND	1.0									
2-Hexanone	ND	10									

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 56 of 61

WO#:	1706G62					
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03-Aug-1	17
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Client: V Project: S	Western Refinin MW 2 and Boy	ng Southwe undary We	est, Gallup Ils							
Sample ID rb	Sa	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	В	atch ID: R4	44015	F	RunNo: 4	4015				
Prep Date:	Analys	sis Date: 7	/5/2017	S	SeqNo: 1	387914	Units: µg/L			
Analyte	Resu	ılt PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Isopropylbenzene	N	D 1.0								
4-Isopropyltoluene	N	D 1.0								
4-Methyl-2-pentanone	N	D 10								
Methylene Chloride	N	D 3.0								
n-Butylbenzene	N	D 3.0								
n-Propylbenzene	N	D 1.0								
sec-Butylbenzene	N	D 1.0								
Styrene	N	D 1.0								
tert-Butylbenzene	N	D 1.0								
1,1,1,2-Tetrachloroethane	N	D 1.0								
1,1,2,2-Tetrachloroethane	N	D 2.0								
Tetrachloroethene (PCE)	N	D 1.0								
trans-1,2-DCE	N	D 1.0								
trans-1,3-Dichloropropene	N	D 1.0								
1,2,3-Trichlorobenzene	N	D 1.0								
1,2,4-Trichlorobenzene	N	D 1.0								
1,1,1-Trichloroethane	N	D 1.0								
1,1,2-Trichloroethane	N	D 1.0								
Trichloroethene (TCE)	N	D 1.0								
Trichlorofluoromethane	N	D 1.0								
1,2,3-Trichloropropane	N	D 2.0								
Vinyl chloride	N	D 1.0								
Xylenes, Total	N	D 1.5								
Surr: 1,2-Dichloroethane	-d4 1	1	10.00		108	70	130			
Surr: 4-Bromofluorobenz	ene 1	1	10.00		108	70	130			
Surr: Dibromofluorometh	ane 1	1	10.00		114	70	130			
Surr: Toluene-d8	1	0	10.00		104	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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1706G62
	03-Aug-17

Client:WesterProject:SMW	ern Refining So 2 and Boundar	uthwest, Gallup ry Wells		
Sample ID mb-32619	SampTy	pe: MBLK	TestCode: EPA Method 8270C: Semivolatiles	
Client ID: PBW	Batch I	D: 32619	RunNo: 44051	
Pren Date: 7/3/2017	Analysis Da	te: 7/6/2017	SeaNo: 1389536 Units: ua/l	
	Desell			.
Analyte	Result	PQL SPK value	SPK Ref Val %REC LOWLIMIT HighLimit %RPD RPDLIMIT	Juai
Acenaphiliene		10		
	ND	10		
	ND	10		
Azohenzene	ND	10		
Renz(a)anthracene	ND	10		
Benzo(a)pyrene	ND	10		
Benzo(h)fluoranthene	ND	10		
Benzo(a h i)pervlene	ND	10		
Benzo(k)fluoranthene	ND	10		
Benzoic acid	85	20		Л
Benzyl alcohol	ND	10		Ũ
Bis(2-chloroethoxy)methane	ND	10		
Bis(2-chloroethyl)ether	ND	10		
Bis(2-chloroisopropyl)ether	ND	10		
Bis(2-ethylhexyl)phthalate	ND	10		
4-Bromophenyl phenyl ether	ND	10		
Butyl benzyl ohthalate	ND	10		
Carbazole	ND	10		
4-Chloro-3-methylphenol	ND	10		
4-Chloroaniline	ND	10		
2-Chloronaphthalene	ND	10		
2-Chlorophenol	ND	10		
4-Chlorophenyl phenyl ether	ND	10		
Chrysene	ND	10		
Di-n-butyl phthalate	ND	10		
Di-n-octyl phthalate	ND	10		
Dibenz(a,h)anthracene	ND	10		
Dibenzofuran	ND	10		
1,2-Dichlorobenzene	ND	10		
1,3-Dichlorobenzene	ND	10		
1,4-Dichlorobenzene	ND	10		
3,3 [°] -Dichlorobenzidine	ND	10		
Diethyl phthalate	ND	10		
Dimethyl phthalate	ND	10		
2,4-Dichlorophenol	ND	20		
2,4-Dimethylphenol	ND	10		
4,6-Dinitro-2-methylphenol	ND	20		
2,4-Dinitrophenol	ND	20		

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 58 of 61

WO#:	1706G62
	03-Aug-17

Client:WProject:S	Vestern Refining So MW 2 and Bounda	outhwes ary Well	t, Gallup ls							
Sample ID mb-32619	SampT	ype: MB	LK	Tes	tCode: El	PA Method	8270C: Semiv	olatiles		
Client ID: PBW	Batch	ID: 326	19	R	RunNo: 4	4051				
Prep Date: 7/3/2017	Analysis D	ate: 7/6	6/2017	S	SeqNo: 1	389536	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
Surr: 2-Fluorophenol	120		200.0		60.8	15	98.1			
Surr: Phenol-d5	100		200.0		51.7	15	80.7			
Surr: 2,4,6-Tribromophen	ol 160		200.0		78.6	15	112			
Surr: Nitrobenzene-d5	90		100.0		90.2	27.2	90.7			
Surr: 2-Fluorobiphenyl	86		100.0		85.7	23.3	85.6			S
Surr: 4-Terphenyl-d14	72		100.0		71.6	27.6	107			

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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1706G62
	02 4 17

Client:	Western Refining Southwest, Gallup
Project:	SMW 2 and Boundary Wells

Sample ID Ics-32619	SampT	ype: LC	S	Tes	tCode: El	PA Method	8270C: Semi	volatiles		
Client ID: LCSW	Batch	n ID: 326	619	F	RunNo: 4	4051				
Prep Date: 7/3/2017	Analysis D	Date: 7/	6/2017	S	SeqNo: 1	389537	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	85	10	100.0	0	85.2	41.2	98.9			
4-Chloro-3-methylphenol	170	10	200.0	0	84.8	29.1	111			
2-Chlorophenol	150	10	200.0	0	77.3	23.3	108			
1,4-Dichlorobenzene	63	10	100.0	0	62.6	29.4	84.5			
2,4-Dinitrotoluene	75	10	100.0	0	74.7	36.6	88.7			
N-Nitrosodi-n-propylamine	90	10	100.0	0	89.5	46.9	106			
4-Nitrophenol	99	10	200.0	0	49.4	15	74.7			
Pentachlorophenol	140	20	200.0	0	68.0	28.1	85.4			
Phenol	100	10	200.0	0	50.4	15	78.2			
Pyrene	97	10	100.0	0	97.0	44.4	96.8			S
1,2,4-Trichlorobenzene	75	10	100.0	0	74.9	34.3	89			
Surr: 2-Fluorophenol	120		200.0		58.5	15	98.1			
Surr: Phenol-d5	110		200.0		52.8	15	80.7			
Surr: 2,4,6-Tribromophenol	160		200.0		80.4	15	112			
Surr: Nitrobenzene-d5	95		100.0		94.6	27.2	90.7			S
Surr: 2-Fluorobiphenyl	86		100.0		85.6	23.3	85.6			
Surr: 4-Terphenyl-d14	68		100.0		68.0	27.6	107			
Sample ID LCSD-32619	SampT	ype: LC	SD	Tes	tCode: El	PA Method	8270C: Semi ^v	volatiles		
Sample ID LCSD-32619 Client ID: LCSS02	SampT Batch	⁻ ype: LC n ID: 326	SD 619	Tes F	tCode: El RunNo: 4	PA Method 4051	8270C: Semi ^v	volatiles		
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017	SampT Batch Analysis D	Type: LC n ID: 326 Date: 7/	SD 619 6/2017	Tes F S	tCode: El RunNo: 4 SeqNo: 1	PA Method 4051 389538	8270C: Semin Units: μg/L	volatiles		
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte	SampT Batch Analysis D Result	Type: LC n ID: 326 Date: 7/0 PQL	SD 619 6/2017 SPK value	Tes F S SPK Ref Val	tCode: El RunNo: 4 SeqNo: 1 %REC	PA Method 4051 389538 LowLimit	8270C: Semi Units: μ g/L HighLimit	volatiles %RPD	RPDLimit	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene	SampT Batch Analysis D Result 69	Type: LC n ID: 326 Date: 7/ PQL 10	SD 619 6/2017 SPK value 100.0	Tes F SPK Ref Val 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6	PA Method 4051 389538 LowLimit 41.2	8270C: Semin Units: μg/L HighLimit 98.9	volatiles %RPD 21.6	RPDLimit 37.4	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol	SampT Batch Analysis D Result 69 140	Type: LC n ID: 326 Date: 7/0 PQL 10 10	SD 519 6/2017 SPK value 100.0 200.0	Tes F SPK Ref Val 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4	PA Method 4051 389538 LowLimit 41.2 29.1	8270C: Semin Units: μg/L HighLimit 98.9 111	volatiles %RPD 21.6 18.5	RPDLimit 37.4 26.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol	SampT Batch Analysis D Result 69 140 140	Type: LC n ID: 326 Date: 7/0 PQL 10 10 10	SD 6/2017 SPK value 100.0 200.0 200.0	Tes F SPK Ref Val 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0	PA Method 4051 389538 LowLimit 41.2 29.1 23.3	8270C: Semin Units: μg/L HighLimit 98.9 111 108	volatiles %RPD 21.6 18.5 11.4	RPDLimit 37.4 26.8 30.3	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene	SampT Batch Analysis D Result 69 140 140 58	Type: LC n ID: 326 Date: 7/0 PQL 10 10 10 10	SD 6/2017 SPK value 100.0 200.0 200.0 100.0	Tes F SPK Ref Val 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5	%RPD 21.6 18.5 11.4 8.32	RPDLimit 37.4 26.8 30.3 32	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene	SampT Batch Analysis D Result 69 140 140 58 63	ype: LC n ID: 320 Date: 7/0 PQL 10 10 10 10 10	SD 519 5/2017 SPK value 100.0 200.0 200.0 100.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7	%RPD 21.6 18.5 11.4 8.32 16.7	RPDLimit 37.4 26.8 30.3 32 36.7	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine	SampT Batch Analysis D Result 69 140 140 58 63 75	ype: LC n ID: 320 Date: 7/0 PQL 10 10 10 10 10 10	SD 619 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 10 10	SD 619 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15	8270C: Semin Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110	Type: LC on ID: 320 Date: 7/0 PQL 10 10 10 10 10 10 10 20	SD 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 200.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1	8270C: Semin Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89	Type: LC n ID: 326 Date: 7/0 PQL 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 100.0 200.0 200.0 200.0 200.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2	<pre>volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89	Type: LC n ID: 326 pate: 7/0 PQL 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 519 5/2017 SPK value 100.0 200.0 200.0 100.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69	Type: LC Date: 7/ PQL 10 10 10 10 10 10 10 10 10 10 10 10 10	SD 519 5/2017 SPK value 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0 100.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110	ype: LC n ID: 320 Date: 7/ PQL 10 10 10 10 10 10 10 20 10 10 10	SD 519 5/2017 SPK value 200.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 100.0 100.0 200.0	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1	<pre>%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0</pre>	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 28.3 39.8 0	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110 96	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 10 20 10 10 10	SD 519 5/2017 SPK value 100.0 200.0 200.0 100.0 100.0 20	Tes F S SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0 48.0	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 44.4 34.3 15 15	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110 96 140	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 20 10 10 10 10	SD 519 6/2017 SPK value 100.0 200.0 200.0 100.0 100.0 20	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0 48.0 71.3	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15 15 15	8270C: Semir Units: µg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112	volatiles %RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0	Qual
Sample ID LCSD-32619 Client ID: LCSS02 Prep Date: 7/3/2017 Analyte Acenaphthene 4-Chloro-3-methylphenol 2-Chlorophenol 1,4-Dichlorobenzene 2,4-Dinitrotoluene N-Nitrosodi-n-propylamine 4-Nitrophenol Pentachlorophenol Phenol Phenol Phenol Pyrene 1,2,4-Trichlorobenzene Surr: 2-Fluorophenol Surr: Phenol-d5 Surr: 2,4,6-Tribromophenol Surr: Nitrobenzene-d5	SampT Batch Analysis D Result 69 140 140 58 63 75 88 110 89 89 69 110 96 140 84	ype: LC n ID: 320 Date: 7/0 10 10 10 10 10 10 20 10 10 10 10	SD 519 6/2017 SPK value 100.0 200.0 200.0 100.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 200.0 100.0 20	Tes F SPK Ref Val 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tCode: El RunNo: 4 SeqNo: 1: %REC 68.6 70.4 69.0 57.6 63.1 74.9 43.9 54.7 44.7 89.2 69.3 54.0 48.0 71.3 83.9	PA Method 4051 389538 LowLimit 41.2 29.1 23.3 29.4 36.6 46.9 15 28.1 15 28.1 15 44.4 34.3 15 15 15 15 15	8270C: Semir Units: μg/L HighLimit 98.9 111 108 84.5 88.7 106 74.7 85.4 78.2 96.8 89 98.1 80.7 112 90.7	%RPD 21.6 18.5 11.4 8.32 16.7 17.7 11.7 21.6 12.0 8.42 7.71 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RPDLimit 37.4 26.8 30.3 32 36.7 29.9 28.8 38.2 39.8 28.3 39.8 0 0 0 0 0 0 0	Qual

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

Sample pH Not In Range

RL Reporting Detection Limit

Р

W Sample container temperature is out of limit as specified

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Client: Project:	Wester SMW 2	n Refining S 2 and Bounda	outhwe ary We	st, Gallup lls							
Sample ID L Client ID: L	_CSD-32619 _CSS02	SampT Batch	ype: LC	SD 619	Test R	tCode: El	PA Method 4051	8270C: Semi	volatiles		
Prep Date:	7/3/2017	Analysis D	ate: 7	6/2017	S	eqNo: 1	389538	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphe	enyl-d14	60		100.0		60.5	27.6	107	0	0	

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 61 of 61

ANALYSIS	INTAL RY	Albu TEL: 305-343-3975 i Website: www.hal	4901 Hawkinz querque, NM 87 FAX: 505-345-4 lenvironmental.c	NE 109 Sam 107 107	ple Log-In C	heck List
Client Name Weste	m Refining Gallup	Work Order Number:	1706G62		RoptNo:	ī
Received By: Richi	e Eriacho	6/30/2017 10:30:00 AM	1	12-2		
Completed By: Ashle Reviewed By:	ey Gallegos	в/30/2017 4:02:10 РМ € 7{3 7		A		
Chain of Custody						
1 Custody seats intact	on sample hottles?		Yes 🗌	No 🗌	Not Present	
2. Is Chain of Custody	complete?		Yes 🔽	No 🗔	Not Present	
3, How was the sample	e delivered?		Courter			
Log In						
4. Was an attempt ma	de to cool the sample	s?	Yes 🗹	No 🗌	NA 🗆	
5. Were all samples re	ceived at a temperatu	re of >0° C to 6.0°C	Yes 🗹	No 🗌		
6. Sample(s) in proper	container(s)?		Yes 🗹	No 🗔		
7. Sufficient sample vo	lume for indicated tes	t(s)?	Yes 🖌	NO DI	r.	
B. Are samples (except	VOA and ONG) prop	only preserved?	Yes V	No VI		
9. Was preservative ad	ided to bottles?		Yes V	No 🗹 (25 NA	
10.VOA vials have zero	headspace?		Yes 🗹	No 🗆	No VOA Vials	
11. Were any sample of	ontainers received bro	ken?	Yes 🗆	No 🔽	# of preserved bottles checked	
12. Does paperwork ma (Note discrepancies	tch bottle labels? on chain of custody)		Yos 🗹	No 🗌	for pH: 17	r (12)unless noted)
13. Are matrices correct	ly identified on Chain	of Custody7	Yes 🔽	No L	Adjusted?	105
14. Is it clear what analy	ses were requested?		Yes 🗹	No 🗌	Sec. All	900
15. Were all holding time (If no, notify custome	es able to be met? er for authorization.)		Yes 🗹	No 🛄	Checked by:	003
Special Handling (i	f applicable)					
16. Was client notified o	f all discrepancies wit	h this order?	Yes	No 🔲	NA 🔽	
Person Notifie	di:	Date				
By Whom:		Via:	eMail 🗌 P	hone 🗌 Fax	In Person	
Regarding:						
Client Instructi	Encondate	a participat di	deled in	++151/2	to -orre f	opourol
to a subtraine remarks:	PH H	dzy hours r	Divin to	apalus	In COTE I	St Secci l
18. Cooler Information Cooler No Ten	p °C Condition	Seal Intact Seal No S	Seal Date	Signed By	2.	
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WESTERN REFINING SOUTHWEST, INC. GALLUP REFINERY - GALLUP, NEW MEXICO SMW-2 AND BOUNDARY WELLS - JUNE 2016 METALS AND CYANIDE ANALYSES FOR GROUNDWATER SAMPLES AND WATER QA/QC SAMPLES

TOTAL METALS ANALYSIS AND DISSOLVED METALS ANALYSIS

Analyte	Analytical Method					
Antimony	SW-846 method 6010/6020					
Arsenic	SW-846 method 6010/6020					
Barium	SW-846 method 6010/6020					
Beryllium	SW-846 method 6010/6020					
Cadmium	SW-846 method 6010/6020					
Chromium	SW-846 method 6010/6020					
Cobalt	SW-846 method 6010/6020 SW-846 method 335.4/335.2 mod					
Cyanide	SW-846 method 6010/6020 SW-846 method 335.4/335.2 mod					
Lead	SW-846 method 6010/6020					
Mercury	SW-846 method 7470/7471					
Nickel	SW-846 method 6010/6020					
Selenium	SW-846 method 6010/6020					
Silver	SW-846 method 6010/6020					
Vanadium	SW-846 method 6010/6020					
Zinc	SW-846 method 6010/6020					
Iron	SW-846 method 6010/6020					
langanese	SW-846 method 6010/6020					

GENERAL CHEMISTRY PARAMETERS FOR GROUNDWATER SAMPLES AND WATER QA/QC SAMPLES

Analyte	Analytical Method
Chloride	EPA method 300.0
Fluoride	EPA method 300.0
Sulfate	EPA method 300.0

Appendix F SMW-2 Area - Analytical Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 01, 2017

Cheryl Johnson Western Refining Southwest, Gallup 92 Giant Crossing Road Gallup, NM 87301 TEL: (505) 722-0231 FAX

OrderNo.: 1706G37

RE: SMW 2

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 6/30/2017 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

and

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report

Lab Order 1706G37 Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Gal Project: SMW 2	llup	AQUEQUS	Clier Col	nt Sampl llection I	e ID: SM Date: 6/28	W-2 3/2017 1	:10:00 PM	
Lao ID: 1706G37-001	Matrix:	AQUEUUS	K	eceivea	Date: 0/30	//2017/1	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA	
Fluoride	ND	0.22	0.50		mg/L	5	7/3/2017 8:26:31 PM	R43998
Chloride	2600	120	250		mg/L	500	7/21/2017 4:18:01 PM	R44455
Bromide	2.8	0.073	0.50		mg/L	5	7/3/2017 8:26:31 PM	R43998
Phosphorus, Orthophosphate (As P)	ND	5.0	10	н	mg/L	20	7/19/2017 6:05:29 PM	R44381
Sulfate	1500	4.8	25		mg/L	50	7/19/2017 6:17:53 PM	R44381
Nitrate+Nitrite as N	ND	0.26	2.0		mg/L	10	7/19/2017 8:22:00 PM	A44381
EPA METHOD 200.7: DISSOLVED METALS	3						Analyst: pmf	
Calcium	300	1.6	20		mg/L	20	7/12/2017 8:09:43 PM	C44171
Magnesium	90	0.25	1.0		mg/L	1	7/12/2017 8:07:46 PM	C44171
Potassium	0.75	0.11	1.0	J	mg/L	1	7/12/2017 8:07:46 PM	C44171
Sodium	2300	8.2	50		mg/L	50	7/13/2017 5:56:50 PM	B44206

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in
	D	Sample Diluted Due to Matrix	Е	Value above quanti

- 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
- the associated Method Blank
- itation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 1 of 8

Analytical Report Lab Order 1706G37

Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: W Project: SI	Vestern Refining Southwest MW 2	t, Gallup		Clier Co	nt Sampl	le ID: SM Date: 6/28	W-4 3/2017	2:25:00 PM			
Lab ID: 17	706G37-002	Matrix:	Matrix: AQUEOUS Received Date: 6/30/2017 10:30:00 AM								
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHO	D 300.0: ANIONS							Analyst: MRA			
Fluoride		1.1	0.22	0.50		mg/L	5	7/3/2017 8:51:20 PM	R43998		
Chloride		63	1.2	2.5		mg/L	5	7/3/2017 8:51:20 PM	R43998		
Bromide		0.26	0.073	0.50	J	mg/L	5	7/3/2017 8:51:20 PM	R43998		
Phosphorus,	Orthophosphate (As P)	ND	1.2	2.5	н	mg/L	5	7/19/2017 6:30:17 PM	R44381		
Sulfate		180	0.48	2.5		mg/L	5	7/3/2017 8:51:20 PM	R43998		
Nitrate+Nitrite	e as N	0.21	0.13	1.0	J	mg/L	5	7/3/2017 10:55:27 PM	R43998		
ЕРА МЕТНО	D 200.7: DISSOLVED ME	TALS						Analyst: pmf			
Calcium		4.5	0.078	1.0		mg/L	1	7/12/2017 8:11:40 PM	C44171		
Magnesium		1.2	0.25	1.0		mg/L	1	7/12/2017 8:11:40 PM	C44171		
Potassium		0.52	0.11	1.0	J	mg/L	1	7/12/2017 8:11:40 PM	C44171		
Sodium		310	3.3	20		ma/L	20	7/12/2017 8:13:39 PM	C44171		

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in
	D	Sample Diluted Due to Matrix	Е	Value above quantit
			_	

- 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
- the associated Method Blank
- tation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 2 of 8

Analytical Report

Lab Order 1706G37 Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Project:	Western Refining Southwest SMW 2		Clier Co	nt Sampl	le ID: Eva Date: 6/28	poration 3/2017 2	n Pond #2 2:45:00 PM					
Lab ID:	1706G37-003	Matrix:	AQUEOUS	R	Received Date: 6/30/2017 10:30:00 AM							
Analyses		Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METH	IOD 300.0: ANIONS							Analyst: MRA				
Fluoride		18	0.44	1.0	*	mg/L	10	7/3/2017 9:16:10 PM	R43998			
Chloride		5000	120	250		mg/L	500	7/19/2017 7:19:55 PM	A44381			
Bromide		1.9	0.15	1.0		mg/L	10	7/3/2017 9:16:10 PM	R43998			
Phosphoru	us, Orthophosphate (As P)	ND	2.5	5.0	н	mg/L	10	7/19/2017 7:07:31 PM	A44381			
Sulfate		1400	9.6	50		mg/L	100	7/3/2017 9:28:34 PM	R43998			
Nitrate+Nit	trite as N	1.1	0.52	4.0	J	mg/L	20	7/19/2017 8:34:25 PM	A44381			
EPA METH	OD 200.7: DISSOLVED ME	TALS						Analyst: pmf				
Calcium		410	1.6	20		mg/L	20	7/12/2017 8:23:47 PM	C44171			
Magnesiur	n	100	5.0	20		mg/L	20	7/12/2017 8:23:47 PM	C44171			
Potassium	1	140	2.3	20		mg/L	20	7/12/2017 8:23:47 PM	C44171			
Sodium		3100	8.2	50		mg/L	50	7/13/2017 5:58:45 PM	B44206			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in
	D	Sample Diluted Due to Matrix	Е	Value above quantit

- 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
- the associated Method Blank
- tation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 3 of 8

Analytical Report

Lab Order 1706G37 Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest Project: SMW 2		Clier Co	nt Sampl llection]	e ID: Eva Date: 6/28	poration 8/2017 3	n Pond #3 3:05:00 PM		
Lab ID: 1706G37-004	Matrix:	AQUEOUS	R	eceived 1	Date: 6/30	0/2017 1	10:30:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: MRA	
Fluoride	16	0.44	1.0	*	mg/L	10	7/3/2017 9:41:00 PM	R43998
Chloride	7100	120	250		mg/L	500	7/19/2017 7:44:45 PM	A44381
Bromide	2.3	0.15	1.0		mg/L	10	7/3/2017 9:41:00 PM	R43998
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0	н	mg/L	10	7/19/2017 7:32:20 PM	A44381
Sulfate	1800	9.6	50		mg/L	100	7/3/2017 9:53:25 PM	R43998
Nitrate+Nitrite as N	1.1	0.52	4.0	J	mg/L	20	7/19/2017 8:46:49 PM	A44381
EPA METHOD 200.7: DISSOLVED ME	TALS						Analyst: pmf	
Calcium	540	1.6	20		mg/L	20	7/12/2017 8:27:42 PM	C44171
Magnesium	150	5.0	20		mg/L	20	7/12/2017 8:27:42 PM	C44171
Potassium	230	2.3	20		mg/L	20	7/12/2017 8:27:42 PM	C44171
Sodium	4300	8.2	50		mg/L	50	7/13/2017 6:00:52 PM	B44206

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in
	D	Sample Diluted Due to Matrix	Е	Value above quanti

- 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
- the associated Method Blank
- itation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 4 of 8

SMW 2

Western Refining Southwest, Gallup

thod 200.7: Dissolved Metals	

Sample ID	МВ-С	Samp	Туре: М	BLK	TestCode: EPA Method 200.7: Dissolved Metals							
Client ID:	PBW	Batc	h ID: C4	4171	RunNo: 44171							
Prep Date:		Analysis [Date: 7/	12/2017	S	SeqNo: 1	394698	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium		ND	1.0									
Magnesium		ND	1.0									
Potassium		ND	1.0									
Sodium		ND	1.0									
Sample ID	LCSLL-C	Samp	Type: LC	SLL	Tes	tCode: El	PA Method	200.7: Dissol	ved Meta	s		
Client ID:	BatchQC	Batc	h ID: C4	4171	F	RunNo: 4	4171					
Prep Date:		Analysis [Date: 7/	12/2017	S	SeqNo: 1	394700	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium		0.59	1.0	0.5000	0	119	50	150			J	
Magnesium		0.53	1.0	0.5000	0	106	50	150			J	
Potassium		0.50	1.0	0.5000	0	99.3	50	150			J	
Sodium		0.51	1.0	0.5000	0	101	50	150			J	
Sample ID	LCS-C	Samp	Type: LC	s	TestCode: EPA Method 200.7: Dissolved Metals							
Client ID:	LCSW	Batc	h ID: C4	4171	RunNo: 44171							
Prep Date:		Analysis [Date: 7/	12/2017	5	SeqNo: 1	394702	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium		52	1.0	50.00	0	103	85	115				
Magnesium		52	1.0	50.00	0	104	85	115				
Potassium		50	1.0	50.00	0	100	85	115				
Sodium		51	1.0	50.00	0	102	85	115				
Sample ID	MB-B	Samp	Туре: М	BLK	Tes	tCode: El	PA Method	200.7: Dissol	ved Meta	s		
Client ID:	PBW	Batc	h ID: B4	4206	F	RunNo: 4	4206					
Prep Date:		Analysis [Date: 7/	13/2017	5	SeqNo: 1	395435	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Sodium		ND	1.0									
Sample ID	LCSLL-B	Samp	Type: LC	SLL	Tes	tCode: El	PA Method	200.7: Dissol	ved Meta	s		
Client ID:	BatchQC	Batc	h ID: B4	4206	F	RunNo: 4	4206					
Prep Date:			Data: 7	42/2017	c		395438	Units: ma/l				
		Analysis L	Jale. 1	13/2017	<u>ر</u>			ermer mg/2				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Qualifiers:

Client:

Project:

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 8

WO#: 1706G37 01-Aug-17

Client: Project:		Western H SMW 2	Refining S	outhw	est, Gallup							
Sample ID	_CS-B		SampT	Type: L	.CS	TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: L	CSW		Batch	h ID: B	44206	F	unNo: 44	4206				
Prep Date:			Analysis D	Date:	7/13/2017	S	eqNo: 1	395441	Units: mg/L			
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium			50	1.(50.00	0	101	85	115			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 8

Client: Project:	Western Refining S SMW 2	outhwes	st, Gallup								
Sample ID MB	SampT	ype: mb	olk	Tes	tCode: E	PA Method	300.0: Anions	6			
Client ID: PBW	Batch	n ID: R4	3998	F	RunNo: 4	3998					
Prep Date:	Analysis D	Date: 7/	3/2017	S	SeqNo: 1	387038	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									
Bromide	ND	0.10									
Sulfate	0.13	0.50								J	
Nitrate+Nitrite as N	ND	0.20									
Sample ID LCS	SampT	ype: Ics	i	Tes	tCode: E	PA Method	300.0: Anions	6			
Client ID: LCSW	Batch	n ID: R4	3998	F	RunNo: 4	3998					
Prep Date:	Analysis D	Date: 7/	3/2017	S	SeqNo: 1	387039	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	0.48	0.10	0.5000	0	95.7	90	110				
Chloride	4.8	0.50	5.000	0	95.8	90	110				
Bromide	2.4	0.10	2.500	0	94.6	90	110				
Sulfate	9.7	0.50	10.00	0	96.6	90	110				
Nitrate+Nitrite as N	3.4	0.20	3.500	0	98.2	90	110				
					TestCode: EPA Method 300.0: Anions						
Sample ID MB	SampT	ype: mb	olk	Tes	tCode: E	PA Method	300.0: Anions	6			
Sample ID MB Client ID: PBW	SampT Batch	ype: mb nID: R4	olk 4381	Tes F	tCode: E RunNo: 4	PA Method 4381	300.0: Anions	5			
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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 Detection Limit

W Sample container temperature is out of limit as specified

Page 7 of 8

WO#:	1706G37	

Client: Project:	Wester SMW	rn Refining S 2	outhwe	est, Gallup							
Sample ID	МВ	Samp	Гуре: т	blk	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID:	PBW	Batc	h ID: 🗛	44381	F	anNo: 4	4381				
Prep Date:		Analysis I	Date: 7	/19/2017	S	SeqNo: 14	402953	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite a	is N	ND	0.20								
Sample ID	LCS	Samp	Type: Ic	s	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID:	LCSW	Batc	h ID: 🗛	44381	F	RunNo: 4	4381				
Prep Date:		Analysis E	Date: 7	/19/2017	5	SeqNo: 14	402954	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		4.8	0.50	5.000	0	95.2	90	110			
Phosphorus, Or	thophosphate (As I	P 4.8	0.50	5.000	0	96.4	90	110			
Nitrate+Nitrite a	s N	3.4	0.20	3.500	0	97.9	90	110			
Sample ID	МВ	Samp	Гуре: М	BLK	Tes	tCode: El	PA Method	300.0: Anions	5		
Client ID:	PBW	Batc	h ID: R4	44455	F	RunNo: 4	4455				
Prep Date:		Analysis I	Date: 7	/21/2017	5	SeqNo: 14	405140	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		ND	0.50								
Sample ID	LCS	Samp	Type: LO	cs	Tes	tCode: El	PA Method	300.0: Anions	;		
Client ID:	LCSW	Batc	h ID: R	44455	F	anNo: 4	4455				
Prep Date:		Analysis [Date: 7	/21/2017	5	SeqNo: 14	405141	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	94.1	90	110			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
- Page 8 of 8



Sample Log-In Check List

Client Name: Weste	rn Refining Gallup	Work Order Numbe	r: 1706G37		RcptNo: 1
Received By: Richie	e Eriacho	6/30/2017 10:30:00 A	M	12-2	· ····-
Completed By: Ashle Reviewed By:	y Gallegos	6/30/2017 1:43:58 PM & H3 17	Λ	A	
Chain of Custody					
1. Custody seals intact	on sample bottles?		Yes 🗌	No 🗌	Not Present 🗹
2. Is Chain of Custody	complete?		Yes 🗹	No 🗌	Not Present
3. How was the sample	e delivered?		<u>Courier</u>		
<u>Log In</u>					
4. Was an attempt ma	de to cool the sample	es?	Yes 🗹	No 🗌	
5. Were all samples re	ceived at a temperate	ure of >0° C to 6.0°C	Yes 🗹	No 🗌	NA 🗔
6. Sample(s) in proper	container(s)?		Yes 🔽	No 🗌	
7. Sufficient sample vo	lume for indicated te	st(s)?	Yes 🔽	No 🗌	
8. Are samples (except	t VOA and ONG) proj	perly preserved?	Yes 🔽	No 🗌	
9. Was preservative ad	Ided to bottles?		Yes 🗌	No 🗹	NA 🗌
10.VOA vials have zero	headspace?		Yes 🗹	No 🗌	No VOA Vials
11. Were any sample co	ontainers received br	oken?	Yes 🗌	No 🗹	# of preserved
12. Does paperwork ma (Note discrepancies	tch bottle labels? on chain of custody)		Yes 🗹	No 🗆	for pH:
13. Are matrices correct	ly identified on Chain	of Custody?	Yes 🔽	No 🗌	Adjusted? NO
14. Is it clear what analy	ses were requested?	•	Yes 🗹	No 🗌	651
15. Were all holding time (If no, notify custome	es able to be met? er for authorization.)		Yes 🗹	No 🗌	Checked by:
Special Handling (İ	f applicable)				
16. Was client notified o	f all discrepancies wi	th this order?	Yes 🗌	No 🗌	NA 🗹
Person Notifie	d:	Date			
By Whom:		Via:	ı eMail	Phone 🗌 Fax	In Person
Regarding:				/	na a la constituit de la constantidade de
Client Instructi	ons:				
17 Additional remarks:	· · · · · · · · · · · · · · · · ·				· · · · · · · · · · · ·

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good	Yes			

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If necessary, samples submitted to Hall Environmental may be succentrated to other accountacted to other accountacted to this possibility. Any sub-contracted data will be clearly notated on the analytical report.